

# Microsoft Azure

## Cloud Application Development – Day 1

Mehmet Kut

Kıdemli Danışman, Ceviz Bilgi Teknolojileri

[mehmet.kut@cevizbilgi.com.tr](mailto:mehmet.kut@cevizbilgi.com.tr)



@mehmetkut

Toros Gökkurt

Cloud Solution Architect, Microsoft

[torosgo@microsoft.com](mailto:torosgo@microsoft.com)



@torosgo



C E V I Z



Microsoft

# Ajanda

## 1. Bölüm

- Azure, Azure PAAS Ön Koşullar & Avantajlar
- Azure Portal, Resource Groups, Resources
- App Services
- Azure App Service Plan
- Web Apps
- Application Slots & Swapping
- Scale Up – Down, Scale In - Out

## 2. Bölüm

- Azure Functions
- Logic App
- Application Insights
- API Management
- Traffic Manager



Microsoft  
Azure



# Azure Hyper-Scale Global Infrastructure



- 2.5x AWS Regions, 7x Google
- G Series – Largest VM Worldwide, 32 Cores, 418 GBs RAM, SSD

# Azure DataCenter





# Azure Compliance

Azure has the largest compliance portfolio in the industry

## Industry



## United States



## Regional



# Azure is an open cloud

DevOps



Clients



Management



Applications



PaaS &  
DevOps



App Frameworks  
& Tools



Databases &  
Middleware



Infrastructure



redhat



ORACLE  
LINUX



FreeBSD



# Developer Services



Visual Studio Team Services



Azure DevTest Labs



VS Application Insights\*



HockeyApp



Developer Tools



Azure Portal



Scheduler



Operations Management Suite



Automation



Log Analytics



Key Vault



Security Center\*

## Compute

- Virtual Machines
- Virtual Machine Scale Sets
- Cloud Services
- Batch
- RemoteApp
- Service Fabric
- Azure Container Service

## Web & Mobile

- Web Apps
- Mobile Apps
- Logic Apps\*
- API Apps
- API Management
- Notification Hubs
- Mobile Engagement
- Functions\*

## Data & Storage

- SQL Database
- DocumentDB
- Redis Cache
- Storage: Blobs, Tables, Queues, Files and Disks
- StorSimple
- Search
- SQL Data Warehouse\*
- SQL Server Stretch Database

## Analytics

- Data Lake Analytics\*
- Data Lake Store\*
- HDInsight
- Machine Learning
- Stream Analytics
- Data Factory
- Data Catalog
- Power BI Embedded\*

## Internet of Things & Intelligence

- Azure IoT Suite
- Azure IoT Hub
- Event Hubs
- Cortana Intelligence Suite
- Cognitive Services\*

## Media & CDN

- Media Services
- Content Delivery Network

## Identity & Access Management

- Azure Active Directory
- B2C\*
- Domain Services\*
- Multi-Factor Authentication

## Hybrid Integration



BizTalk Services



Service Bus



Backup



Site Recovery

## Networking



Virtual Network



ExpressRoute



Traffic Manager



Load Balancer



Azure DNS\*



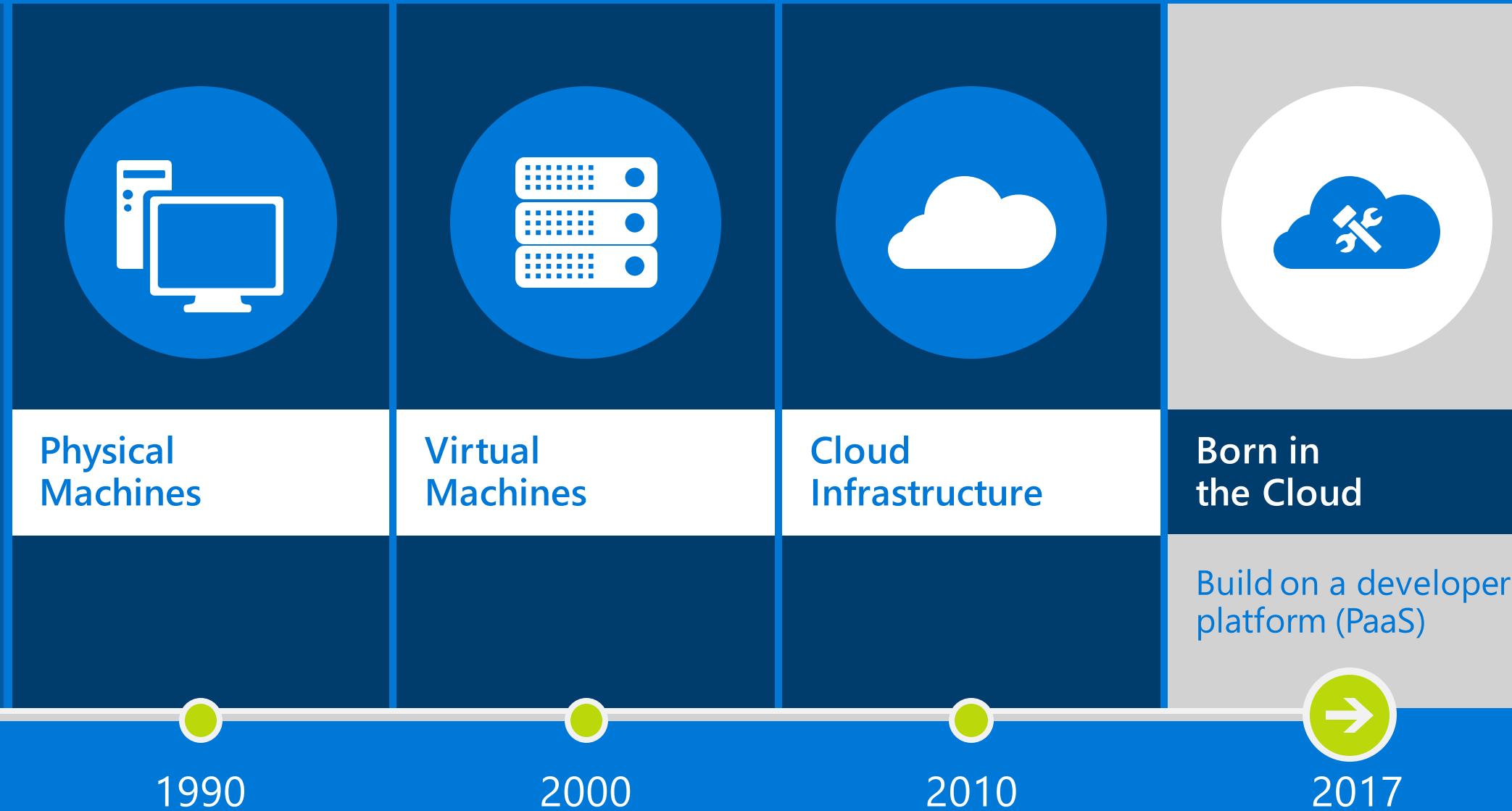
VPN Gateway



Application Gateway

# Zaman içinde uygulama geliştirme değişimi

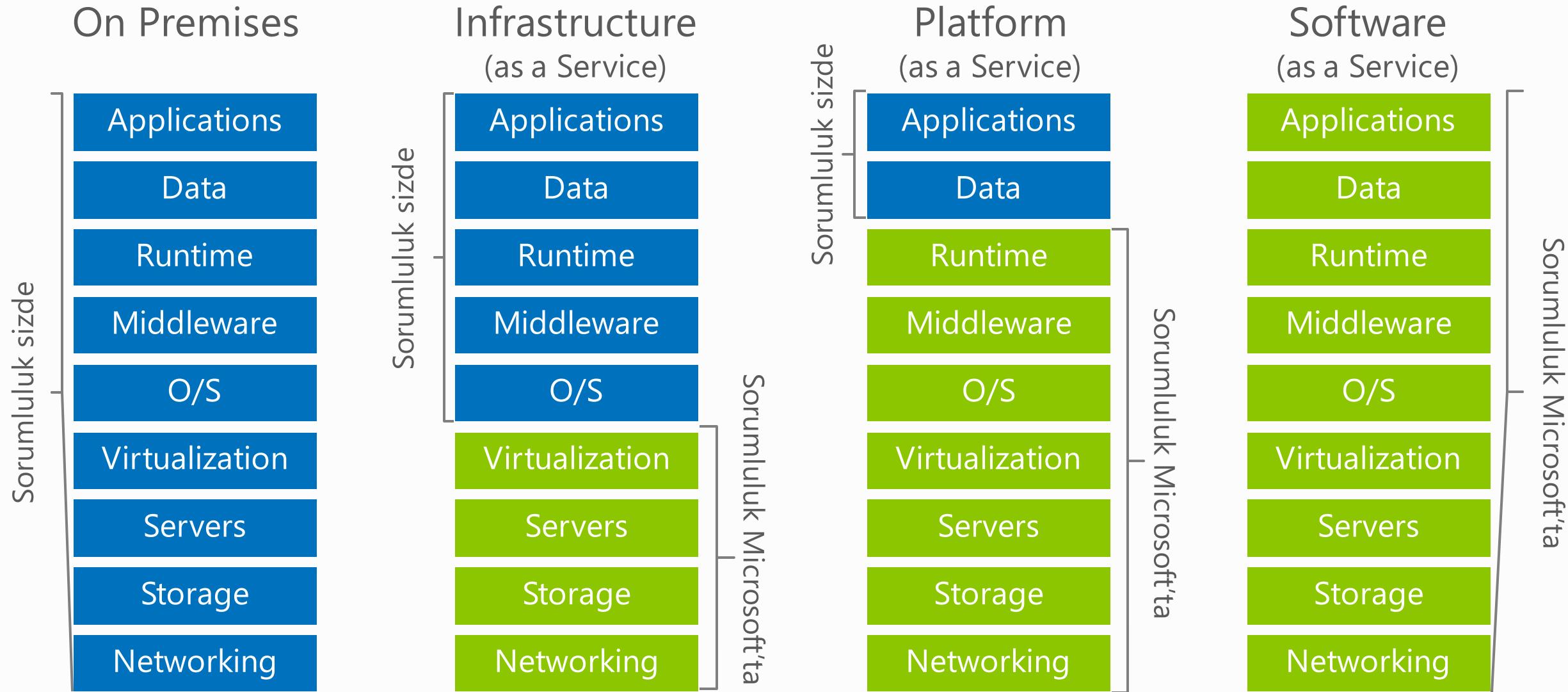
Mainframe  
Monolithic  
Client/Server  
3 Tier  
Component  
RAD  
Distributed  
SOAP  
SOA  
Web  
REST  
Mobile  
Microservices  
Containers  
Serverless



# Eski ve Yeni Dünya

Eski	<ul style="list-style-type: none"><li>• Sunucu satın alma &amp; kiralama</li><li>• Gelecekte gerekecek olan donanım ihtiyacını şimdiden belirleme</li><li>• Yeterli olmayan ya da gereğinden fazla kaynak kullanımı</li><li>• Deployment genelde insanlar tarafından manuel yapılıyor</li></ul>	Yeni
	<ul style="list-style-type: none"><li>• Servis kiralama</li><li>• Sadece bugünün gereksinimleri ile ilgili kaynak kullanımı ve maliyet</li><li>• İhtiyaç olan miktarda kaynak kullanımı</li><li>• Otomatik deployment yapısı ile harcanan zamanı minimize edebiliriz</li></ul>	

# Bulut Servis Modelleri



# Uygulamanızın bir araba olduğunu düşünürsek



IaaS

...arabaya sahip olabilirsiniz

PaaS

Sadece baygıkla kullanabilirsiniz  
geliştirmeye, iyileştirmeye ve  
modernleştirmeye  
odaklanabilirsiniz

SaaS

...ulaşım için taksi  
kullanabilirsiniz

# Bana en uygun Azure bölgesi hangisi?



# Bana en uygun Azure bölgesi hangisi?



Konum

İşletmeniz nerede?

Düzen ülkelerde şubeleriniz veya müşterileriniz var mı?



Uyumluluk Gereksinimleri

Sizin veya müşterilerinizin uyumluluğa yönelik özel talepleri var mı?

# Bana en uygun Azure bölgesi hangisi?



- Hizmet kullanılabilirliği

İstediğiniz Azure hizmetleri, planladığınız bölgede kullanılabiliyor mu?

- Data Center konumu

Sizin veya müşterilerinizin, Data Center konumunun nerede olduğu önemli mi?

- Fiyatlandırma

Kararınızı verirken sizin için en önemli olan faktör, maliyet mi?

# Demo

- Hız Testi



# Azure Yönetim Arayüzleri

# Azure Yönetim Arayüzleri

[manage.windowsazure.com](http://manage.windowsazure.com)

Name	Type	Status	Subscription	Location
agprt	Web app	Running	mike@benko - MSDN Subscription	East US
autobenko	Automation Account	Ready	mike@benko - Production	East US 2
benkoacs2	Active Directory Access Control Nam...	Active	mike@benko - Production	East US
BenkoApps	Mobile Service	Ready	mike@benko - Production	East US
BenkoApps.db	SQL Database	Online	mike@benko - Production	East US
benkocloud	Storage Account	Online	mike@benko - MSDN Subscription	East US
benkodata	Web app	Running	mike@benko - Production	East US
benkodb	SQL Database	Online	mike@benko - Production	East US
benkoeast	Storage Account	Online	msdn@benko - MSDN Subscription	East US
benkomedia	Media Service	Active	msdn@benko - MSDN Subscription	East US
benkosites	Storage Account	Online	mike@benko - Production	North Central US
benkositess	Cloud service	Running	mike@benko - Production	North Central US
benkotestcloud	Storage Account	Online	mike@benko - MSDN Subscription	East US
benkotgps	Storage Account	Online	mike@benko - MSDN Subscription	North Central US
benkotips	Web app	Running	mike@benko - MSDN Subscription	East US
benkotips	Visual Studio Online	Active	mike@benko - Production	North Central US

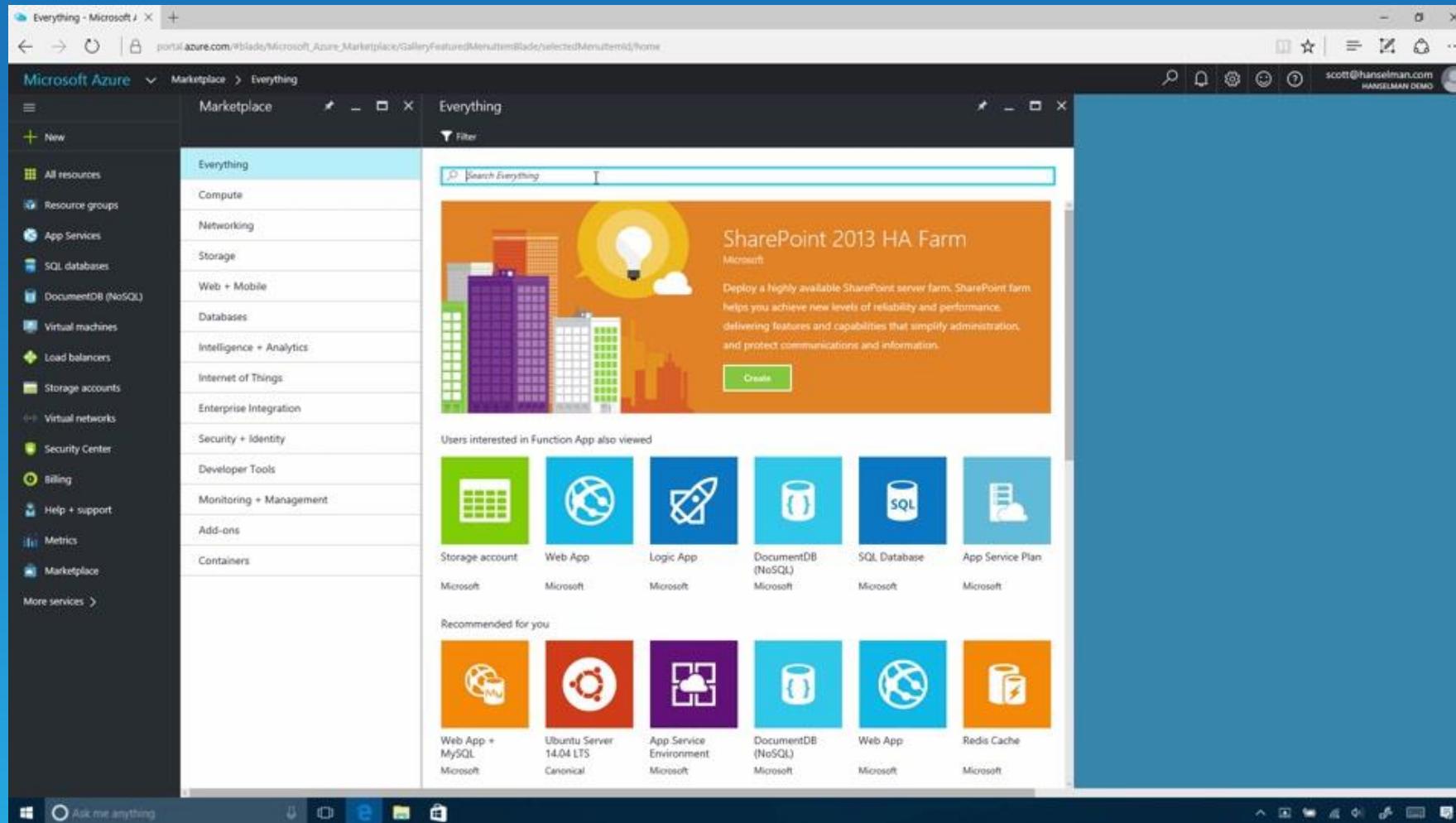
- Subscription merkezli
- Tüm kaynaklar gözüktür.
- İçeriğe göre değişen toolbar
- Yardım Sistemi
- ASM – Azure Service Management
- Classic – **Mümkünse Kullanmayın!**

[portal.azure.com](http://portal.azure.com)

- Yüksek özelleştirilebilir arayüz.
- Arama, Blade, Lens özellikleri
- Role based access control (RBAC)
- Gelişmiş izleme ve hata ayıklama
- Self service ticketing
- ARM – Azure Resource Management

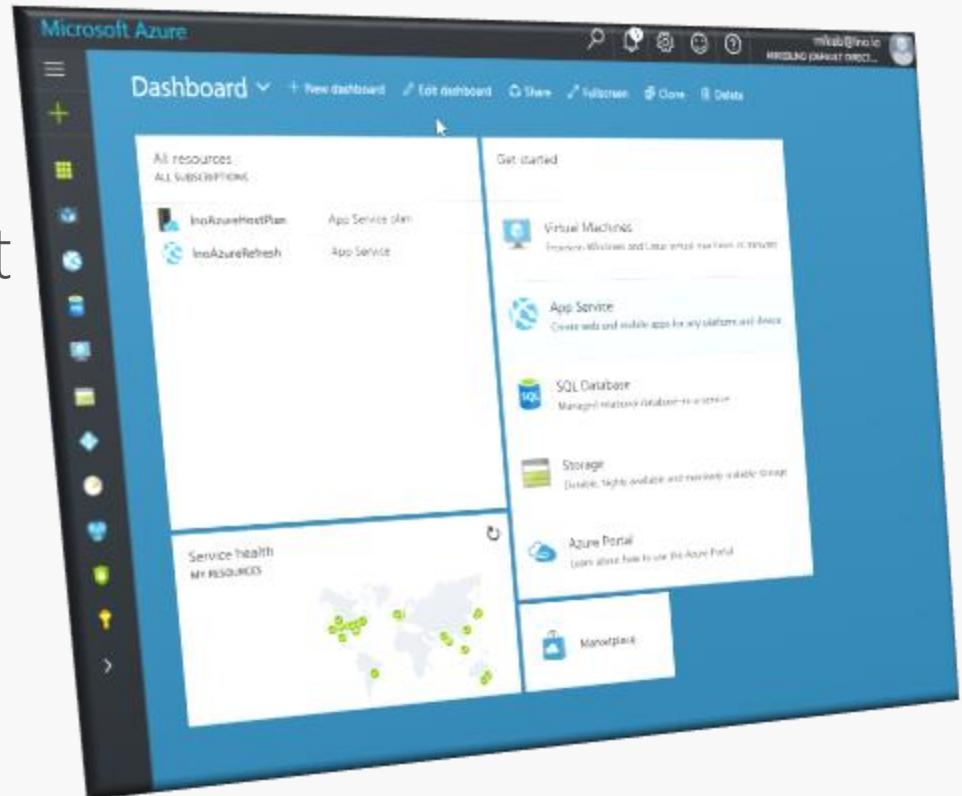
# Modern Azure Portal

Microsoft Azure portalı, Azure kaynaklarınızı oluşturabileceğiniz ve yönetebileceğiniz portaldır.



# Modern Azure Portal

- Blades are a vertical partition of content currently being viewed
- Additional levels of detail can be drilled into with additional blades added to right
- Customizable dashboard views allow you to pin what you need where you want it
- Powerful search enables you to find anything by name or by type
- Support provisioning with ARM



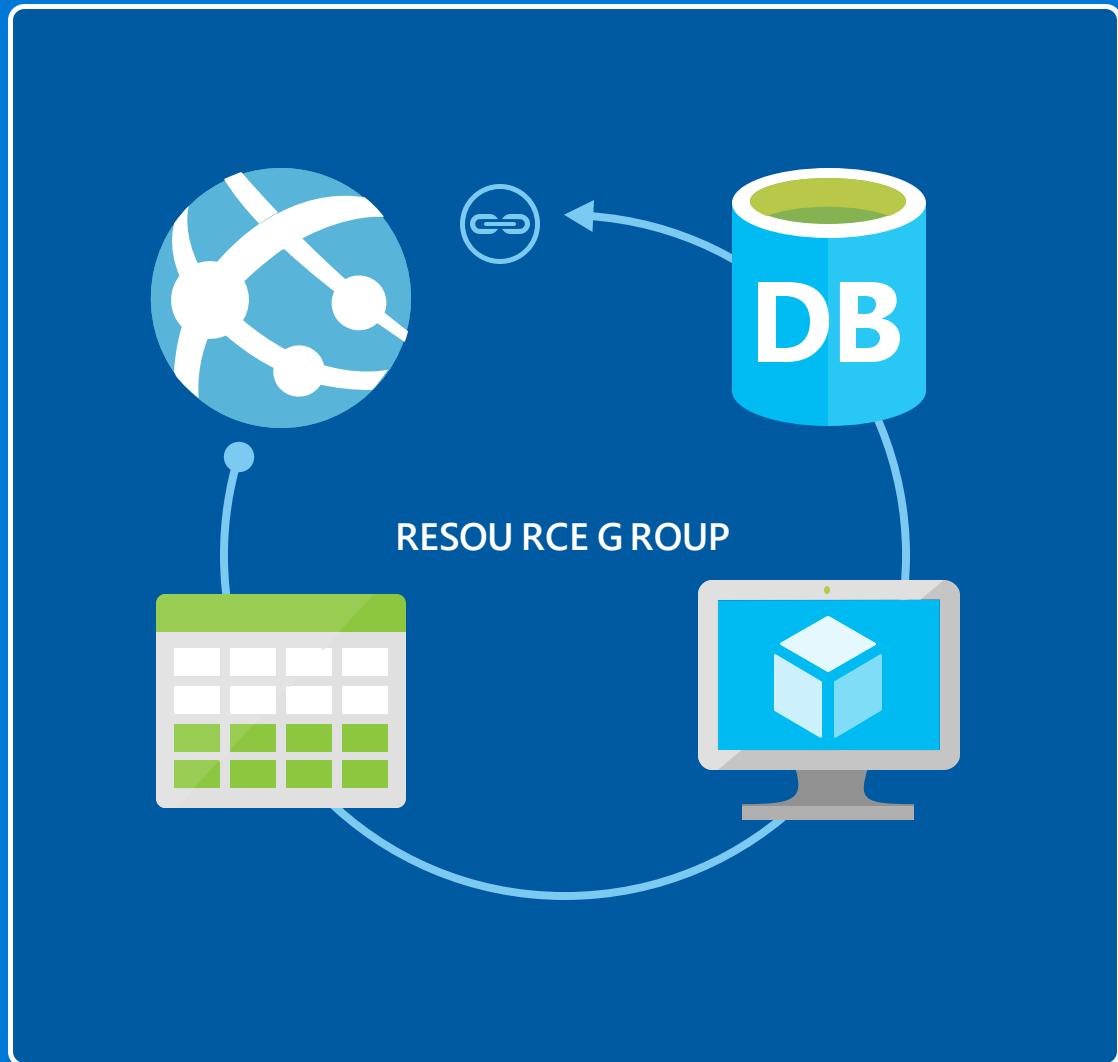
<http://portal.azure.com>

# Azure Resource Manager

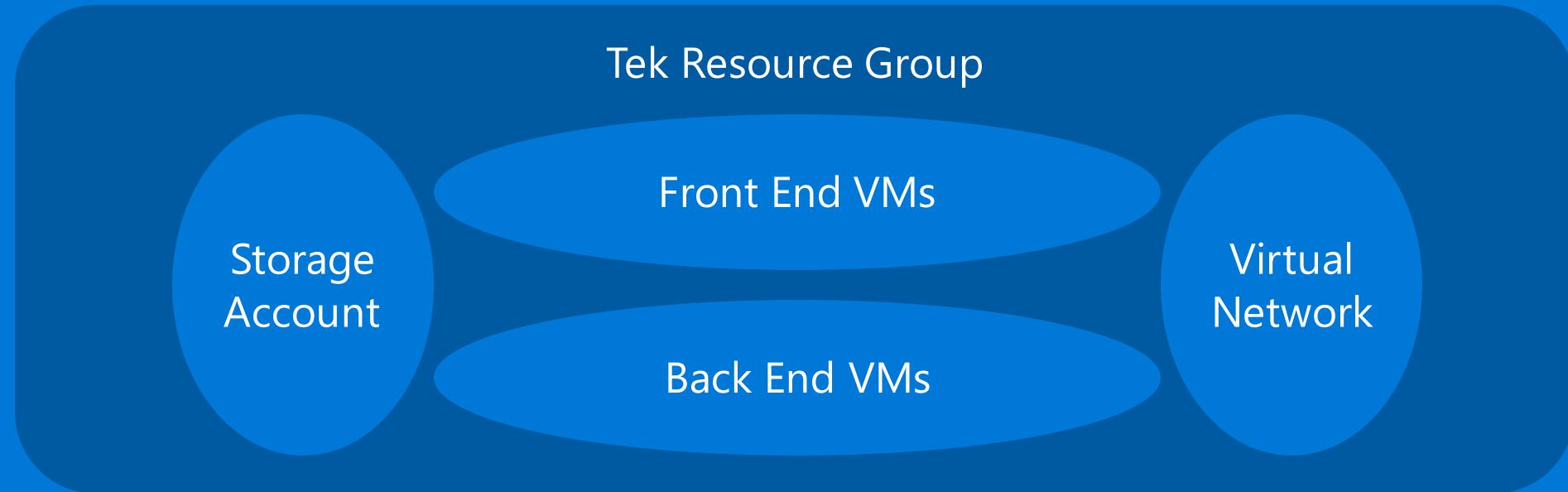
- JSON based service definition
- Scriptable via PowerShell, .NET and other tools to provision services with specific settings
- Repeatable!
- New Portal is ARM focused as well as RBAC enabled

# Resource Groups

- Bir Azure çözümü için ilgili resourceları bir arada tutan bir kapsayıcıdır.
- Resource group içerisinde farklı regionlara sahip resource bulunabilir.
- Resource Group bir çözümün tüm kaynaklarını veya yalnızca grup olarak yönetmek istediğiniz kaynakları içerebilir.
- Kuruluş için önemli olan faktörleri temel alarak resourceları, nasıl resource gruplara ayıracığınıza siz karar verirsiniz.



# Tek veya çoklu resource groups?



Çoklu Resource Groups

RG1:  
Storage  
Account

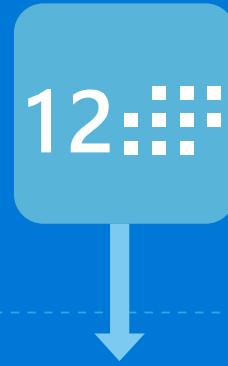
RG3: Front End VMs

RG4: Back End VMs

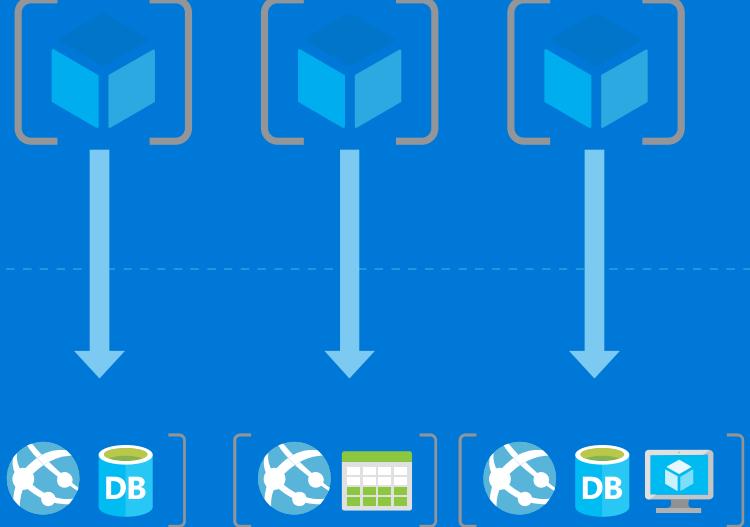
RG2:  
Virtual  
Network

# Role Based Access Control

SUBSCRIPTION

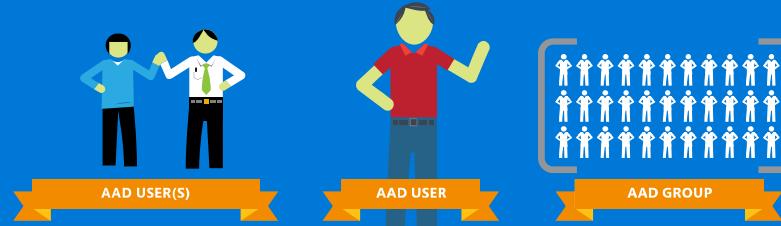


RESOURCE GROUPS

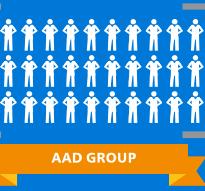


RESOURCES

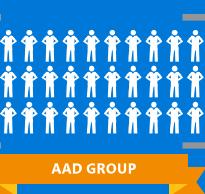
ACCESS INHERITANCE



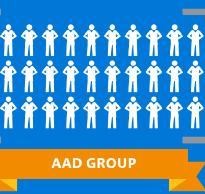
CONTRIBUTORS



READERS



READERS



READERS

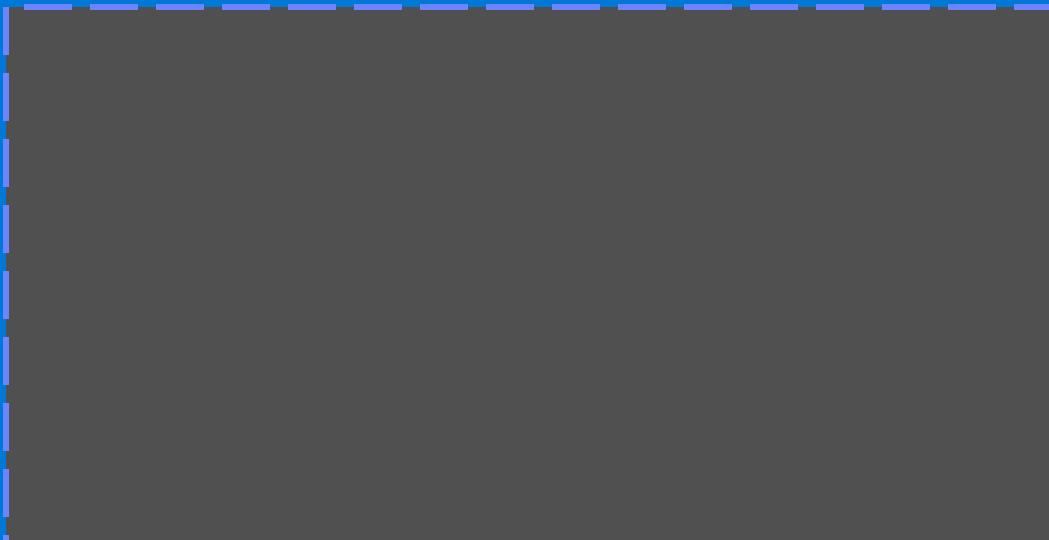
# Örnek: ARM kaynak yapısı

Microsoft Azure Subscription

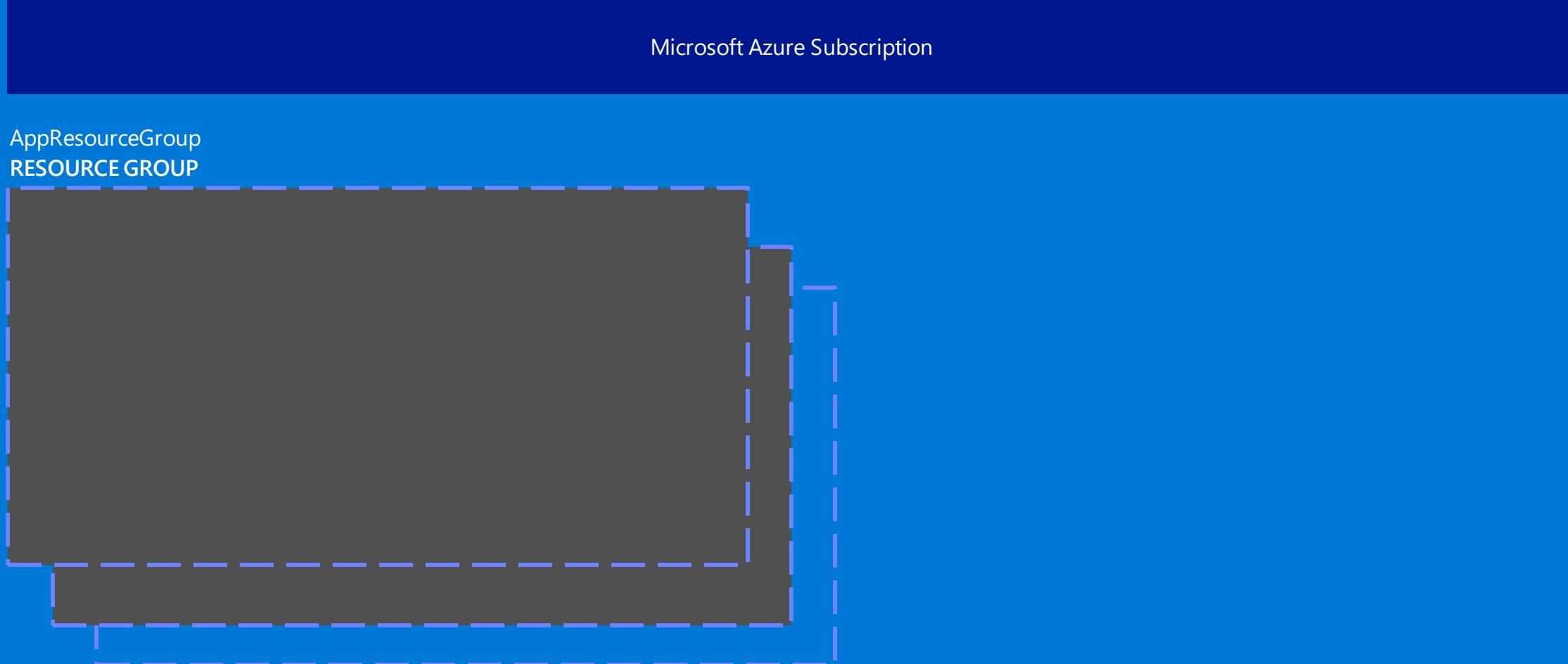
# Örnek: ARM kaynak yapısı

Microsoft Azure Subscription

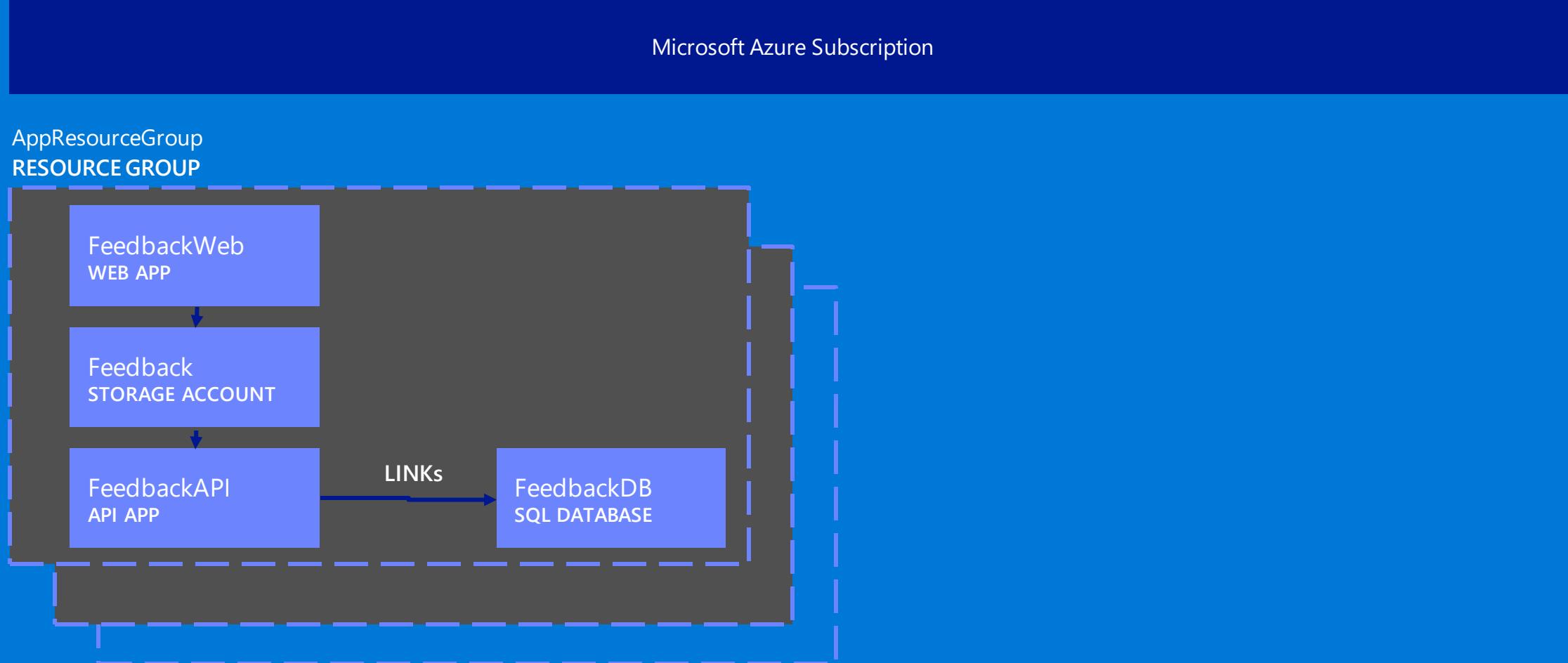
AppResourceGroup  
**RESOURCE GROUP**



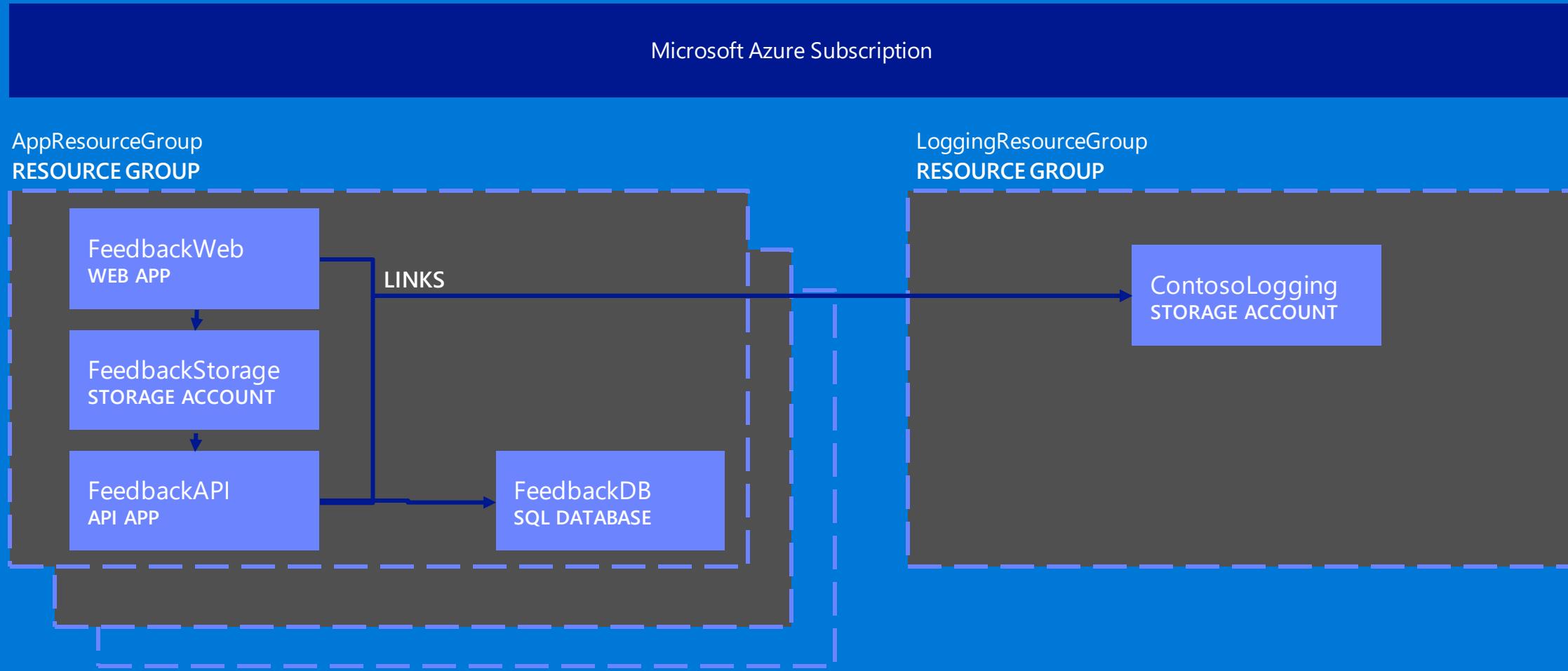
# Örnek: ARM kaynak yapısı



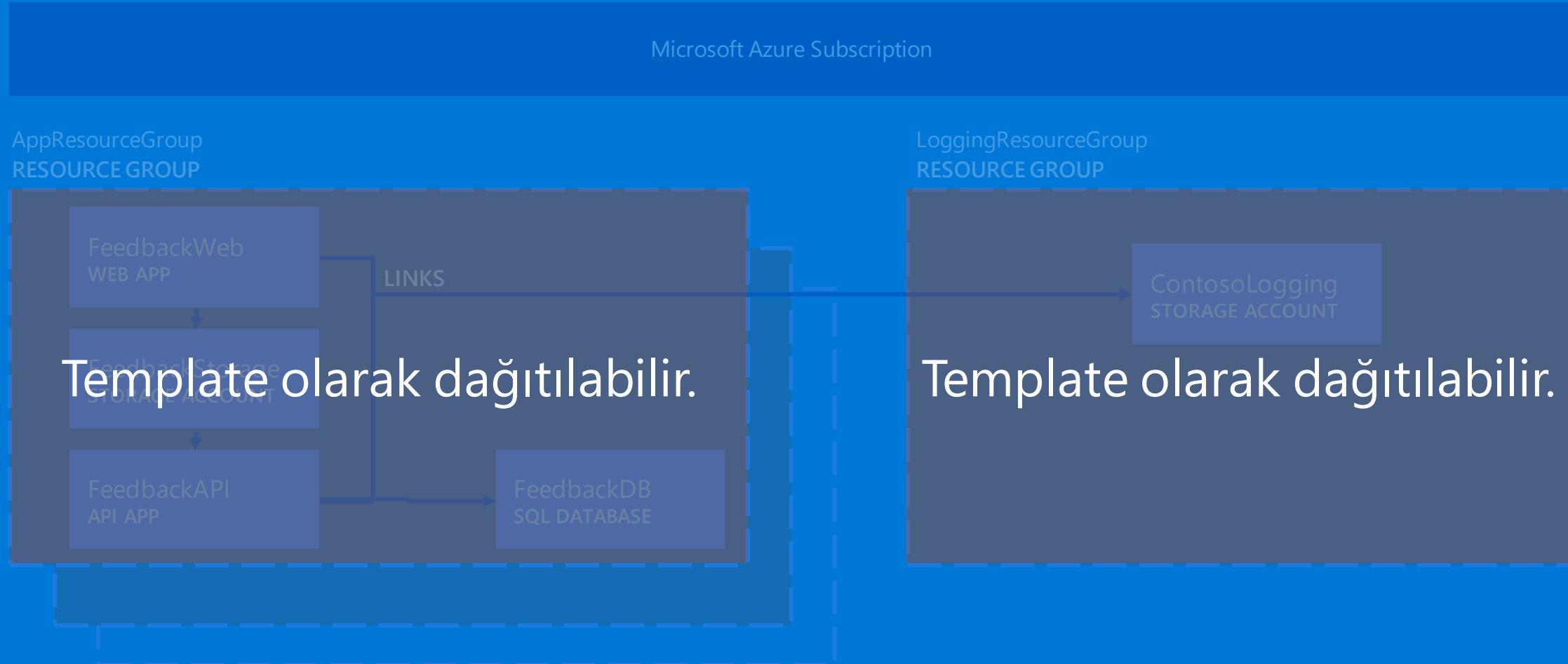
# Örnek: ARM kaynak yapısı



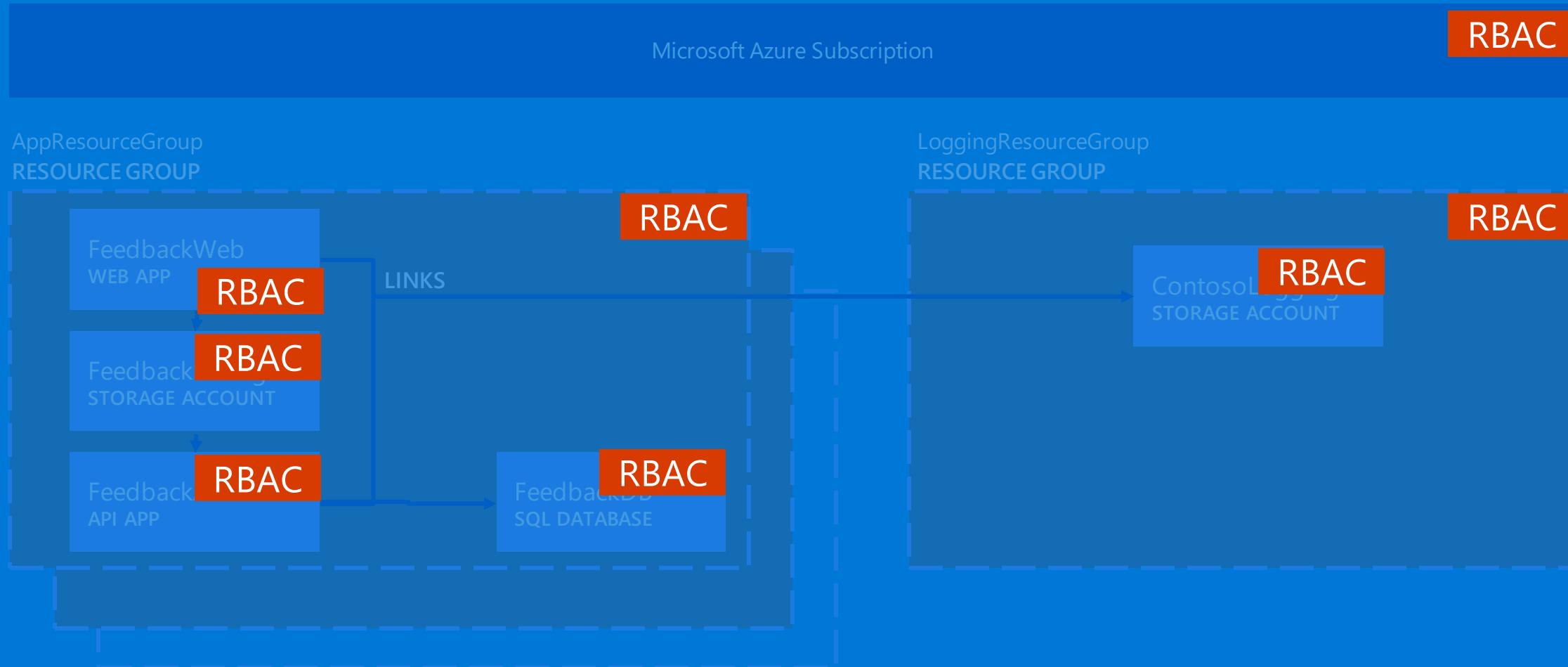
# Örnek: ARM kaynak yapısı



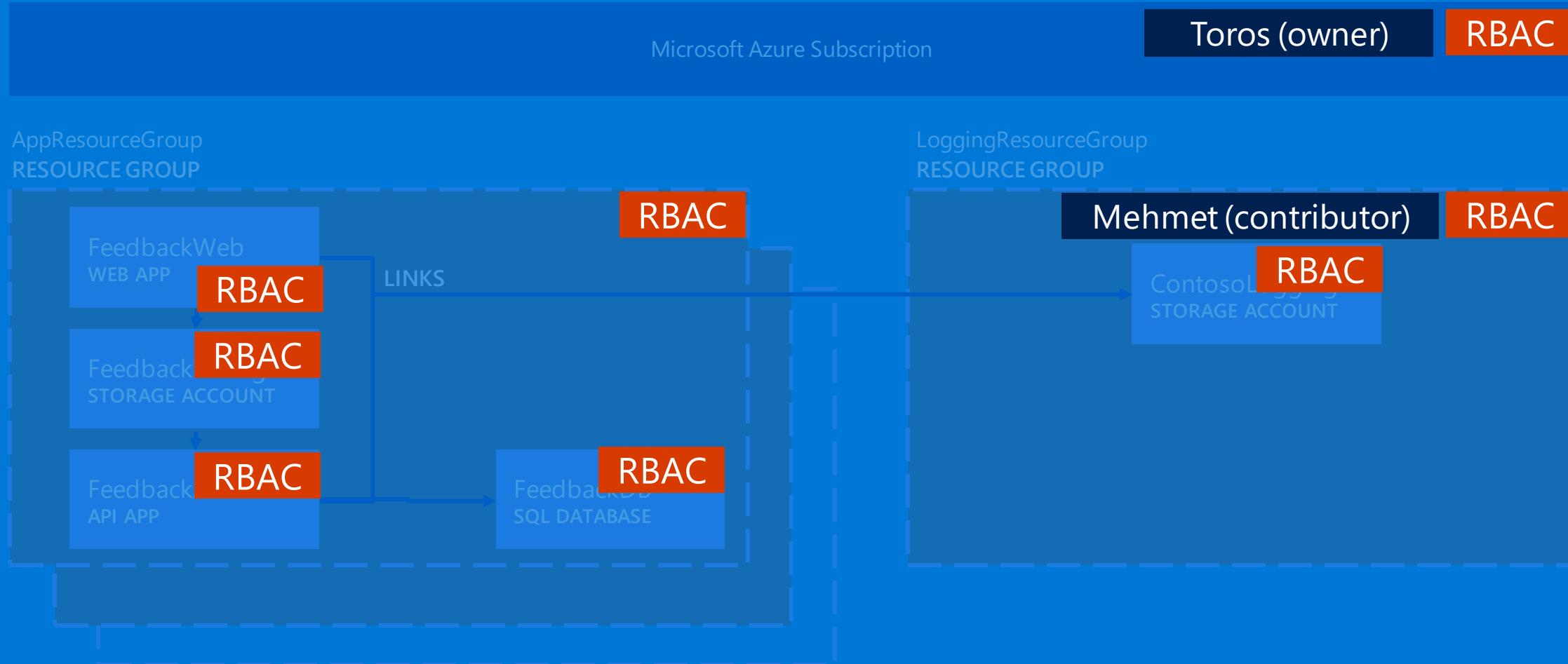
# Örnek: ARM kaynak yapısı



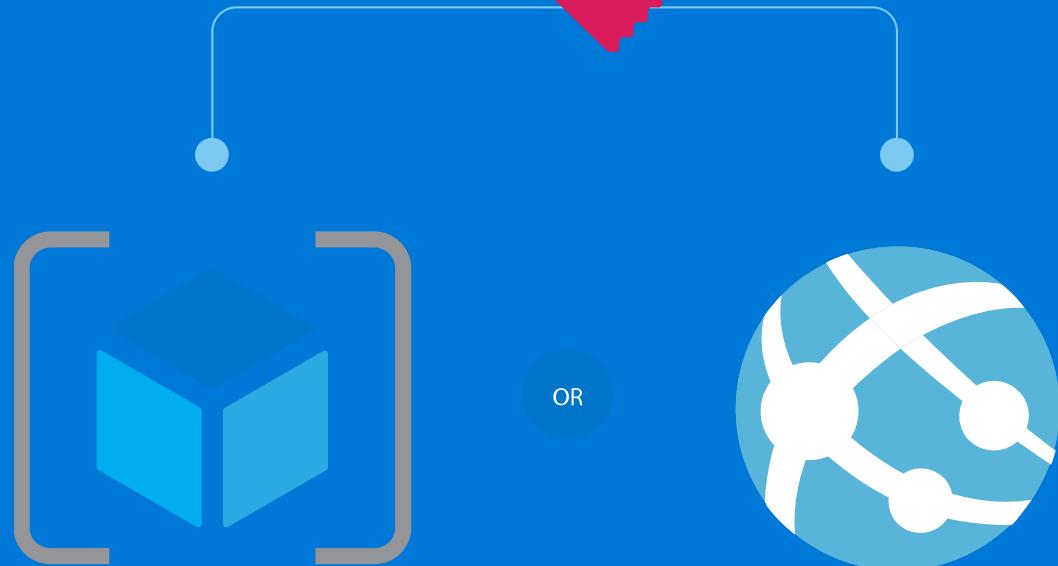
# Örnek: ARM kaynak yapısı



# Örnek: ARM kaynak yapısı



# Resource Tags



- Name-value ikilisi ile tag ekleme.
- Subscription bazında
- Her kaynağı 15 e kadar tag ekleme imkanı.

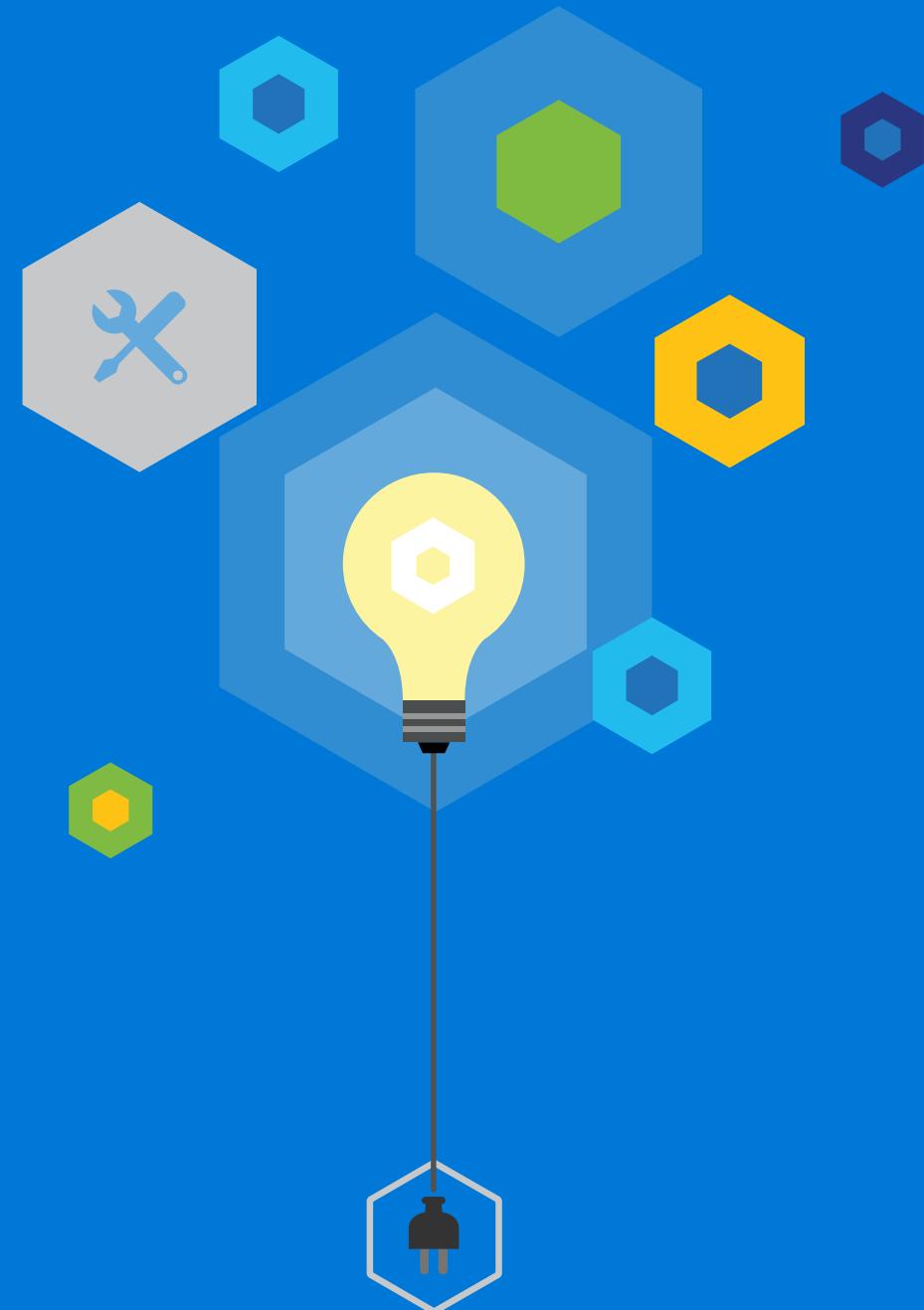
## Taglama önerileri

- Notlar: VM kaynakları için basit notlar alın.
- Creator: VM in sahibini yazın.
- Department/Cost center: Bu kaynağın departmanı ve maliyet merkezini yazın
- Environment: Bu VM in ortamı nedir canlı, test, dev

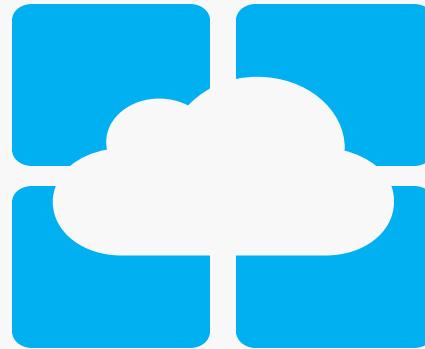
# Hands On Lab

HOL 3 - Intro to Azure Portal

- Azure Portal
- Resource Groups
- Resources
- Access Control
- Tags



# Azure App Service



# Azure App Service

*"PaaS that developers love and  
businesses can trust"*

# Azure App Service

## Build and scale great web and mobile apps



Auto-patching and auto-scale

.NET, Java, Node.js, PHP, Python

Integrate with SaaS and on-premises

Continuous integration with VSTS,  
Github, BitBucket, and more

>365k

Aktif müşteri



>1.1M

Uygulama



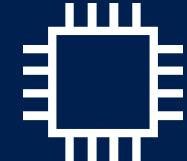
>9B

Günlük request



>300k

Kullanılan çekirdek



3x

Yıllık müşteri artışı



4x

Yıllık trafik artışı



# Azure PaaS Avantajlar & Ön Koşullar

## Avantajlar

- Kaynak kullanımı kadar ödeme imkanı
- Kolay ve hızlı kurulum, deployment
- Uygulamaların modernizasyonu için gereken kaynaklar
- Operasyonel işler için harcanan zamanın minimize edilmesi
- Kaynak Yönetimi yerine geliştirilecek olan uygulamaya odaklanma

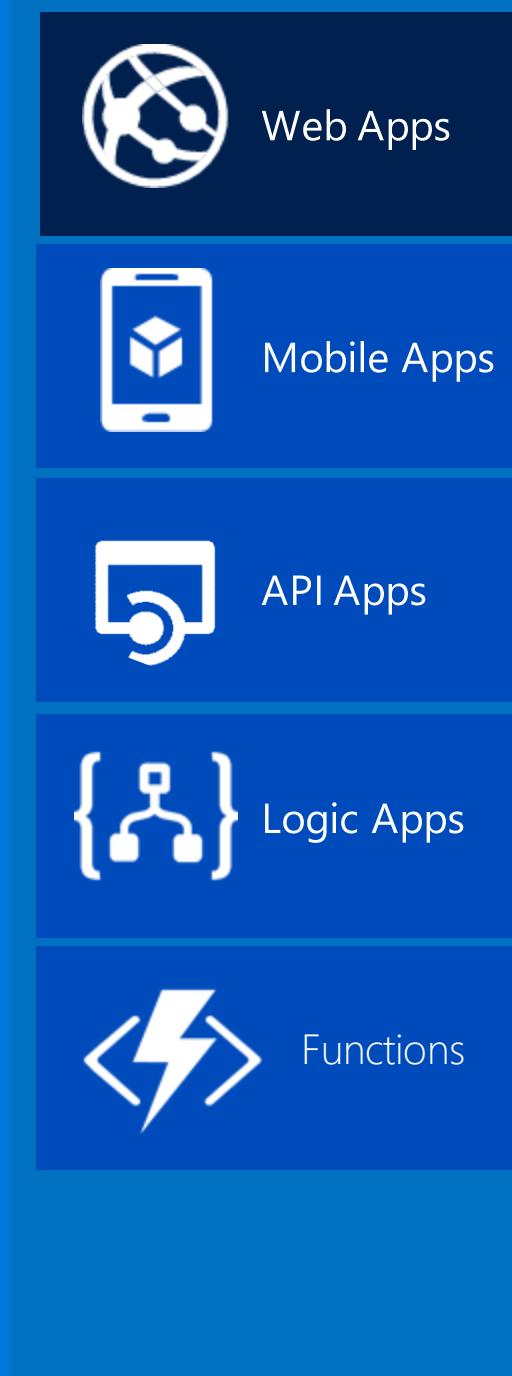
## Web Farm Yapısına Uygunluk Gereksinimi

- Ayrı instance'lar üzerinde session state, application state, data cache, output cache tutulmamalı
- Konfigürasyon ile ilgili değişkenler ortak bir yapıda yönetilmeli
- Kaynak kullanımının optimize edilmesi için yapısal değişikliklere gidilebilir (cdn, async metodlar)

## Kaynaklar Hakkında Bilgi Edinme

- Kullanılması planlanan kaynaklar için ihtiyaç doğrultusunda ön bilgi elde edilmeli
- Kaynakların limitleri, artırıcıları, eksileri hesaba katılmalı
- Kaynak ücretlendirmeleri ile ilgili tahminler yapılmalı

# App Service



## DevOps productivity



Source code  
control  
integration



CI/CD build  
and deploy



Staged  
deployments  
with slots



Auto scale  
on demand



Monitoring  
and alerting



Sitecore



drupal



Umbraco



Orchard



Episerver



WordPress



DNN  
Platform



Joomla



Drupal

## Multiple languages and frameworks



ASP.NET



ASP.NET  
Core 1.0



Java



python™



## Enterprise workloads



SOC 2



ISO/IEC 27018



PCI-DSS



Global scale



Corporate  
connectivity



Azure Active  
Directory



Dedicated  
environments

# App Service



Web Apps



Mobile Apps



API Apps



Logic 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

# App Service



Web Apps



Mobile Apps



API Apps



Logic Apps



Functions

## API fundamentals



Swagger  
API Metadata



CORS enablement

## Authentication / Access Control



EasyAuth



Service Principle  
Authentication

## API Consumption



Client SDK  
Generation



Logic Apps

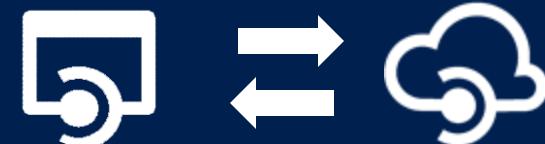


Power Apps



Flows

## Integration with API Management



# App Service



Web Apps



Mobile Apps



API Apps



Logic Apps



Functions

Connect SaaS applications



SharePoint Online



Unlock value across on-premises and cloud



Automate EAI, B2B/EDI, and business processes



{JSON}

Flatfile



Format conversion

Enterprise messaging

B2B

Enhance integration solution with Azure services



Functions



API management



Cognitive services



Machine learning

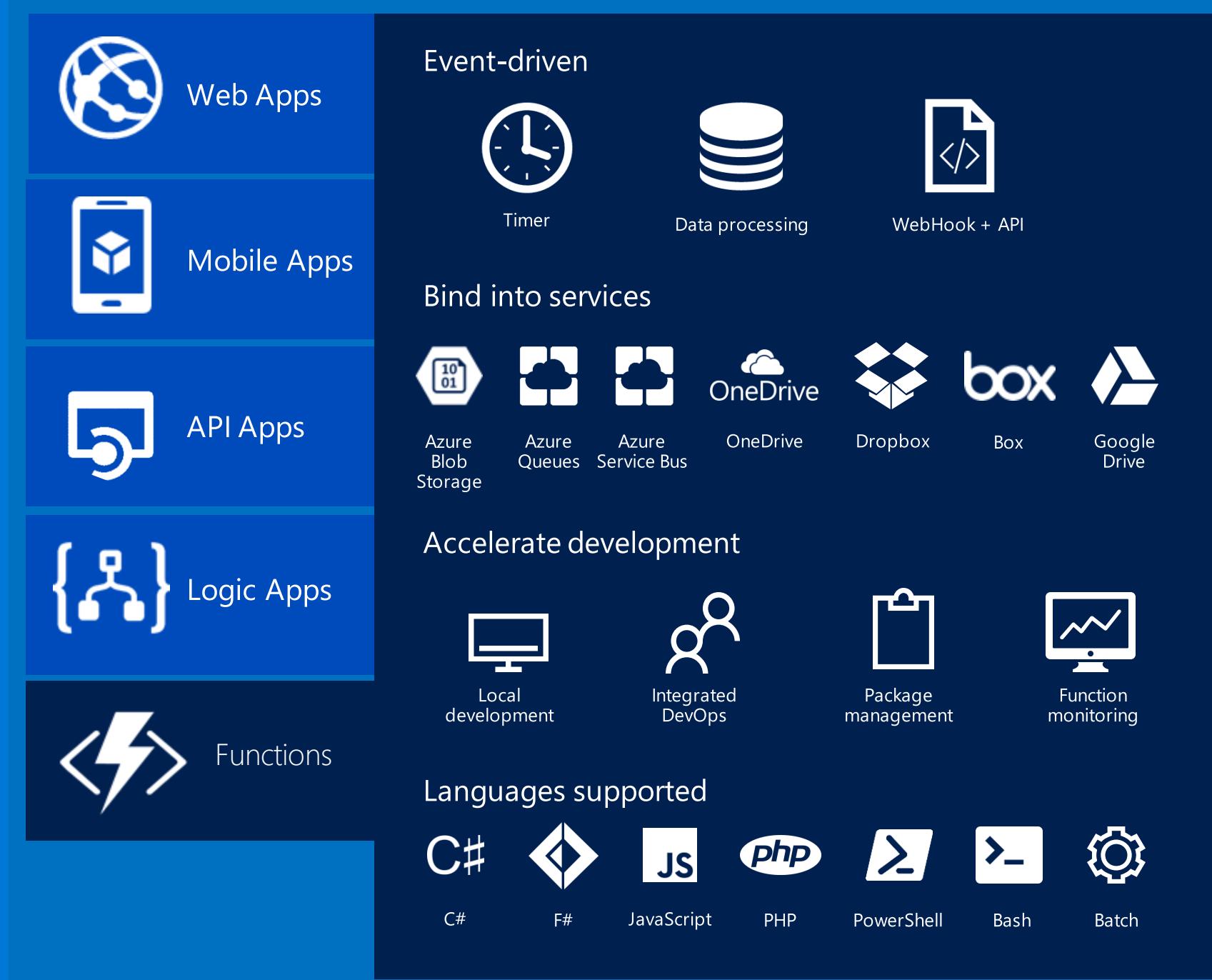


Blob storage



SQL database

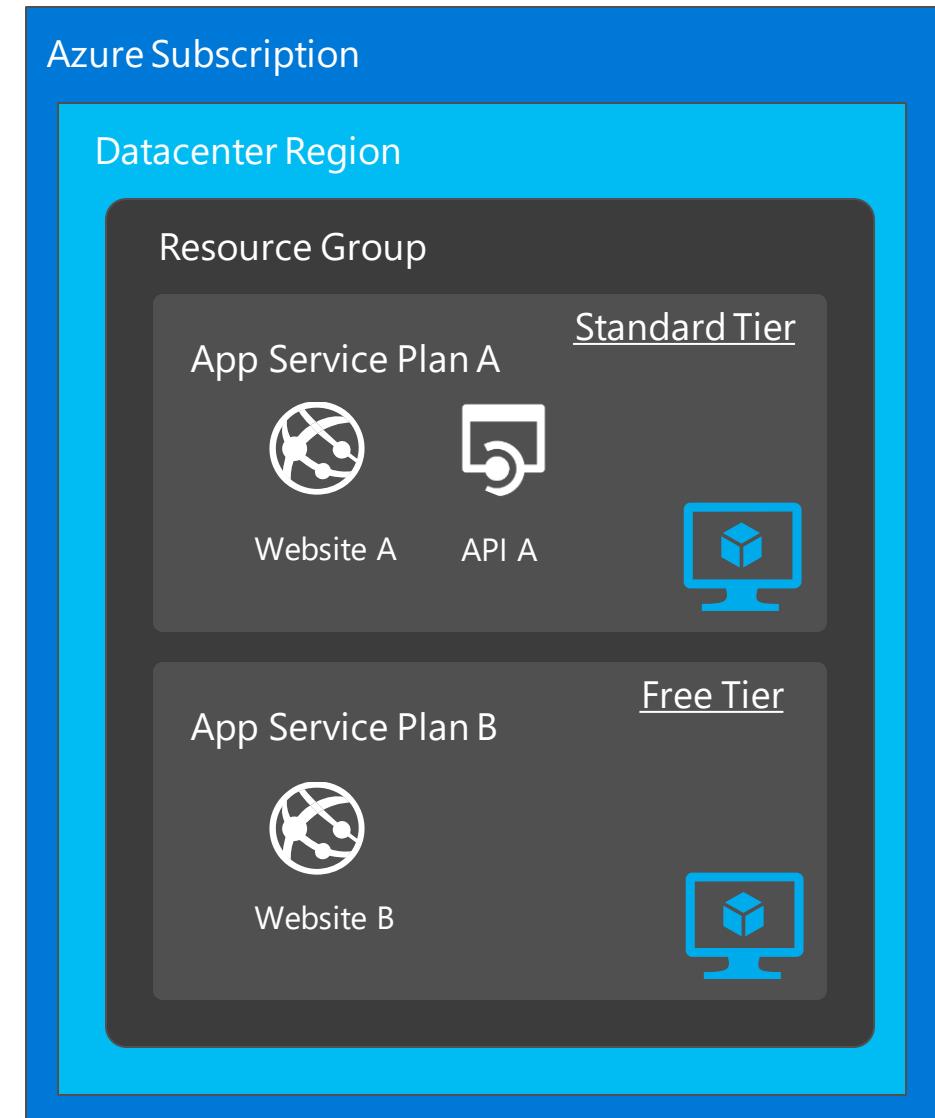
# App Service



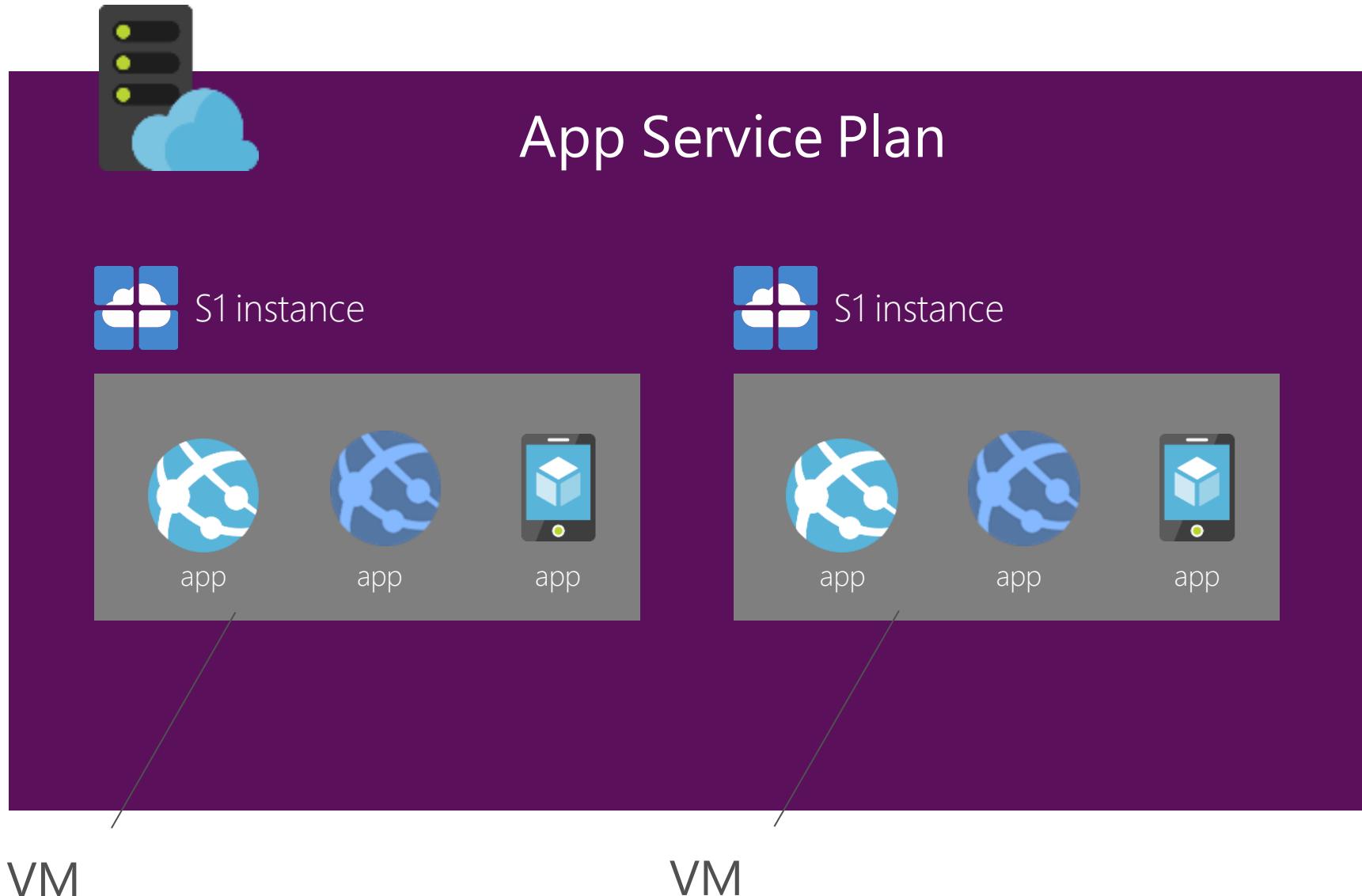
# Azure App Service Plan

# App Service Plan

- Bir webapp sadece bir app service plan içerisinde bulunabilir
- Aynı service plan içerisinde bulunan web app ler Azure üzerinde **aynı kaynaklar** üzerinde çalışır.
- Bir resource group içerisinde farklı web appler kapasite ihtiyacına göre farklı app service planları içerisinde bulundurulabilir.
- Aynı appservice plan içerisinde bulunacak webapplerin aynı subscription, aynı region ve aynı resource group içerisinde bulunması gereklidir



# App Service Plan



Price tier: Standard  
Compute Resource: S1  
Scale: 2  
Apps: running 3 apps

# App Service Plans

## Plans

	Free	Shared	Basic	Standard	Premium
# of Apps	10	100	Unlimited	Unlimited	Unlimited
Shared Disk Space	1 GB	1 GB	10 GB	50 GB	500 GB
Maximum Instances	1	1	3	10	50
Autoscale	No	No	No	Yes	Yes
Staging Environments				5	20
Custom Domains	No	Yes	Yes	Yes	Yes
SLA				99.95%	

# Web Apps

# Web Apps

## Build and scale great web apps



Auto-patching and auto-scale

.NET, Java, Node.js, PHP, Python

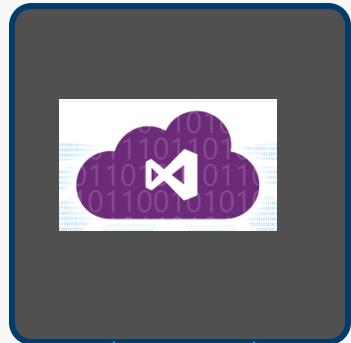
Integrate with SaaS and on-premises

Continuous integration with VSTS,  
Github, BitBucket, and more



Web Apps

2) Code Repository



3) Build



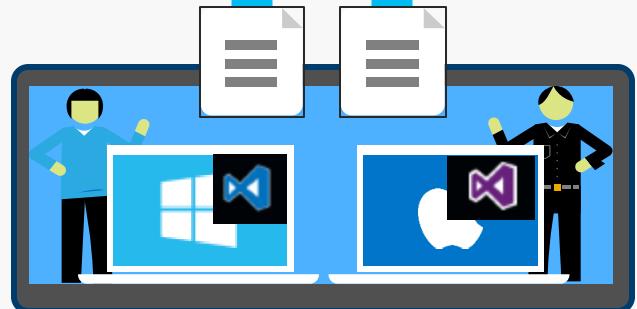
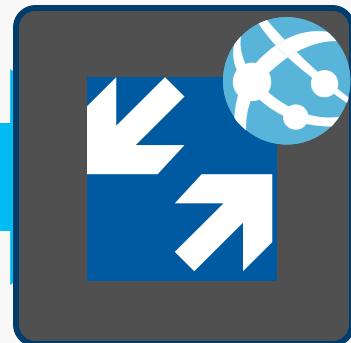
4) Deploy to stage



5) Validate



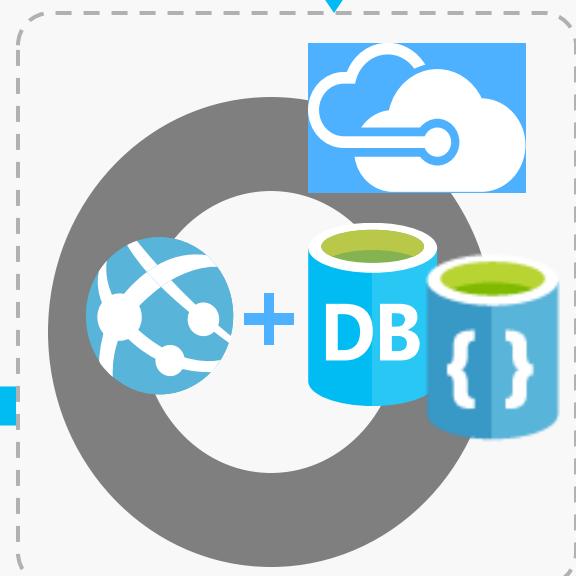
6) Publish



1) Develop



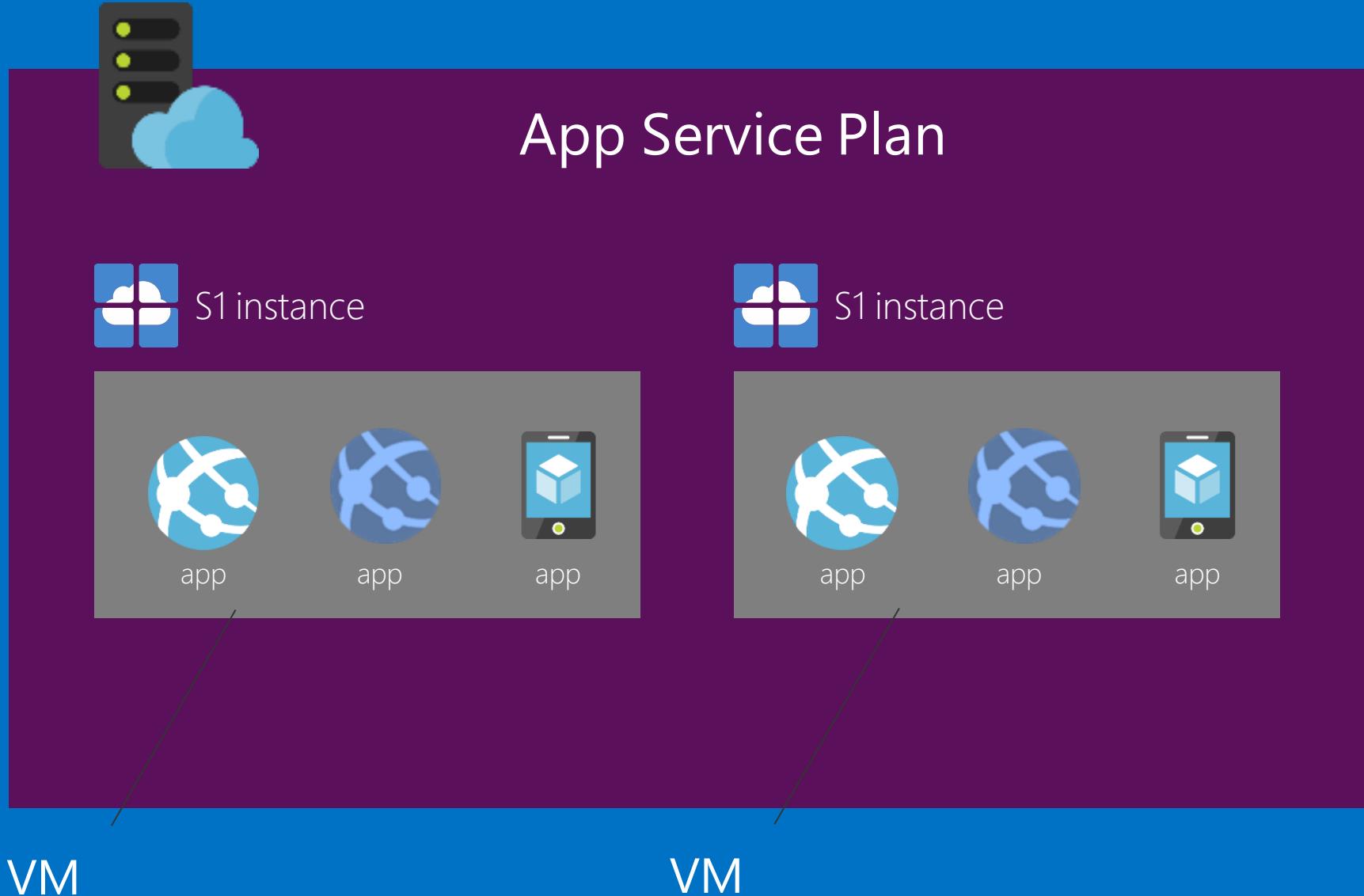
8) Monitor and Improve

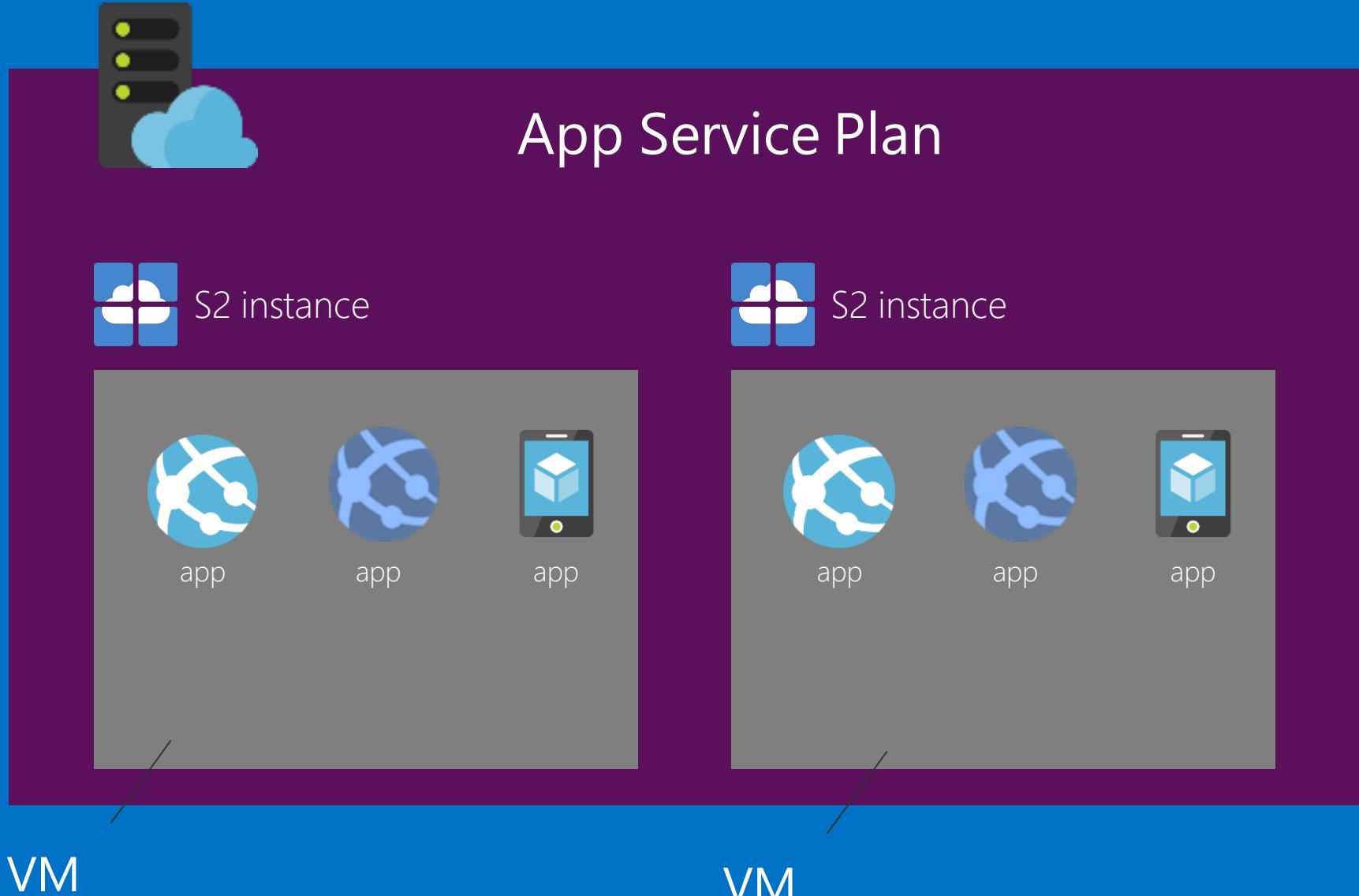


7) Deploy to Cloud

Instance Count 1  6 Instances





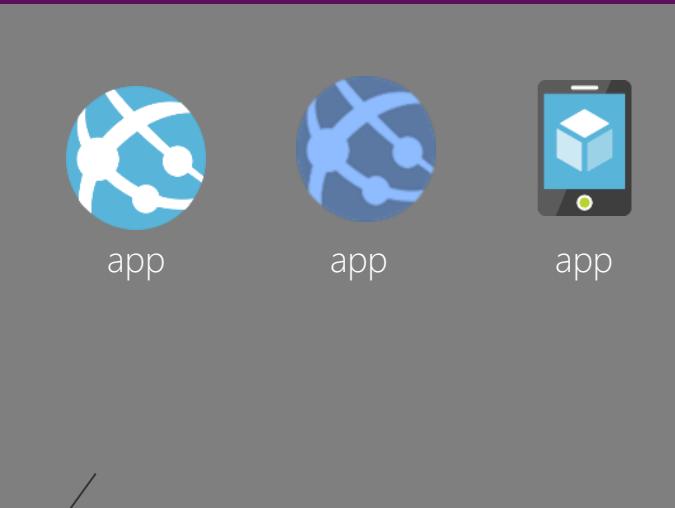


Price tier: Standard  
Compute Resource: S2  
Scale: 3  
Apps: running 3 apps

# App Service Plan



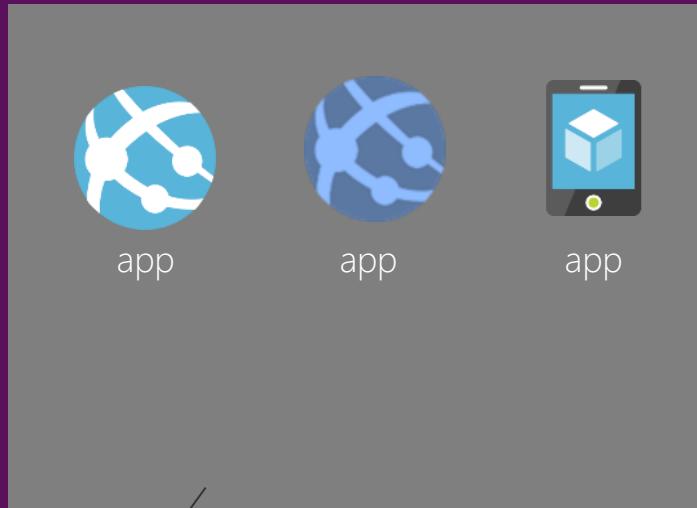
S2 instance



VM



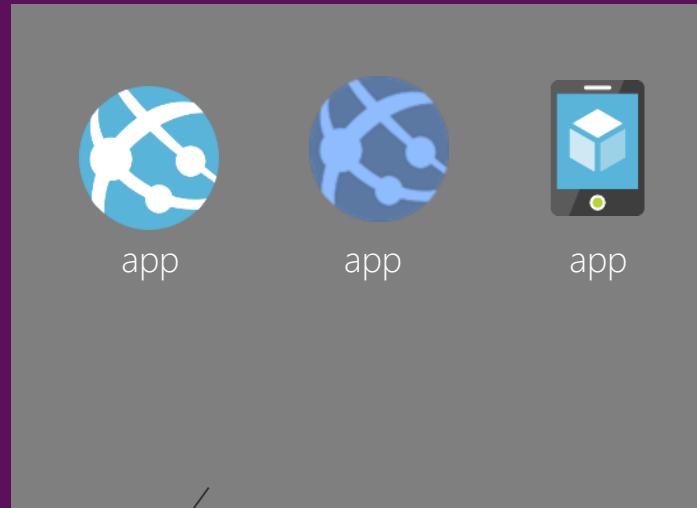
S2 instance



VM



S2 instance

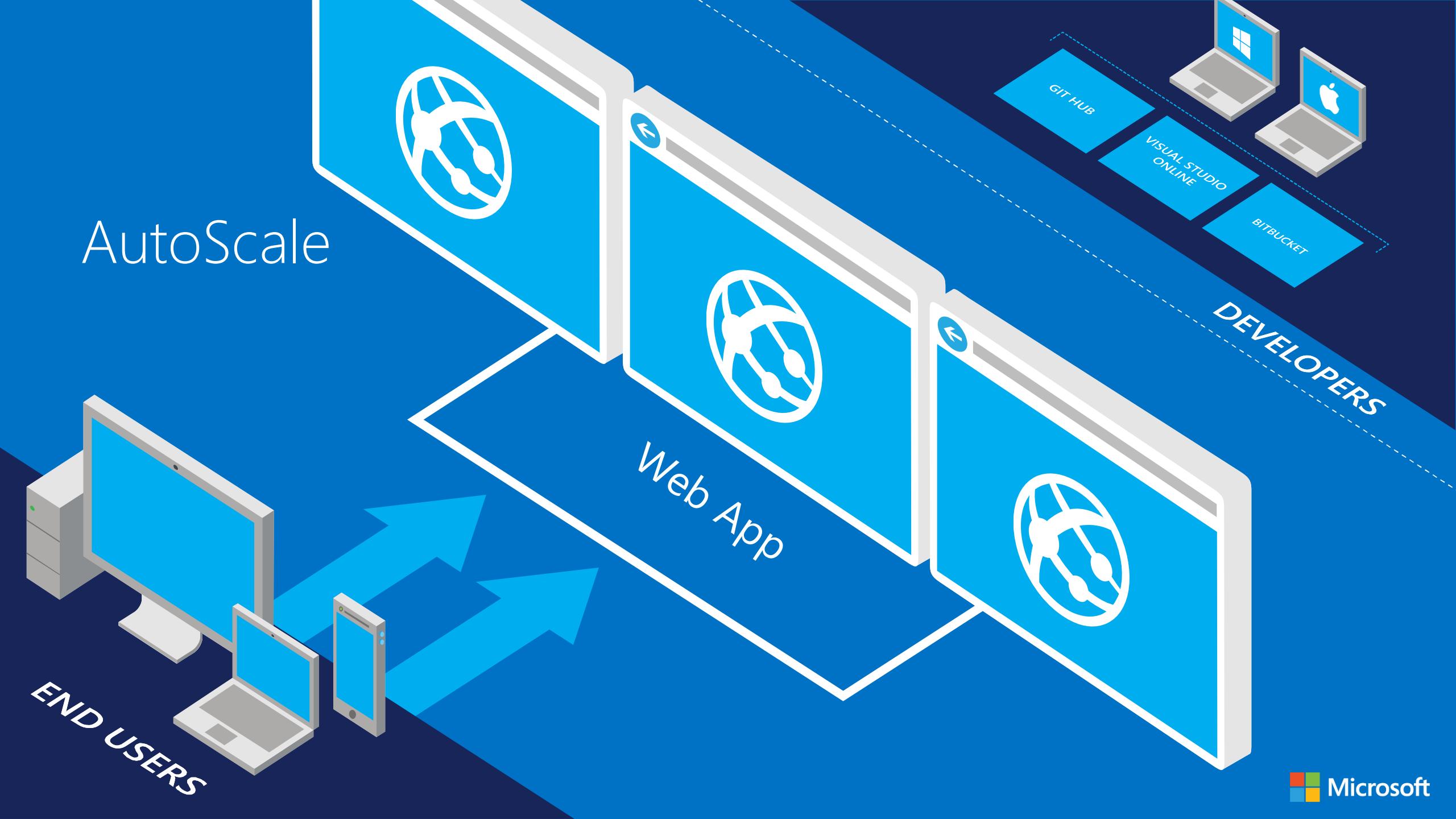


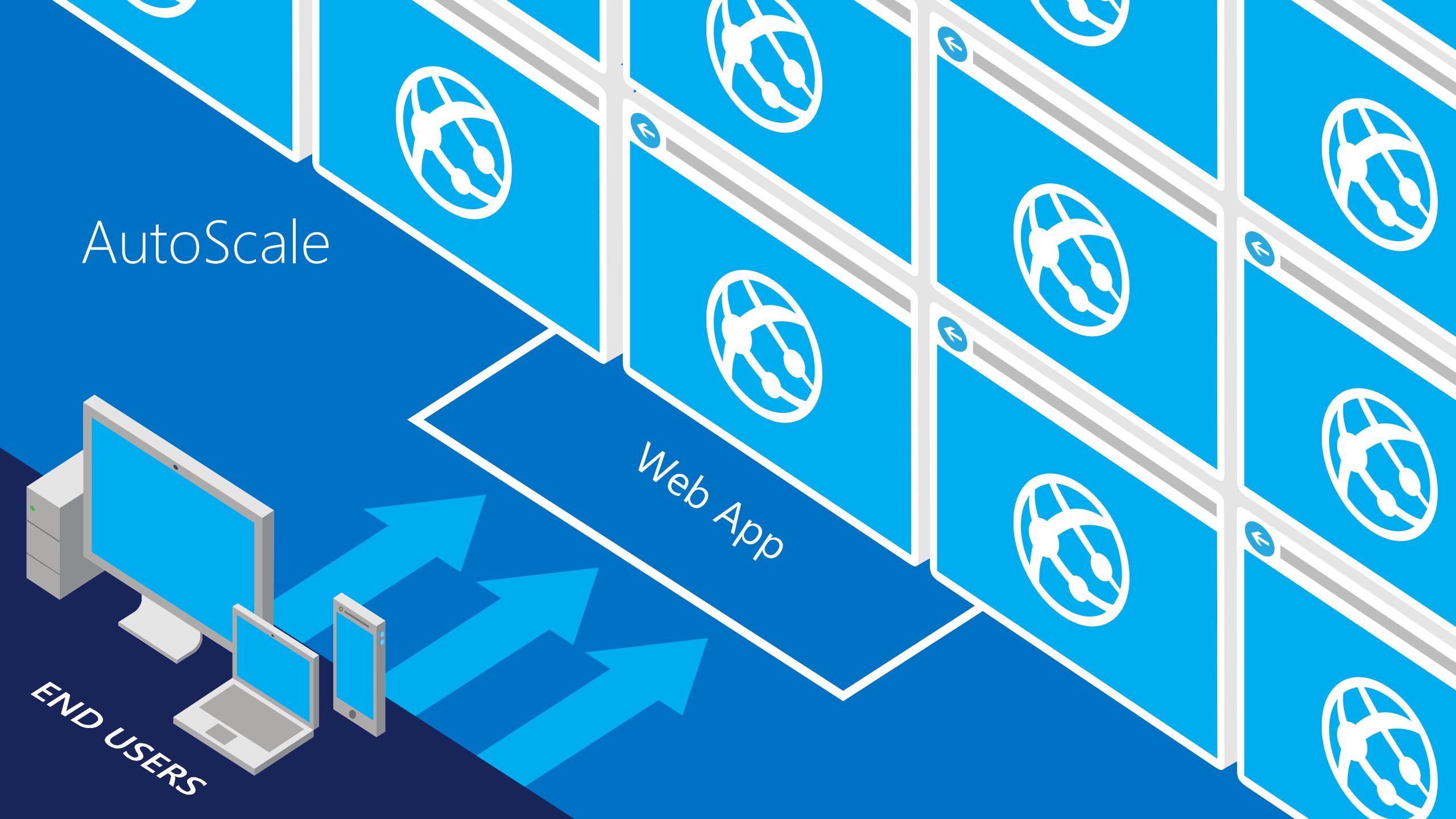
VM

 Microsoft

AutoScale



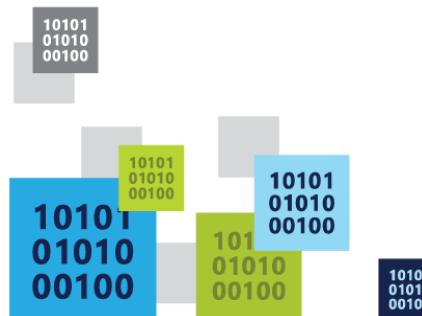




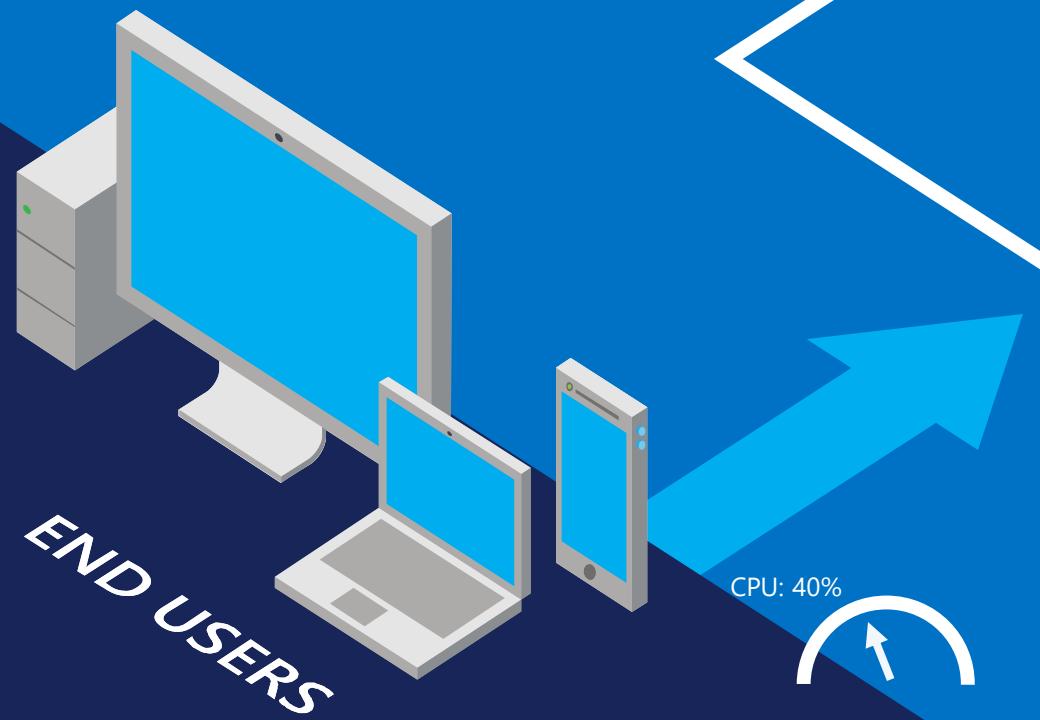
# Auto-Scaling (Metrics)



CPU Percentage    HTTP Queue  
Memory               Length  
Percentage          Data In  
Disk Queue          Data Out  
Length



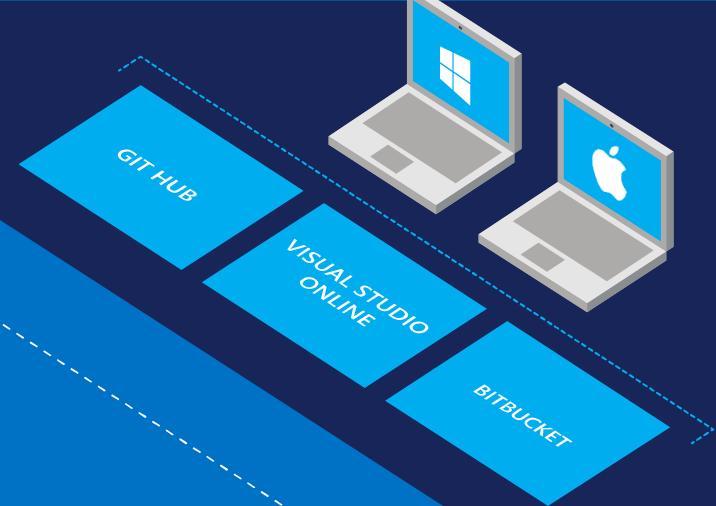
# AutoScale Rule



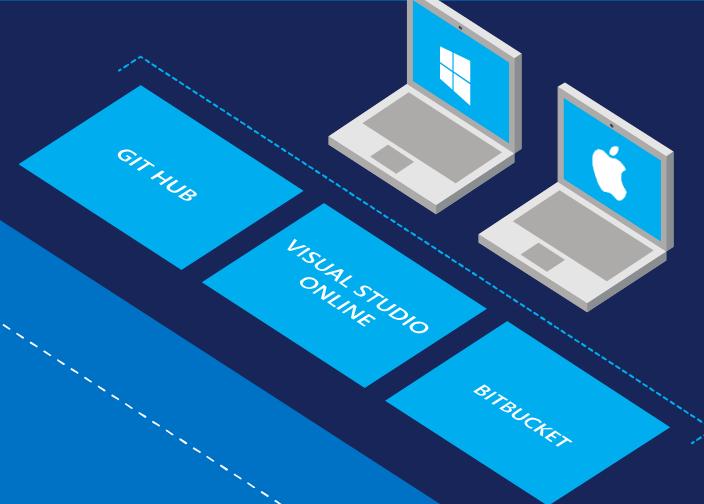
CPU: 40%



Web App



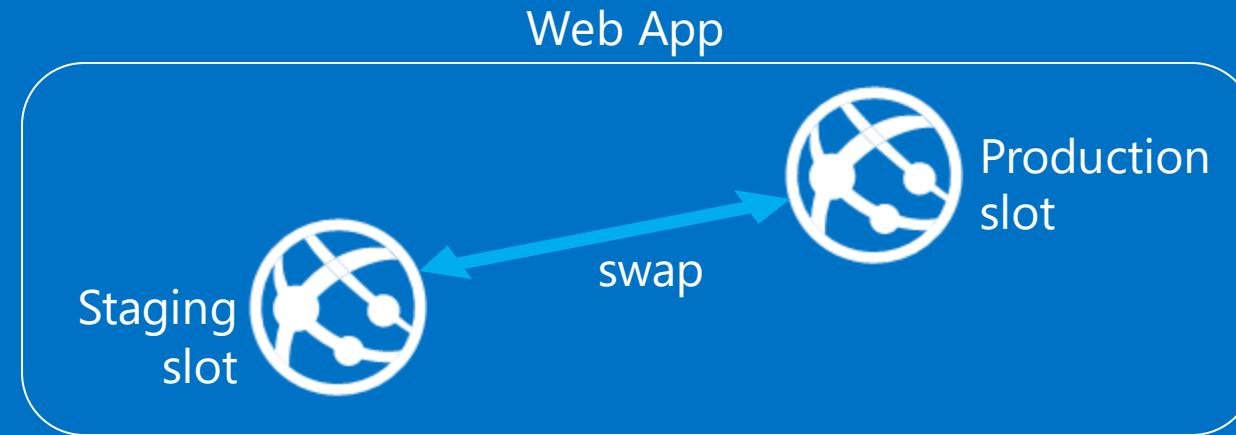
AutoScale  
Rule



DEVELOPERS

# Deployment Slots

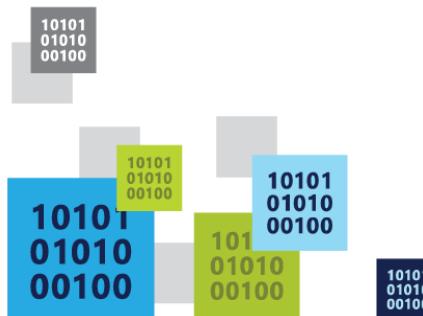
# Bir Web App. Birden çok deployment.



Son zamanda popüler olan dev, staging ve production deployment akışına uygun.

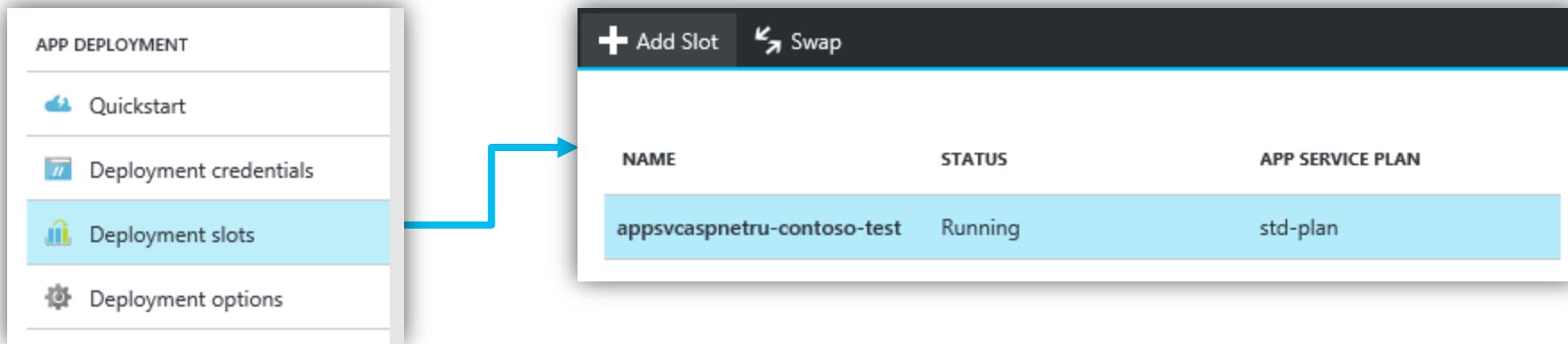
İki slot arasında swap işlemi nerdeyse anlık.

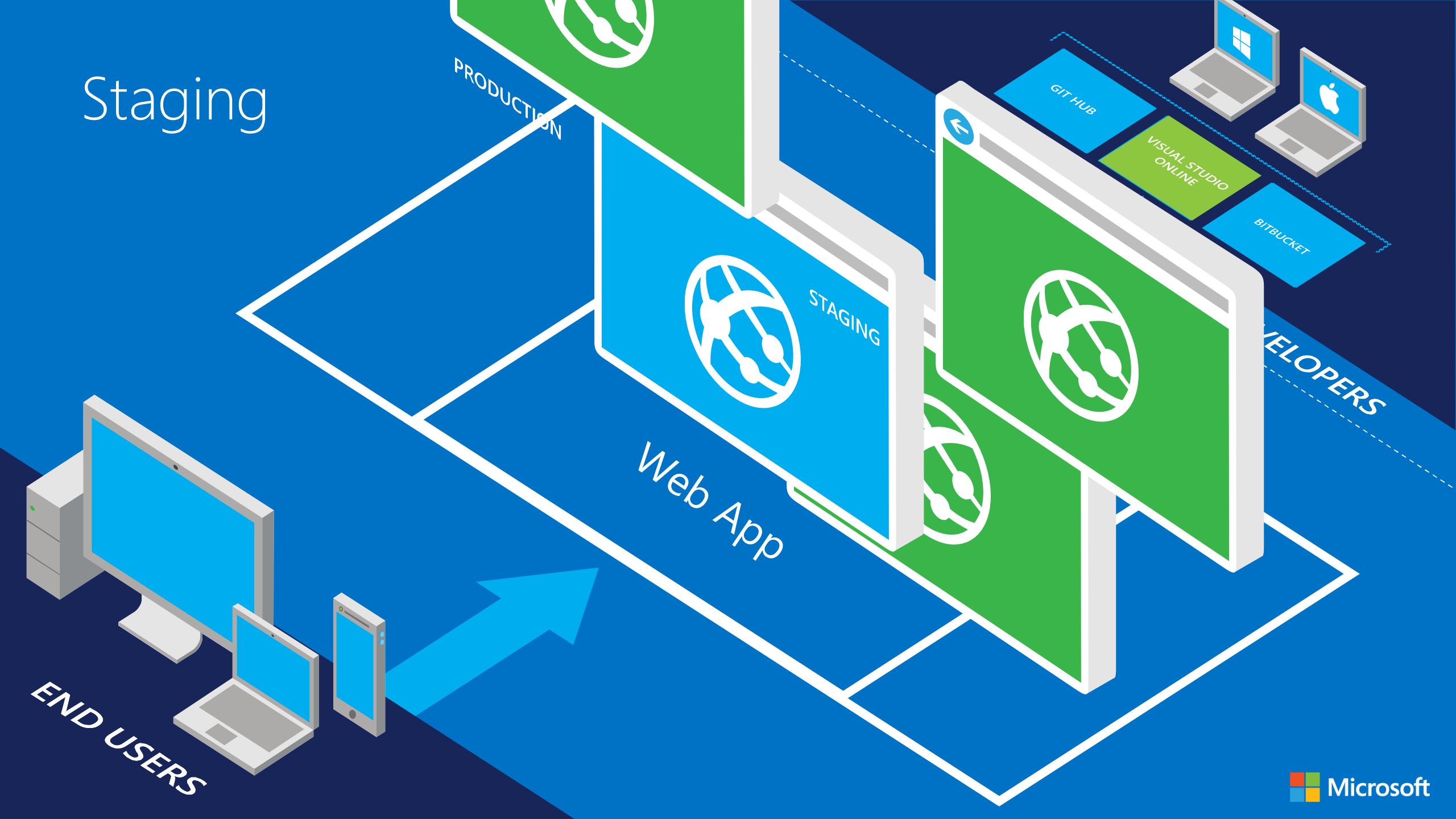
İhtiyaç halinde uygulamayı çalışan son hale geri getirebilme.



# Deployment Slots

- Asıl (production) web app'a bağlı olan ayrı bir web app. Aynı app service plan üzerinde çalışırlar.
- Her slot kendine özel bir URL'e sahiptir.





# Staging

PRODUCTION

Web App

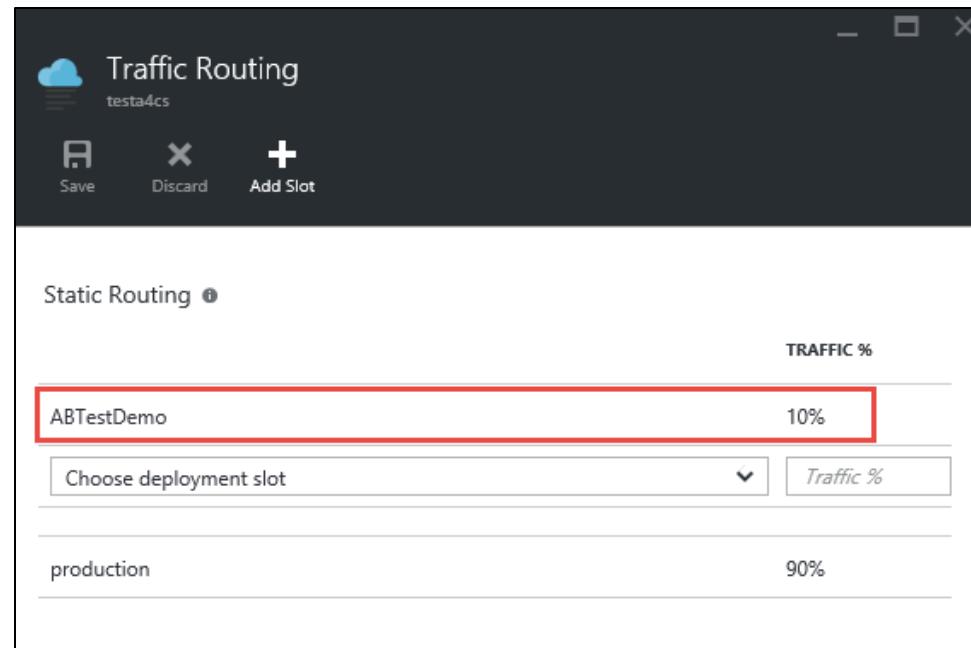
END USERS

STAGING

Microsoft

# A/B Testing

- Test changes by routing requests to different deployment slots
- Use Traffic Routing to direct % of traffic to alternate slots



# Continuous Integration

- Web apps can be deployed manually via FTP or WebDeploy
- Automate deployment using 3<sup>rd</sup> party source-control providers
- Can also use a local Git repository from Azure Portal



Git



Visual Studio  
Team Services



GitHub

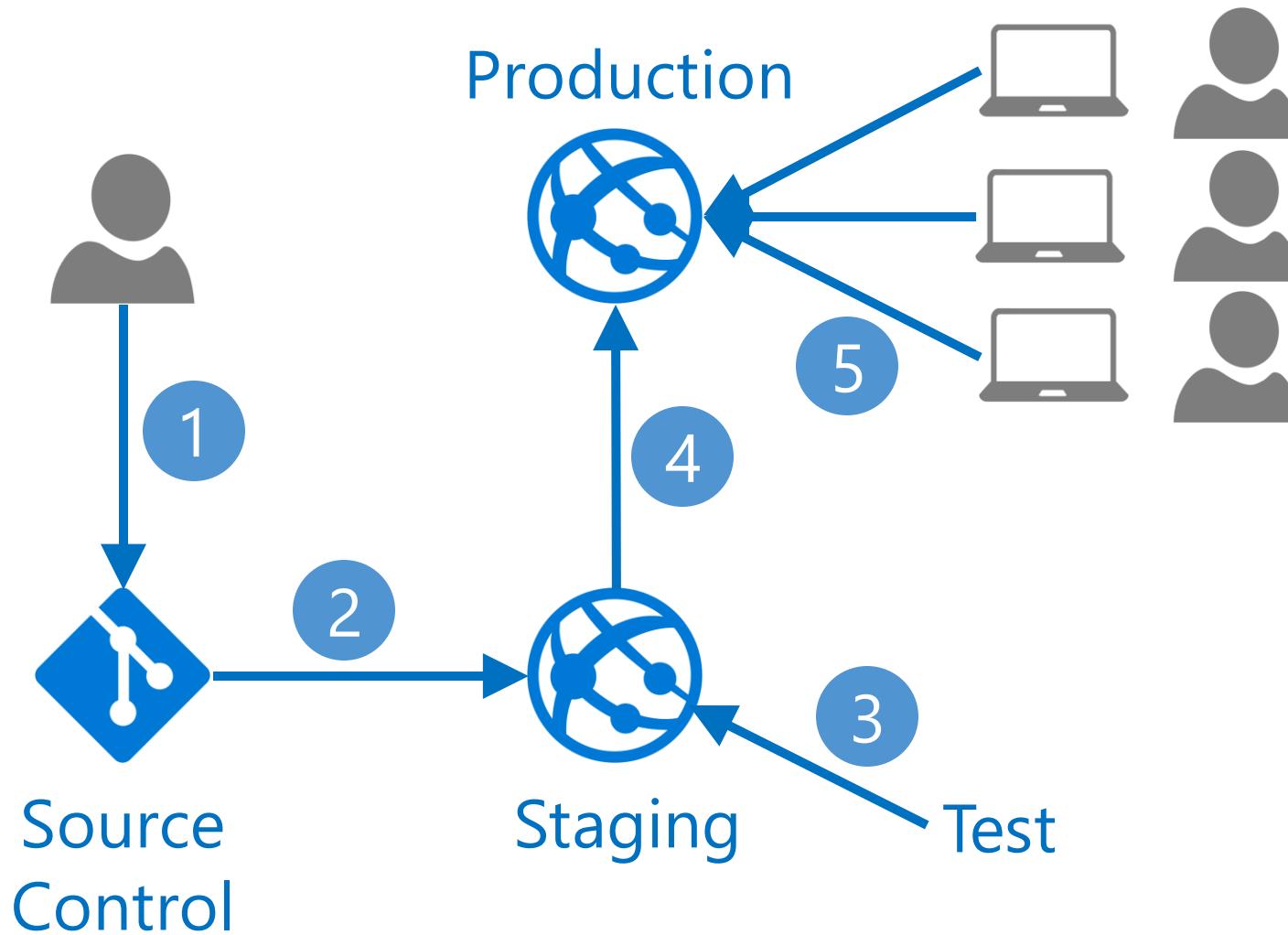


BitBucket



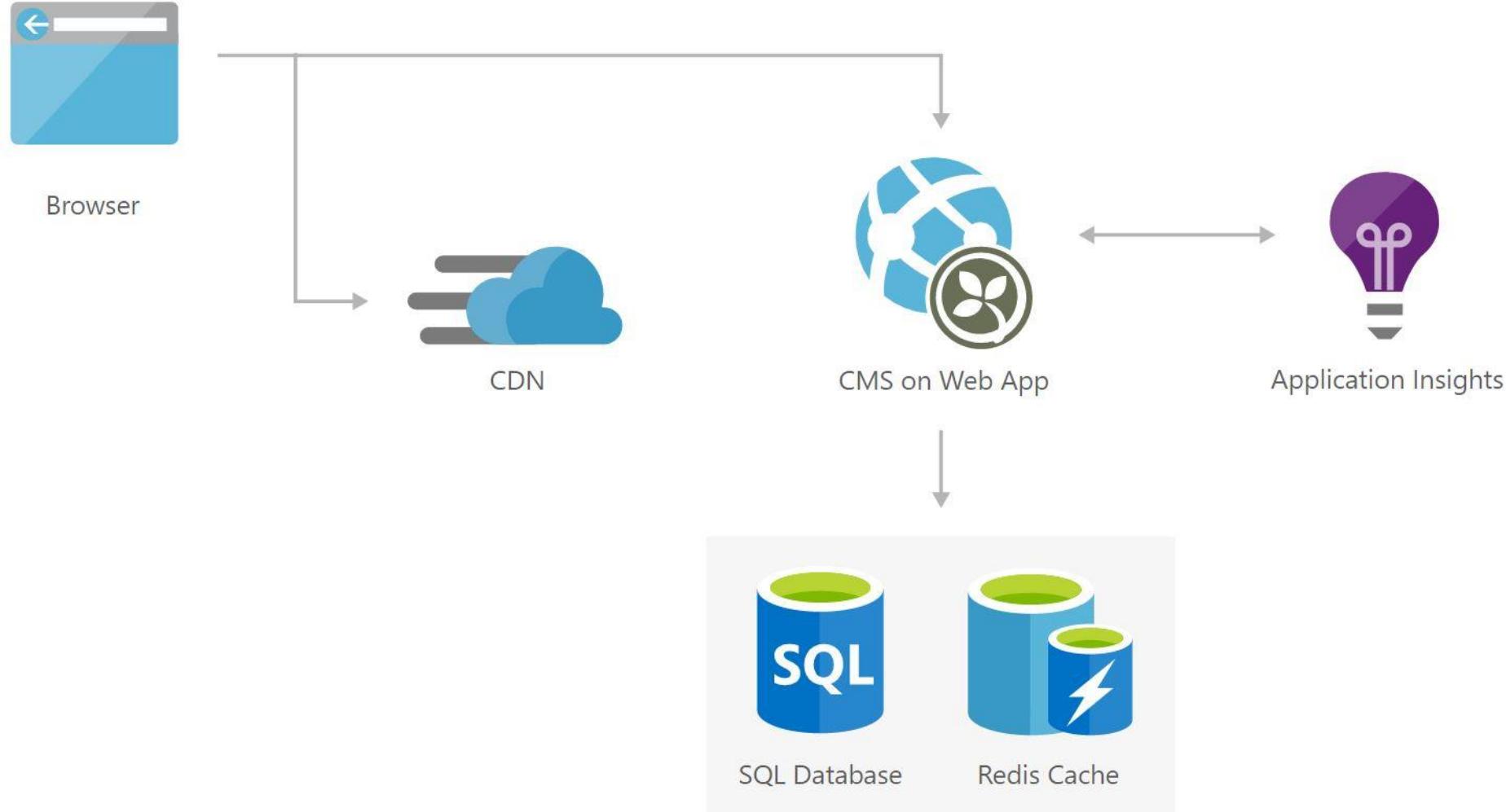
DropBox

# Continuous Integration + Deployment Slots



1. Developer commits code
2. Automated process builds/compiles and deploys to staging slot
3. Automated and other tests validate content in staging slot
4. Staging content promoted to production
5. Users see updated site

# App Service, örnek uygulama mimarisi



# Web Jobs

# Light-weight CPU Intensive Tasks



run.cmd, run.bat



run.exe



run.ps1



run.sh



run.php



run.py



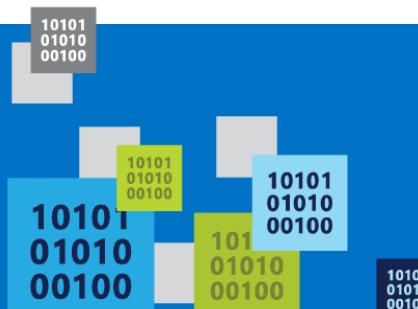
run.js

Job Type: On-Demand, Scheduled, Continuous

Scale: Singleton, Multi-instance

WebJobs SDK Feature: BlobTrigger, TableTrigger, QueueTrigger, ServicebusTrigger

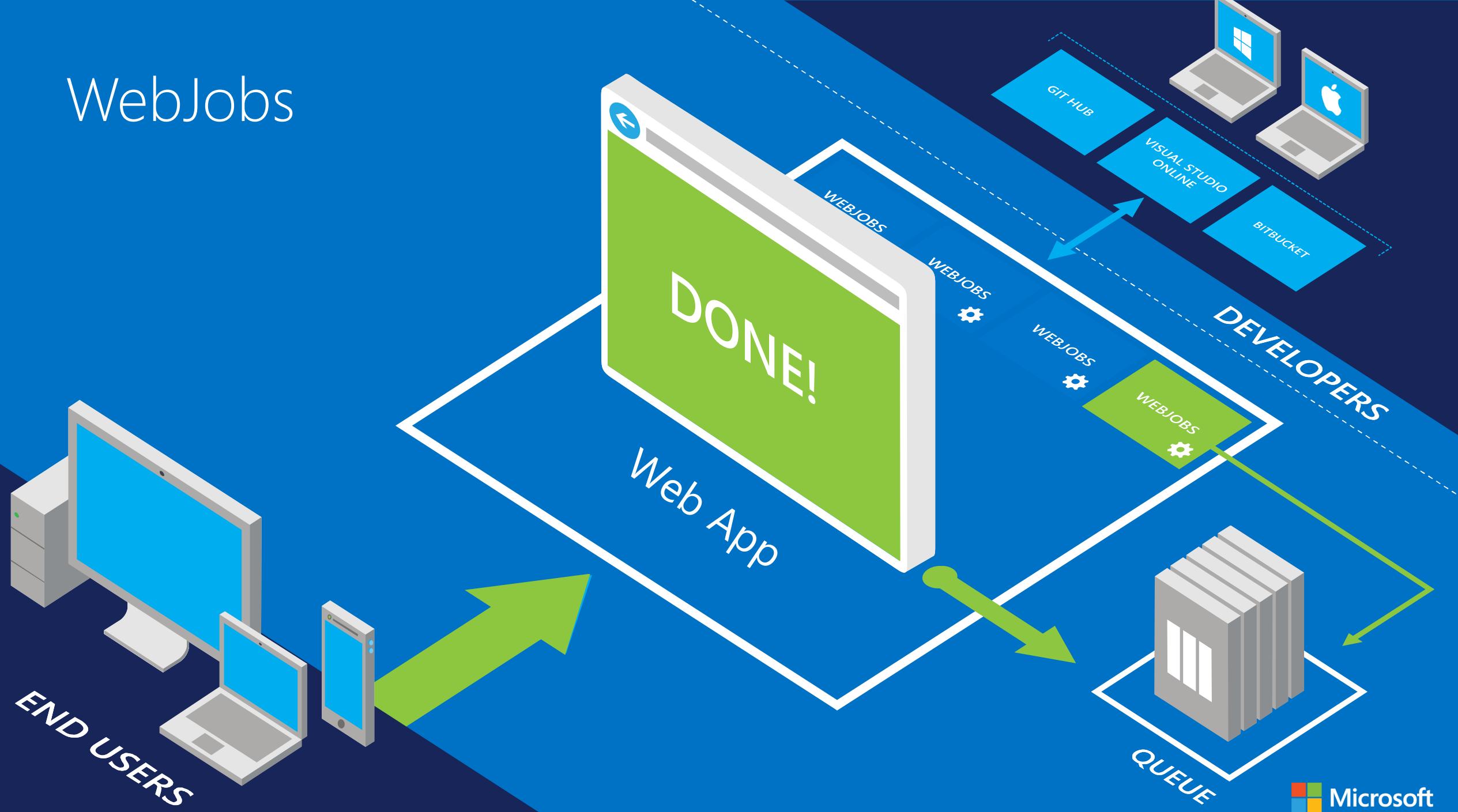
Deployment: Portal, Visual Studio, CLI, Git



# WebJobs



# WebJobs

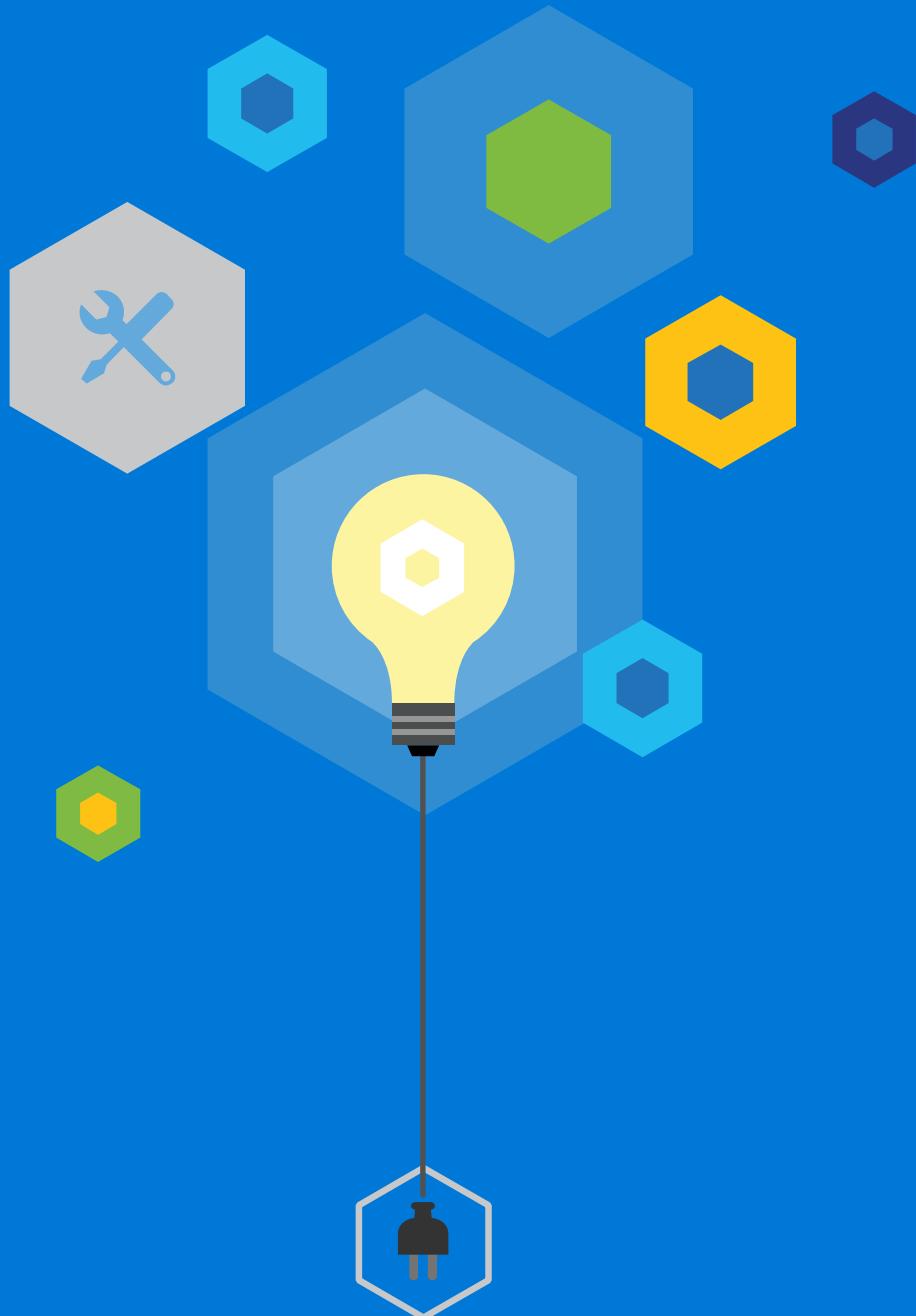


# Hands On Lab

HOL 4.1 - Azure Web Apps

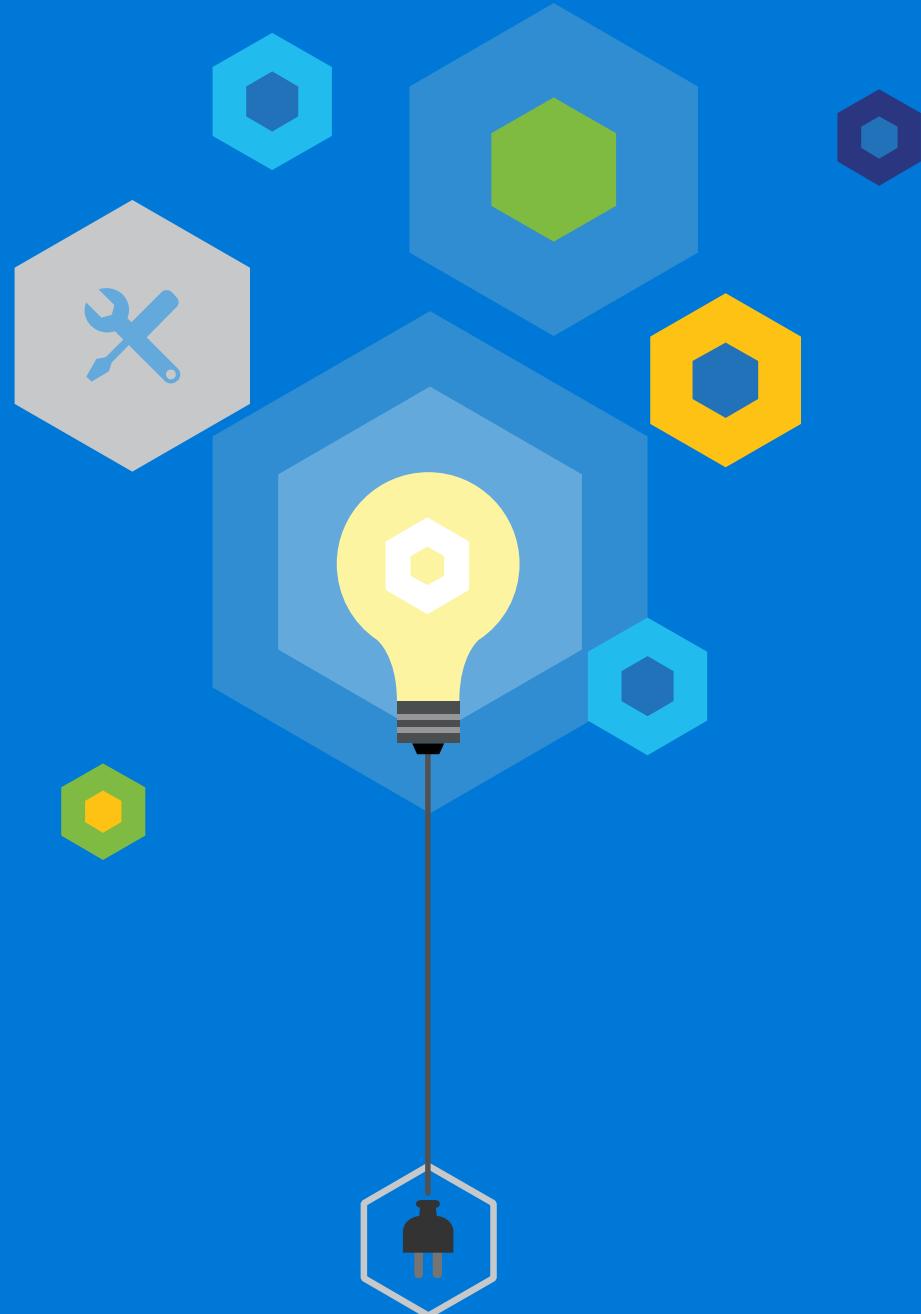
HOL 4.2 - Azure Web Apps

- Azure App Service Plan & App Service
- Web App
- Visual Studio Deployment
- Deployment Slots



# Özet

- Azure temel bilgi.
- Azure bölge seçimi.
- Azure Portal arayüzü ve kullanımı.
- App Service, App Service Plan ve Web app oluşturma.
- Visual Studio kullanarak deployment
- Deployment Slots

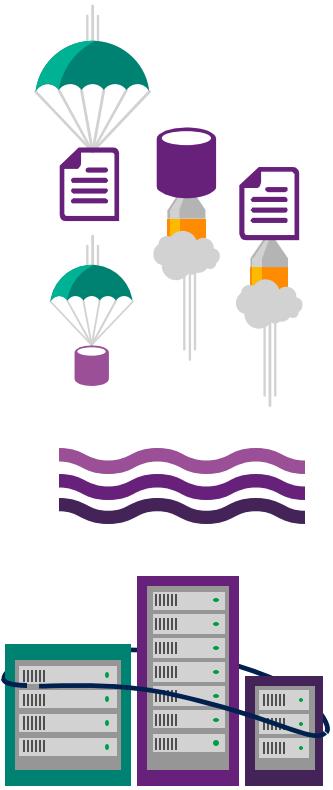


`break;`

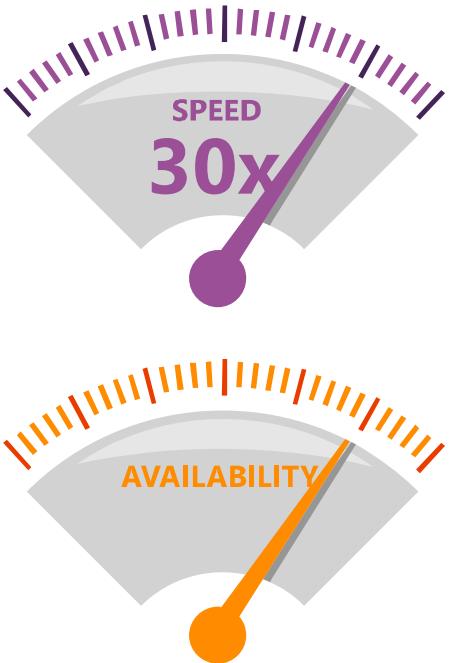
*Coming up:*  
*Azure Functions*  
*Logic Apps*  
*Application Insights*  
*Traffic Manager*

# Azure Functions

# What is “serverless”



Abstraction  
of servers

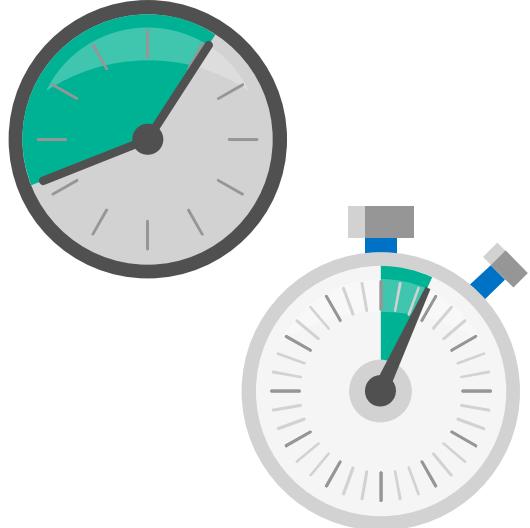


Event-driven  
scale

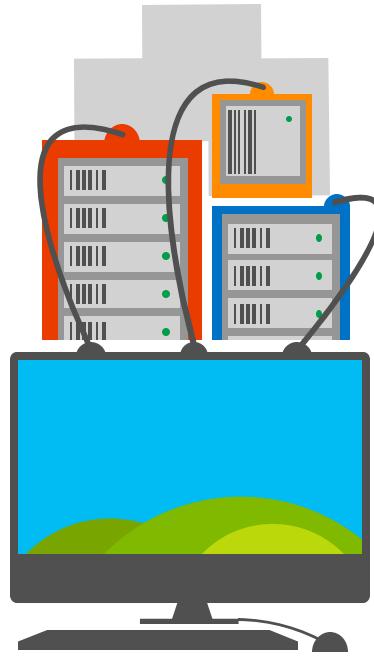


Sub-second  
billing

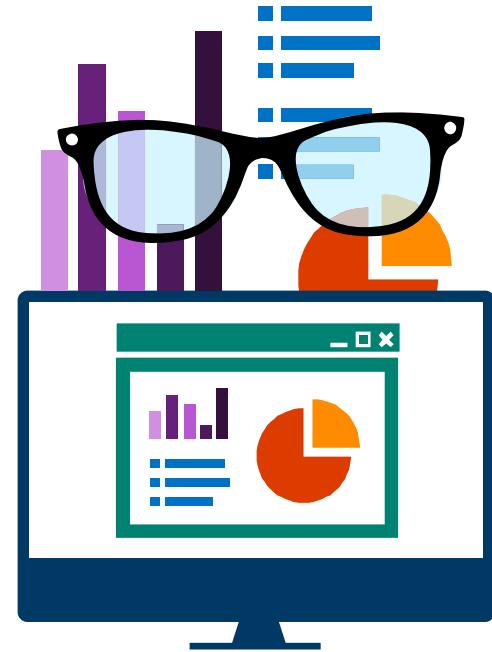
# Benefits of “serverless”



Quick start



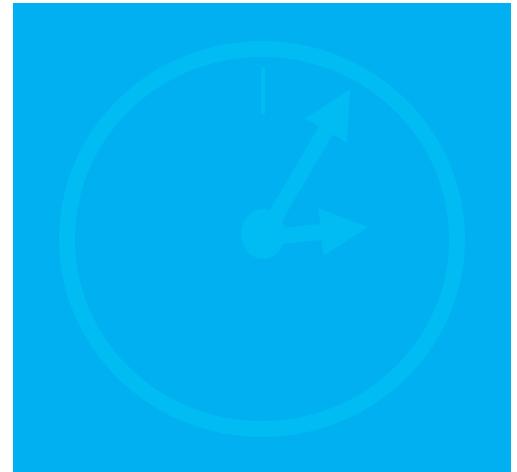
Managed for  
you



Focus on  
Business  
Logic

# Best practices for the “Functions” programming model

- Functions *should* “do one thing”
- Functions *should* be stateless
- Functions *should* finish as quickly as possible



CODE

AZURE FUNCTIONS

EVENTS + DATA



+



# Azure functions

Asynchronous, event-driven,  
serverless experience

AZURE FUNCTIONS

Respond to events occurring in  
other Azure services, SaaS products  
(e.g., Office365, Salesforce),  
on-premises systems



Only pay while function is executing

Fully open source

# Azure Functions

Serverless



Event-driven scale



No Ops

Accelerate development

**nodeJS**

C#



Develop your way



Local development



OneDrive



Box



Twilio



Dropbox



Sendgrid



Azure storage



Azure queue storage



Azure event hub



AzureDocDb

# Languages

- Node/JavaScript
- C#
- F#
- Python
- PHP
- Batch
- Bash
- PowerShell

# Bindings

- Schedule (trigger)
- HTTP (trigger, output)
- WebHook (trigger, output)
- Blob Storage (trigger, input, output)
- Storage Queues (trigger, output)
- Storage Tables (input, output)
- Easy Tables (input, output)
- DocDB (input, output)
- Event Hub (trigger, output)
- Notification Hub (output)

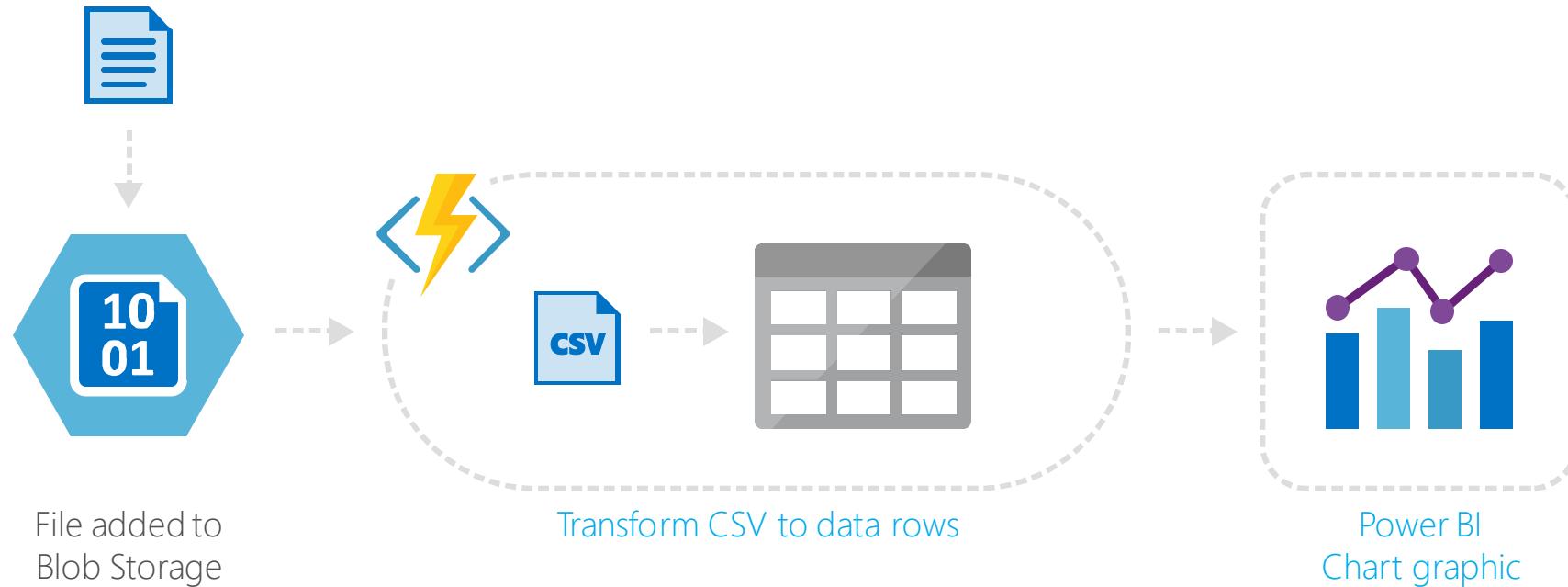
# Applications

## Example: Timer based processing



# Applications

## Example: Azure service event processing



# Async background processing

## Example: Serverless Mobile back ends



# Hands On Lab

HOL 3.1 - Azure Functions

HOL 3.2 - Azure Functions

- Azure Functions

# Logic Apps

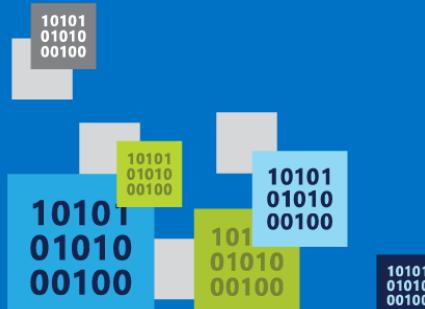
# Logic Apps for easy automation



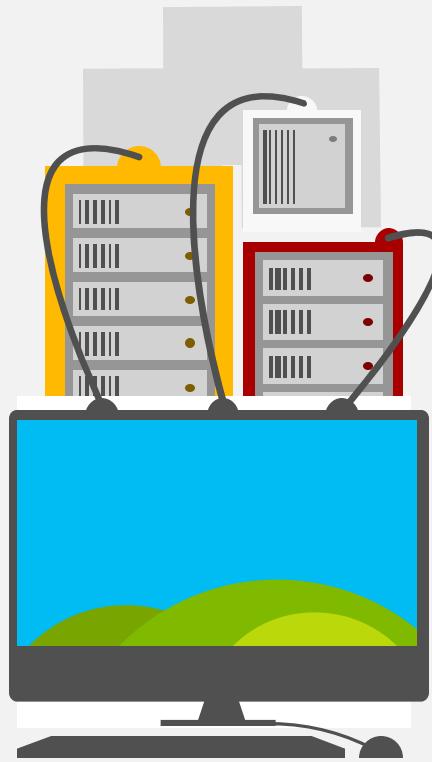
## LOGIC APPS

Automate SaaS and  
on-premises systems

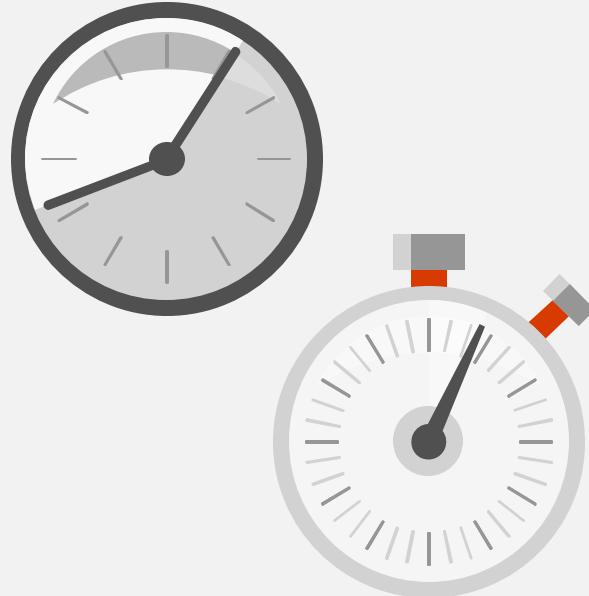
- No code designer for rapid creation
- Dozens of pre-built templates to get started
- Out of box support for popular SaaS and on-premises apps
- Use with custom API apps of your own
- Biztalk APIs for expert integration scenarios



# Logic Apps is Serverless



Reduced  
devops



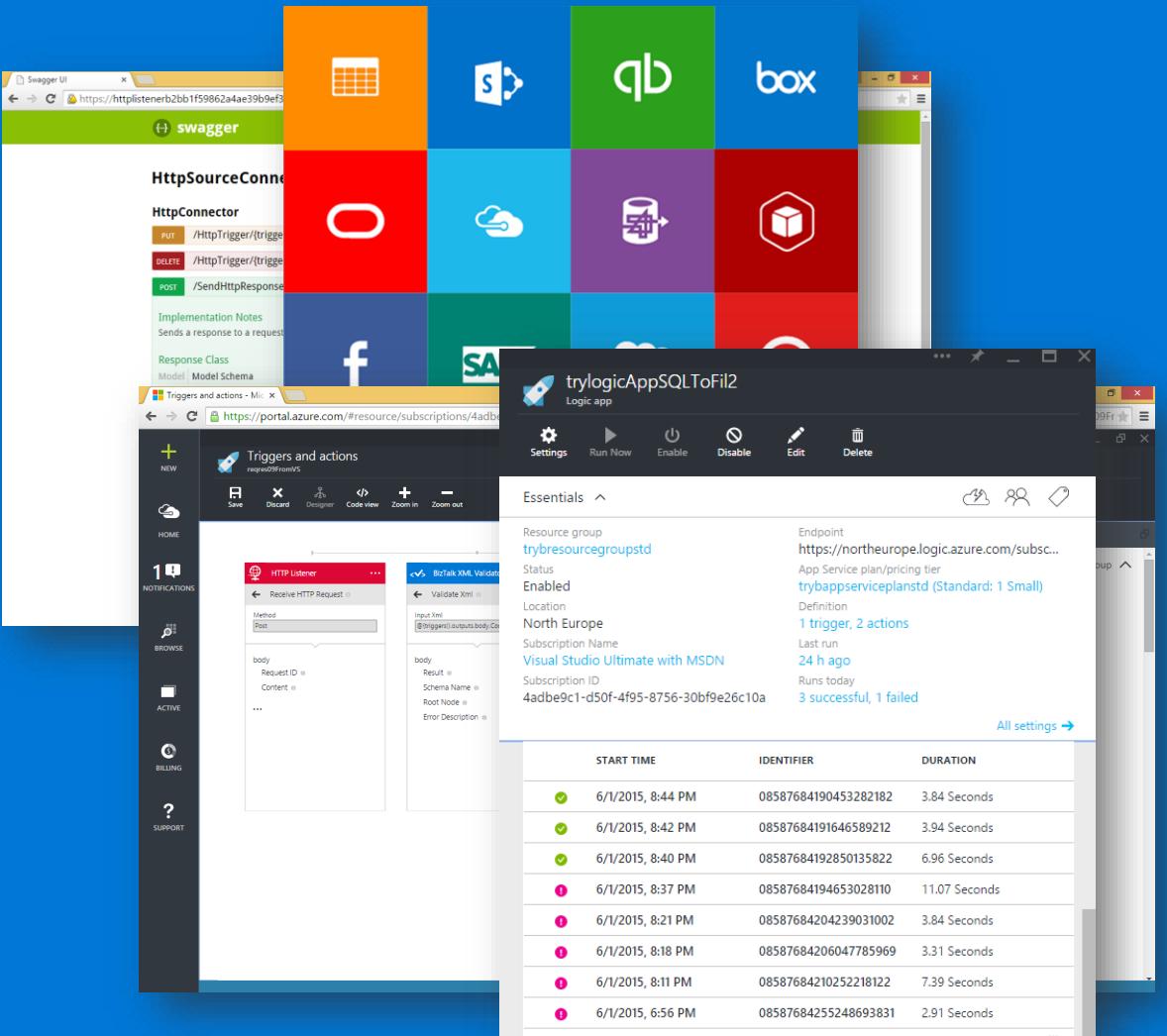
Reduced time  
to market



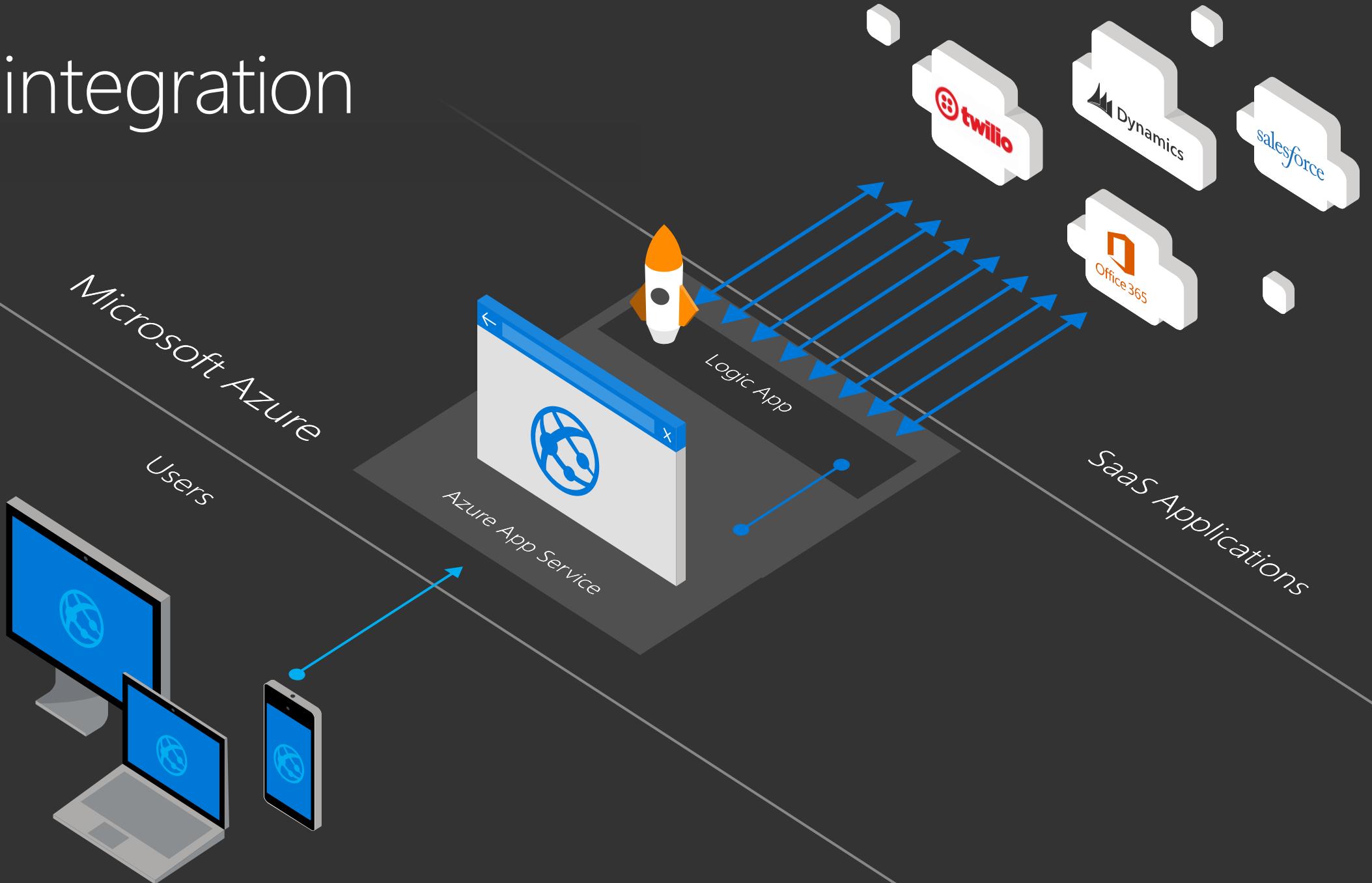
Per action billing

# Logic Apps

- Browser-based work flow engine
- With pre-built connectors
- With BizTalk API Apps
- Enables use of custom API apps
- Provides built-in support for tracking
- Provides Role-based Access Control
- Manage deployment lifecycle with Resource Manager



# SaaS integration



# SaaS Connectors

## Connectors

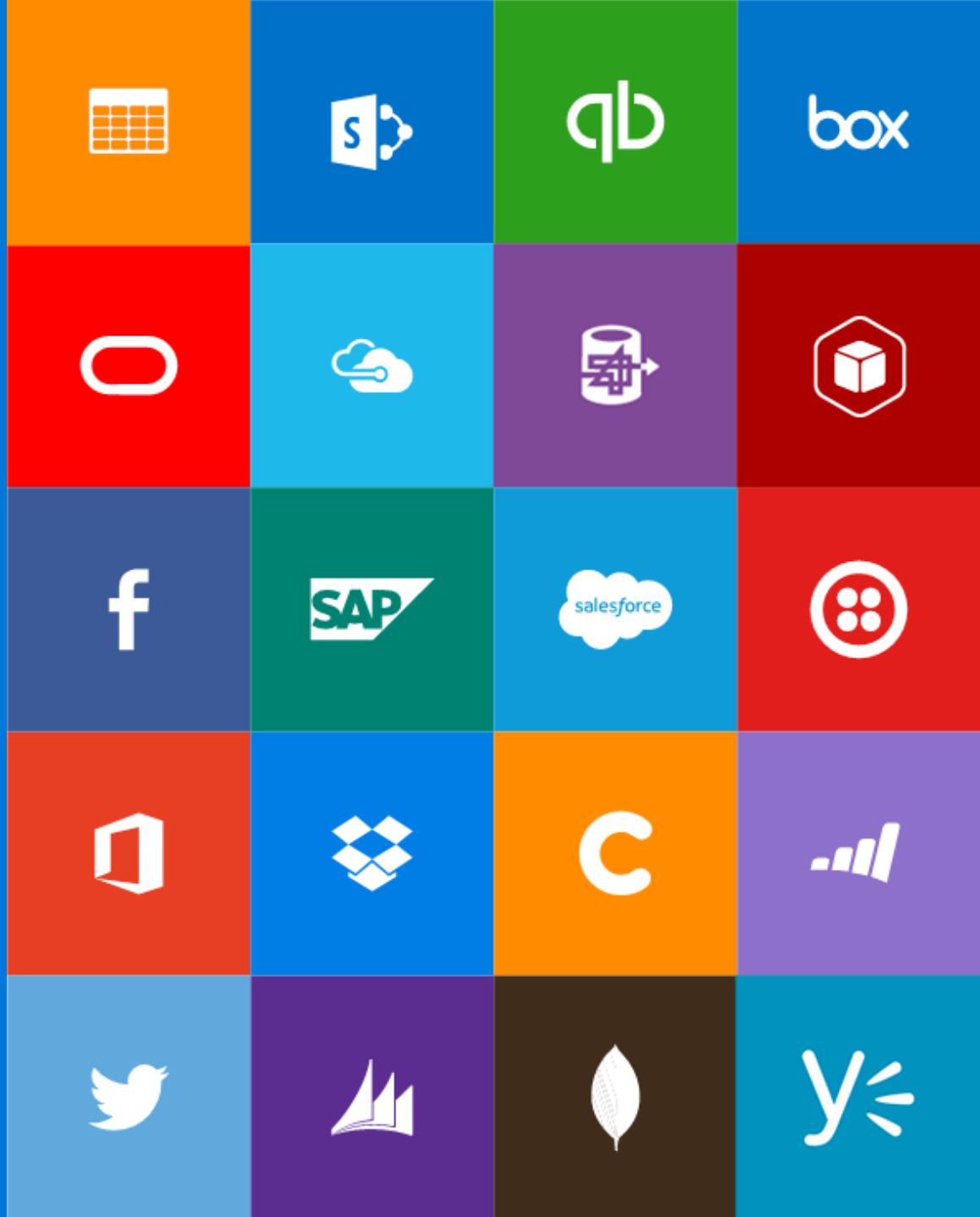
- Box
- Chatter
- Delay
- Dropbox
- Azure HD Insight
- Marketo
- Azure Media Services
- OneDrive
- SharePoint
- SQL Server
- Office 365
- Oracle
- QuickBooks
- SalesForce
- Sugar CRM
- SAP
- Azure Service Bus
- Azure Storage
- Timer / Recurrence
- Twilio
- Twitter
- IBM DB2
- Informix
- Websphere MQ
- Azure Web Jobs
- Yammer
- Dynamics CRM
- Dynamics AX
- Hybrid Connectivity

## Protocols

- HTTP, HTTPS
- File
- Flat File
- FTP, SFTP
- POP3/IMAP
- SMTP
- SOAP + WCF

## BizTalk Services

- Batching / Debatching
- Validate
- Extract (XPath)
- Transform (+Mapper)
- Convert (XML-JSON)
- Convert (XML-FF)
- X12
- EDIFACT
- AS2
- TPMOM
- Rules Engine



# Hands On Lab

HOL 6.1 - Logic Apps

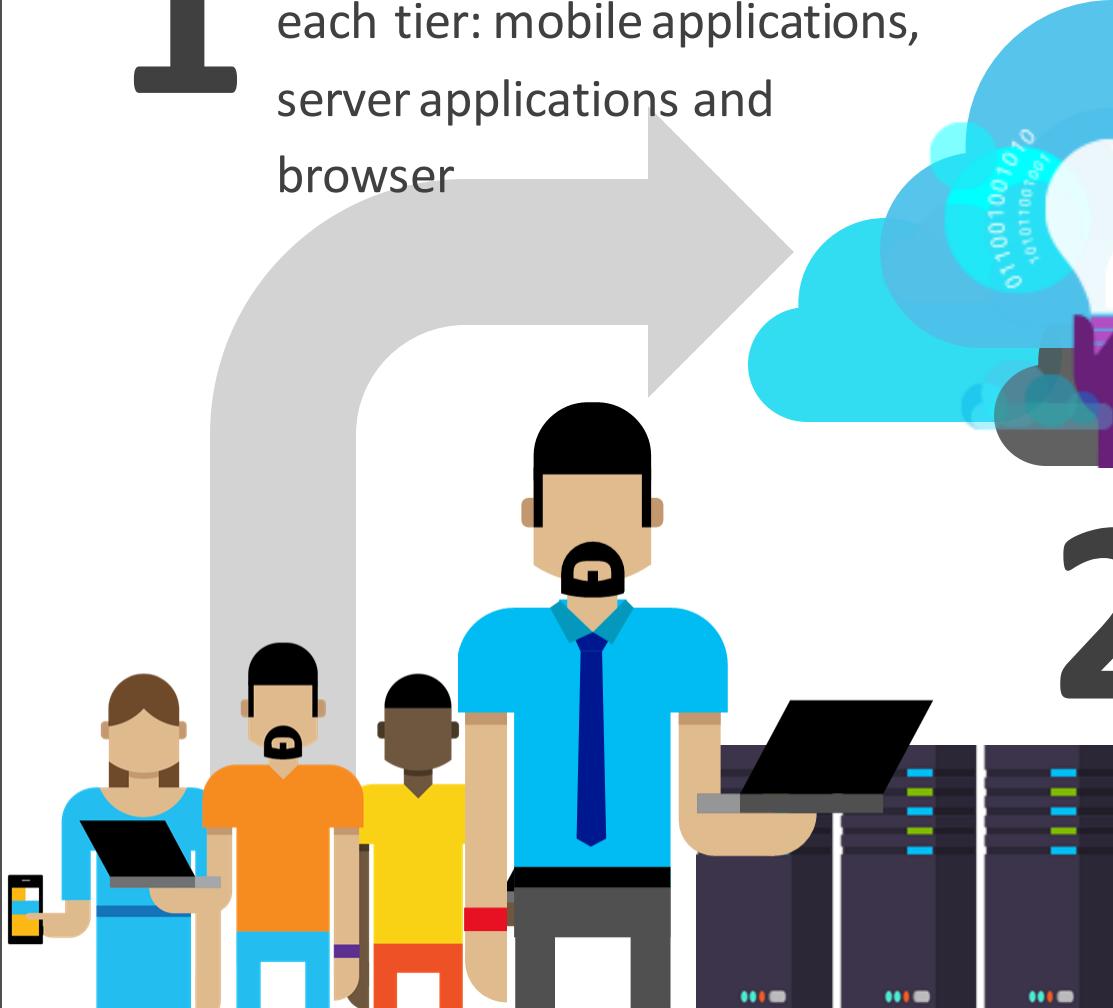
HOL 6.2 - Logic Apps

- Logic Apps

# Application Insights

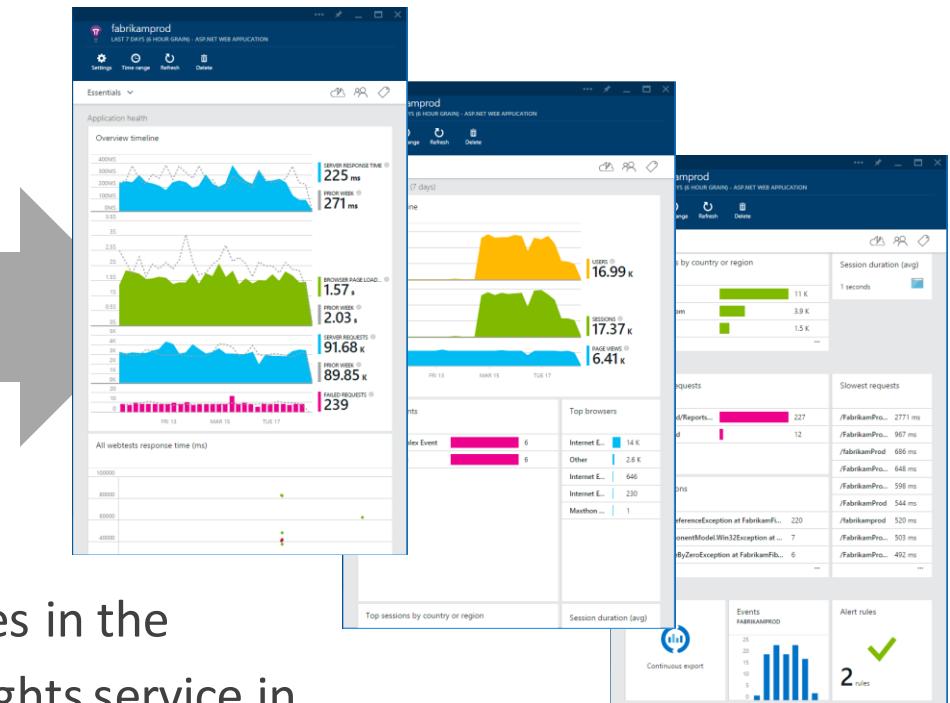
# 1

Telemetry is collected at each tier: mobile applications, server applications and browser



# 2

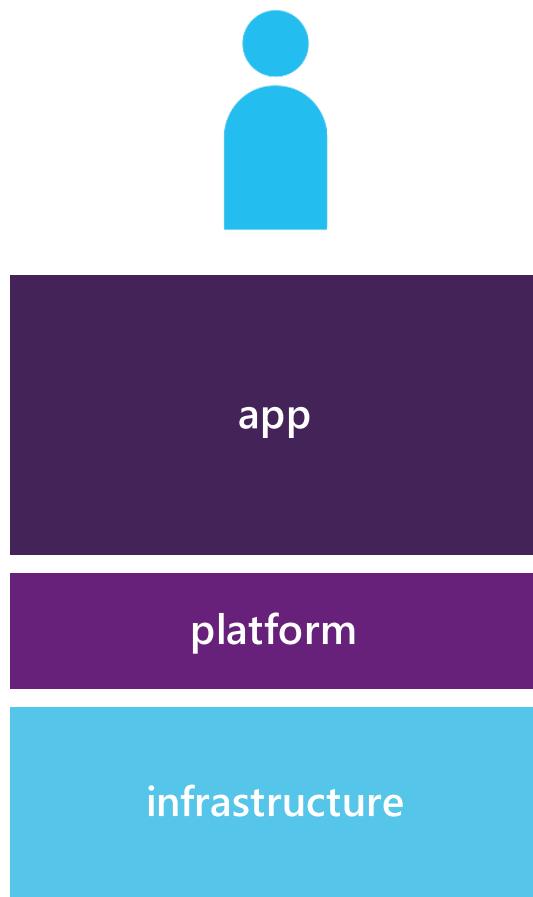
Telemetry arrives in the Application Insights service in the cloud where it is processed & stored



# 3

Get a 360° view of the application including availability, performance and usage patterns

# Sources of Telemetry

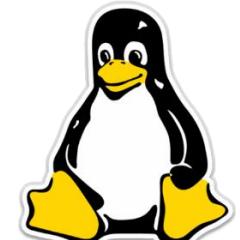
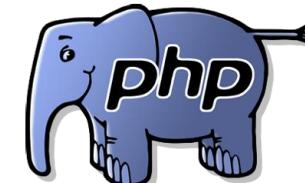
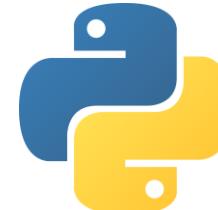


- 1 **Outside-in monitoring**  
URL pings and web tests from 16 global points of presence
- 2 **Observed user behavior**  
How is the application being used?
- 3 **Developer traces and events**  
Whatever the developer would like to send to Application Insights
- 4 **Observed application behavior**  
No coding required – service dependencies, queries, response time, exceptions, logs, etc.
- 5 **Infrastructure performance**  
System performance counters

# Supported platforms

Any app support

- Easily add analytics across multiple platforms including: ASP.NET, Java/J2EE, iOS, Android, Windows, as well as OSS technologies such as Node.JS, PHP, Ruby, Python, etc.
- Open source SDK:  
<https://github.com/Microsoft/ApplicationInsights-Home>
- Logging framework:  
[Log4Net](#), [nLog](#), [System.Diagnostics](#)  
[Log4J](#), [Logback](#)



# Key capabilities

## 360° View Across Availability, Performance & Usage

Overall app health via Overview Blade

Quickly correlate performance & usage data

Detailed insights with a click of a button through intuitive data exploration



## Fast & Powerful Diagnostics & Usage Insights

Quickly diagnose availability & performance issues

Learn & improve continuously with usage insights

Extend your telemetry data

Export your data for further analysis



## Built-in Analytics for any app

Supports any app type

Zero-click enablement

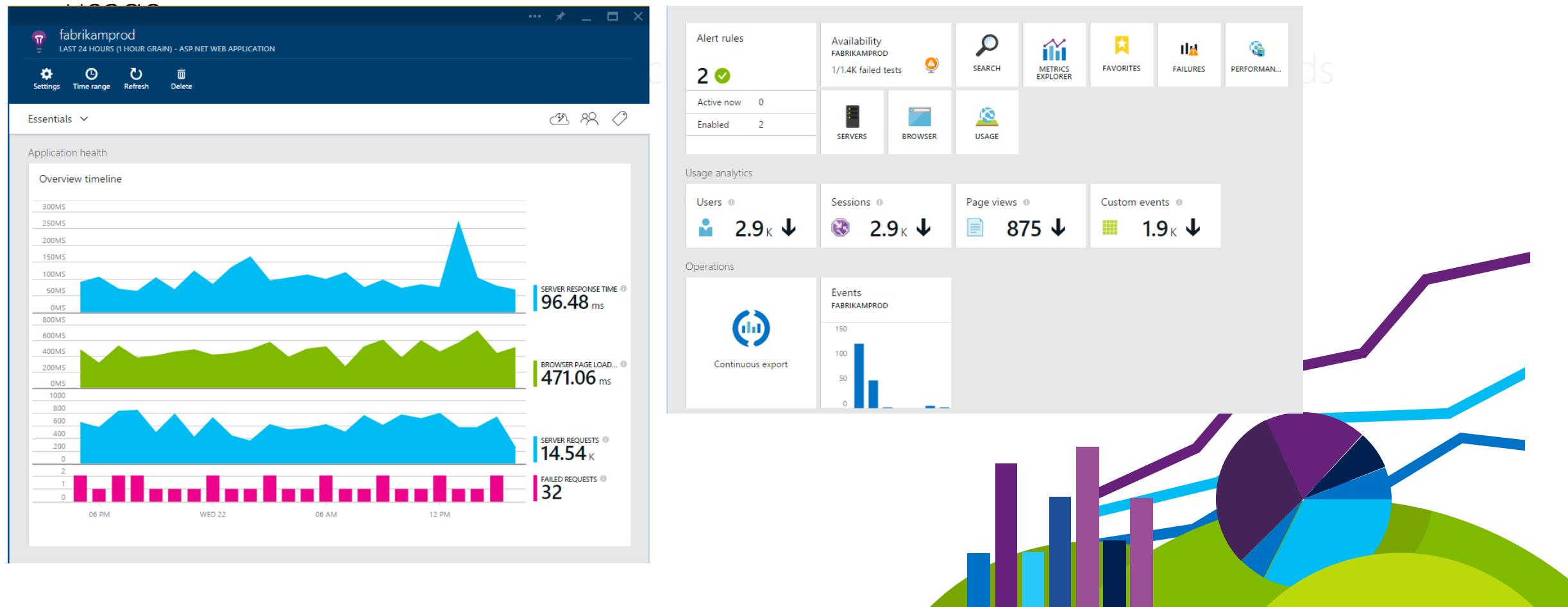
No-touch monitoring



# Overview Blade

## Out of the box experience

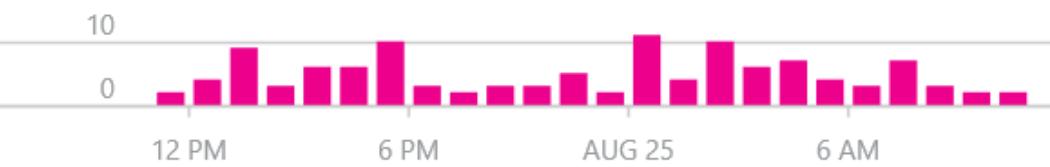
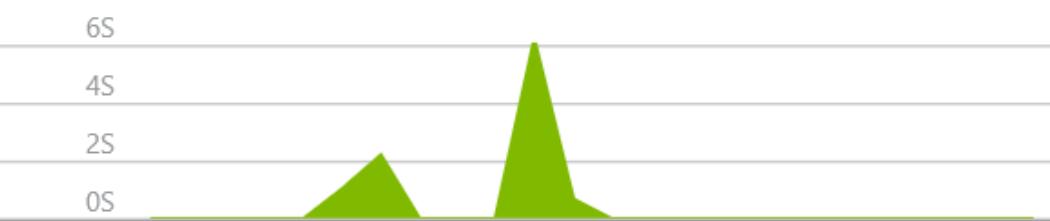
- Provides a summary of the application's health - availability, performance and usage



## Application health

### Overview timeline

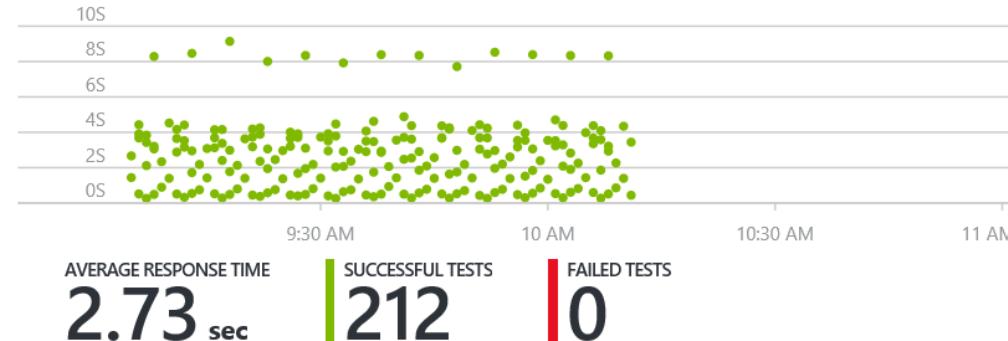
TEAMSYSTEMCAFE



### All web tests response time (ms)

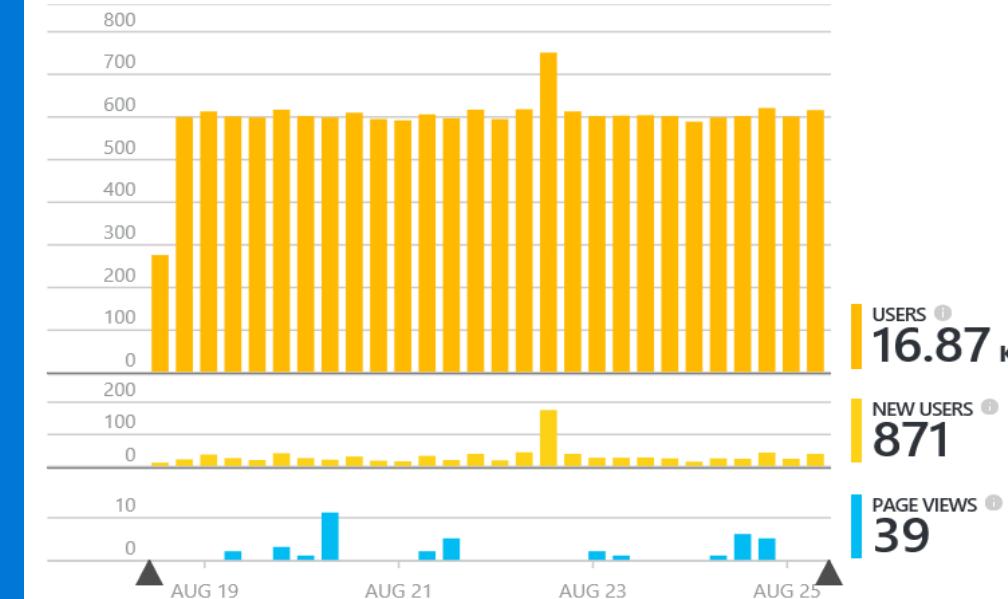


Filtered on tests between 8/25/2015 9:04 AM and 8/25/2015 11:00 AM



Filtered on Real user traffic x

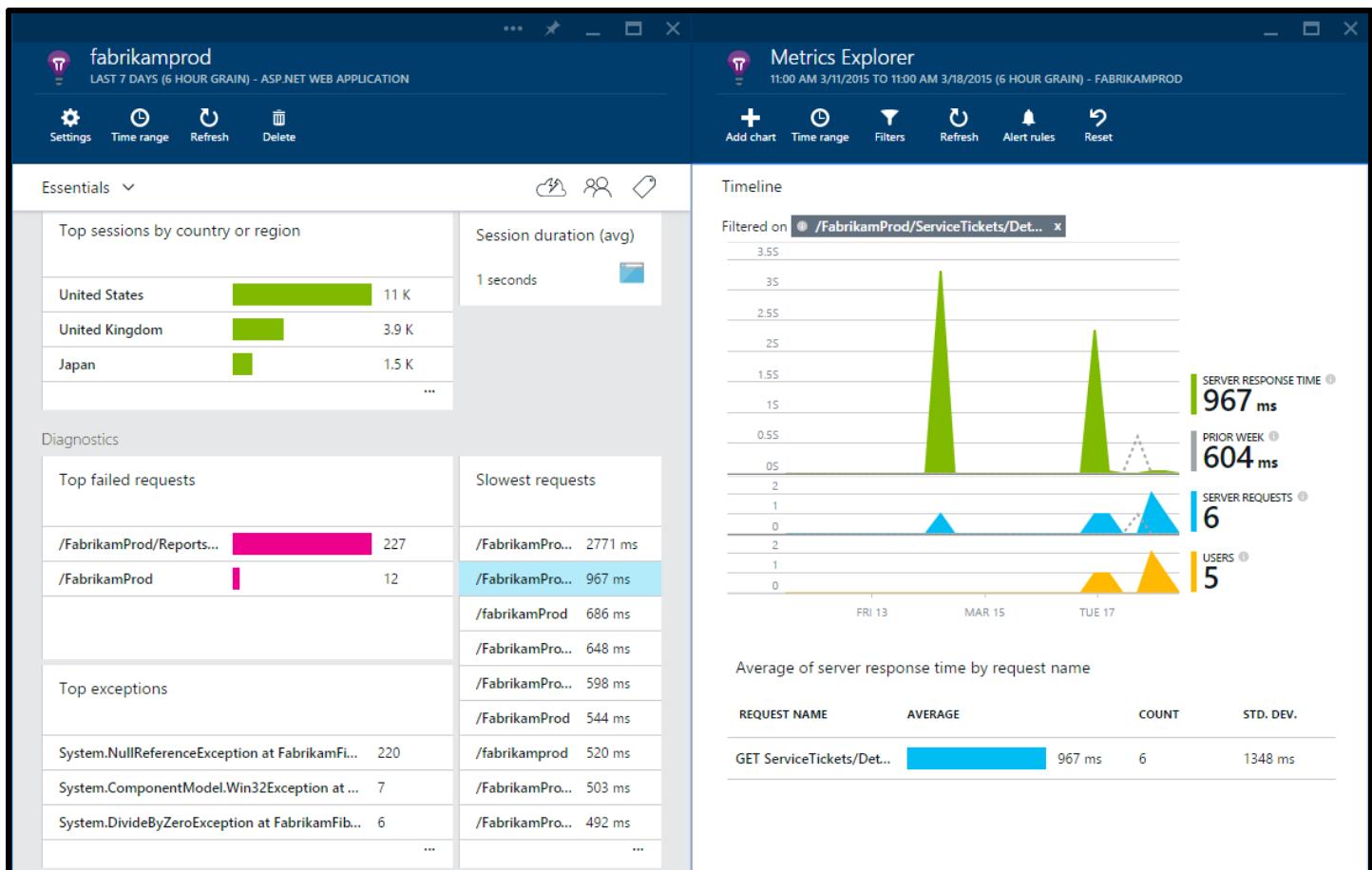
### Timeline



# Drill down

Detailed insights with the click of a button

- Correlate performance and usage in a single view
- Pinpoint problems and investigate questions like “Do I have network performance issues that hurt user adoption?”
- Click on specific metric and drill into detailed information and answer questions such as “what request is failing the most?”

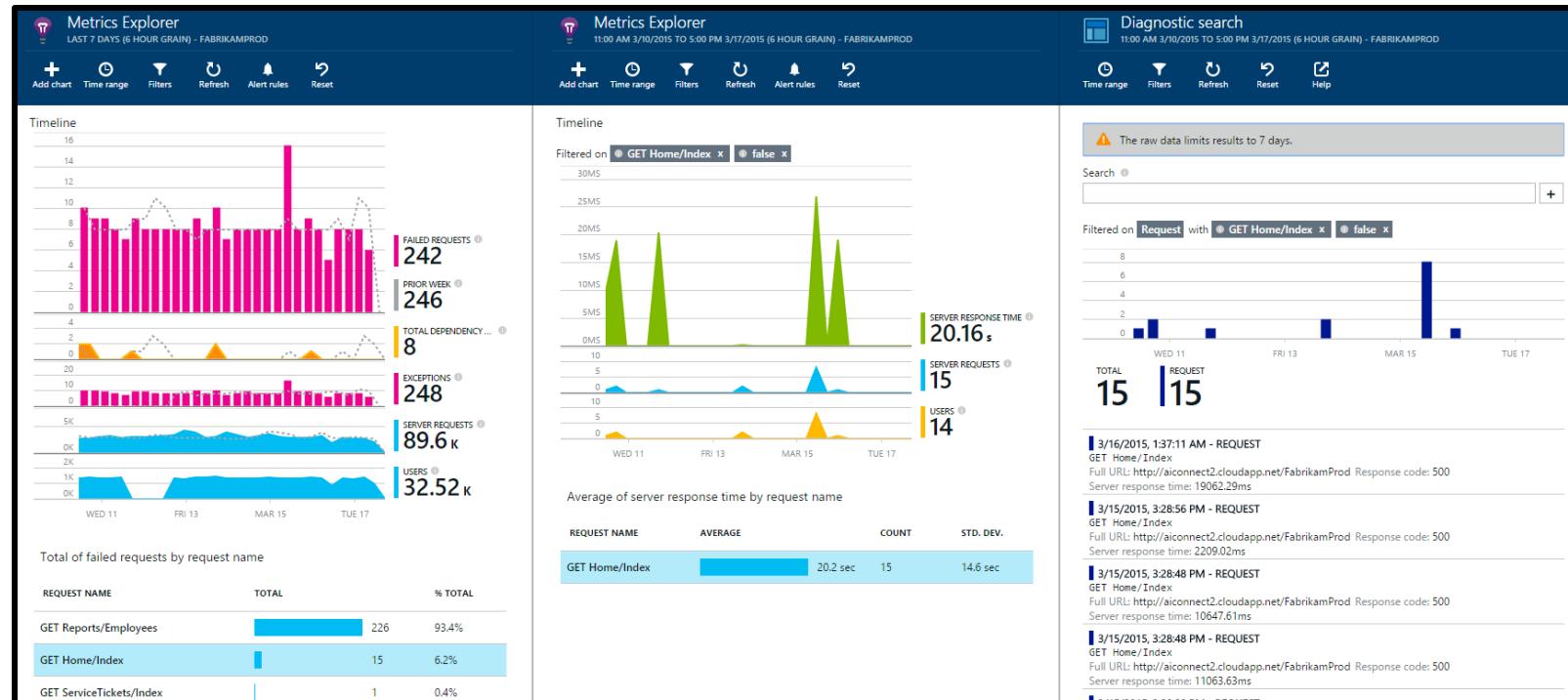


# Drill down tools

Powerful insights with Metrics Explorer and Diagnostic Search

- **Metrics Explorer** provides a flexible multi-dimensional UI over custom and out-of-the-box telemetry collected

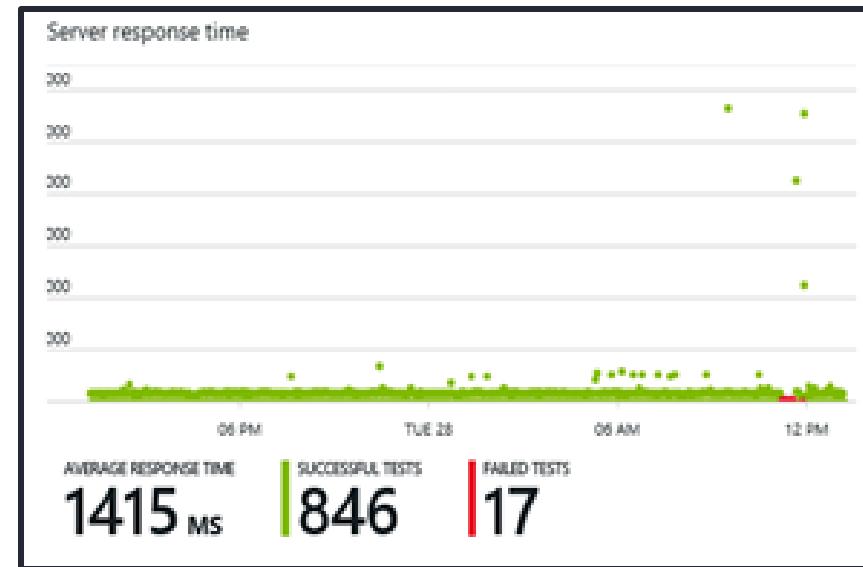
- **Diagnostic Search** enables efficient search over large sets of data using the query experience



# Fast and powerful insights

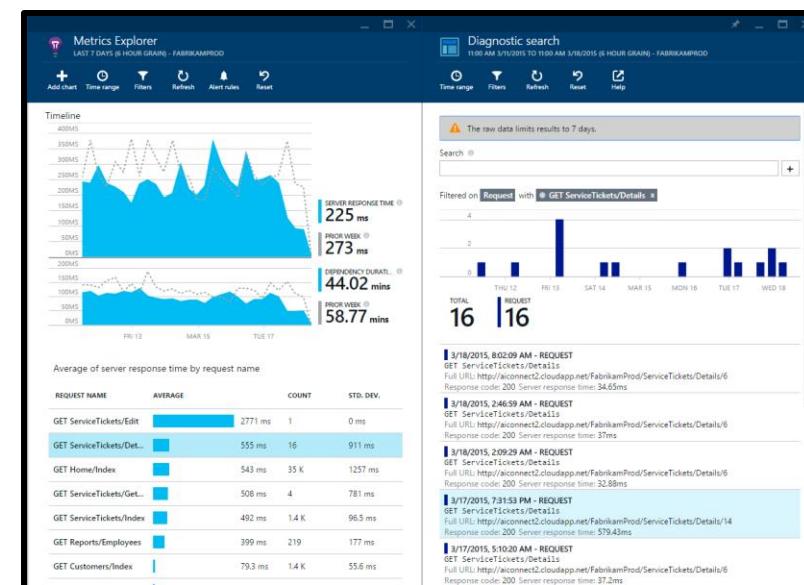
## Identify & triage availability issues

- Monitor your web sites with simple pings to complex web tests from points around the world



## Diagnose & solve performance problems

- Quickly diagnose issues by accessing rich application performance data from the client view to dependencies



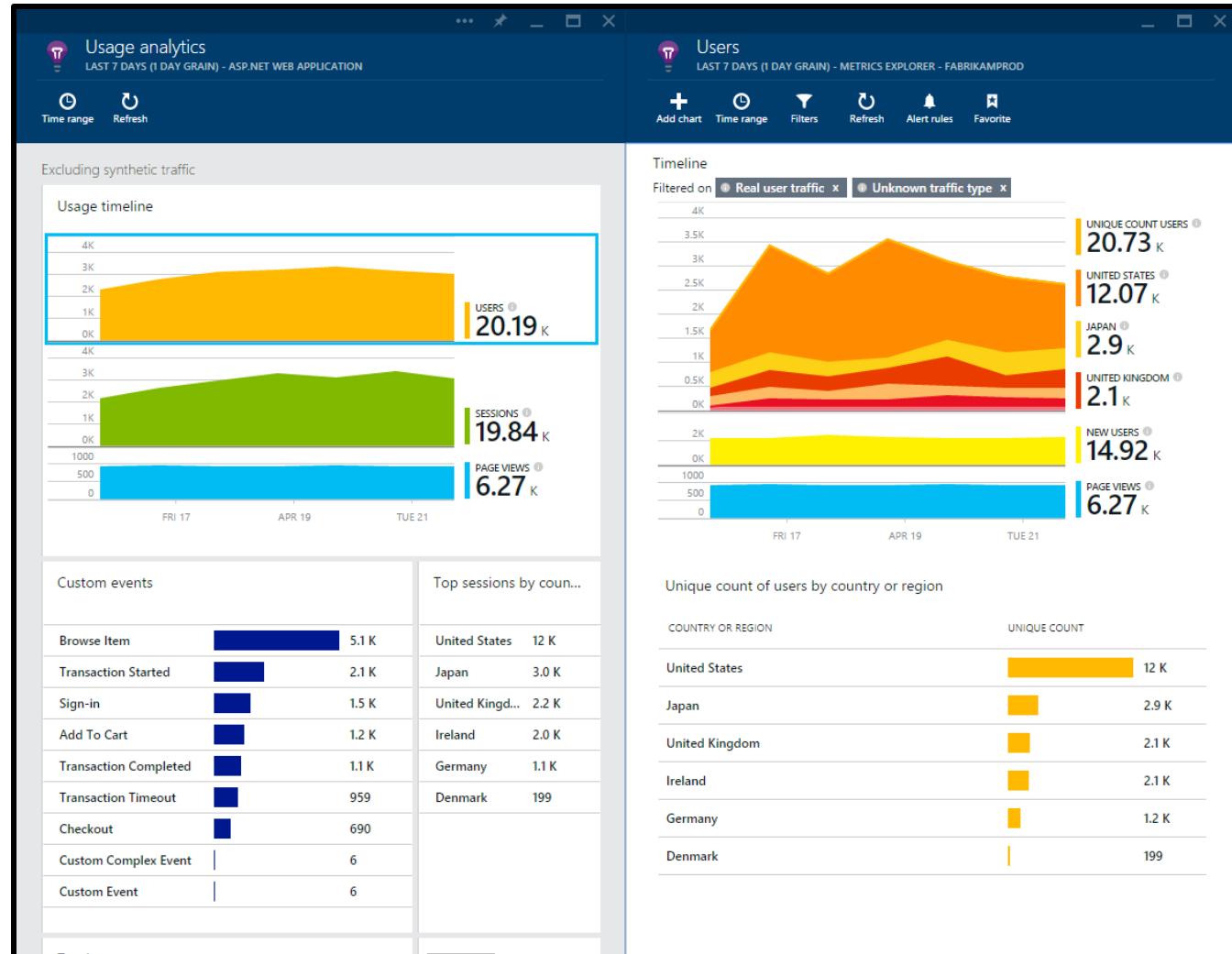
## Mobile crash/sever exception analytics

- Real time view of crashes happening on devices, allowing you to focus on fixing key issues with the biggest impact first

# Fast and powerful insights

Learn & improve with usage insights

- Understand where your users are coming from and where they spend most of their time
- Prioritize future investments and continuously improve your app based on user activity and usage patterns and trends



# Implementing Common Scenarios with the SDK

# Customer Usage Monitoring

```
<head>
    <meta charset="utf-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>@ViewBag.Title - Mercury Health</title>
    @Styles.Render("~/Content/css")
    @Scripts.Render("~/bundles/modernizr")
```

/\* Application Insights code to monitor usage

```
<script type="text/javascript">
    var appInsights = window.appInsights || function (r) {
        r.config = { instrumentationKey: "f7d379a2-0" };
        window.appInsights = appInsights;
        appInsights.trackPageView();
    };
</script>
```

```
try
{
    var duplicateFoodLogEntry = db.FoodLogEntries.FirstOrDefault(
        entry =>
        (entry.Description == newFoodLogEntry.Description) &&
        (entry.MealTime == newFoodLogEntry.MealTime));

    if (duplicateFoodLogEntry != null)
    {
        // Application Insights - Track Event
        var telemetry = new TelemetryClient();

        // Trace telemetry to create custom diagnostic log
        telemetry.TrackEvent("Duplicate FoodLogEntry " + duplicateFoodLogEntry);

        throw new ArgumentException("You cannot add two identical food log entries");
    }

    db.FoodLogEntries.Add(newFoodLogEntry);
    db.SaveChanges();
}
```

```
// Application Insights - Track Events
var telemetry = new TelemetryClient();
telemetry.TrackEvent("Created FoodLogEntry " + foodLogEntry.Description);
```

# Fast and powerful insights

## Extend telemetry data

- Add custom metrics and events to better track and analyze user activity
- Continuously Export data to Azure Blob Storage for custom integration with other data sources and further analysis

```
// Application Insights - Track Custom Event
var telemetry = new TelemetryClient();

// Application Insights - Create Metadata for Event - String properties:
var properties = new Dictionary<string, string>
{{"UserSearchText", searchString.ToString()}};

// Application Insights - Create Metadata for Event - Numeric measurements:
var measurements = new Dictionary<string, double>
{{"UserSearchHits", myquery.Count()}};

// Application Insights - Send the event
telemetry.TrackEvent("UserSearches", properties, measurements);
```

The image displays four screenshots of the Azure Application Insights interface:

- Metrics Explorer:** Shows a timeline chart for the last 7 days. Key metrics displayed include Total Events (12), Custom Complex Events (6), Custom Events (6), Users (32.52k), and Session Custom Events (0). Below the chart is a table showing activity by event name.

EVENT NAME	EVENTS	USERS	SESSIONS
Custom Complex Event	5	0	0
Custom Event	5	0	0

- Diagnostic search:** Shows a search interface for "Custom Event". It displays a timeline from WED 11 to TUE 17, showing 6 total events. Below the timeline is a list of log entries for CUSTOM EVENT events on March 16, 15, and 14, 2015.
- Continuous export:** Shows a list of continuous export configurations. One configuration is selected, pointing to a storage account named "fabrikamexport".
- Edit continuous export:** A detailed view of the selected continuous export configuration. It shows the export destination as "fabrikamexport" and the event types to export as "All types". On the right, a list of available event types is shown with checkboxes for turning them on or off.

# SDK Best Practices

API	Collected by Default?	When to Use
Track Page View	Yes with JavaScript SDK	Want to differentiate with SPA
Track Request	Yes with Server SDK	
Track Event	No	Business/Feature usage logging
Track Trace	No	System logging, treat like your event log
Track Exception	Yes but only at HTTP Module with Server SDK	Only exceptions you care about
Track Metric	No	Performance counters, business metrics

# What about the Price?

- Available in Free, Standard & Premium Pricing Tiers
- Differentiated on Data Volume limits, data retention and data export capability

# Hands On Lab

HOL 5 - Application Insights

- Application Insights

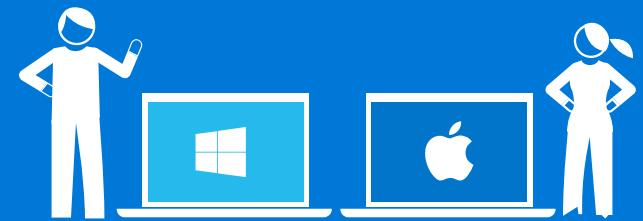
# Azure API Management

Build & Host

Publish & Manage

App Services  
Service Fabric  
Containers  
On-prem

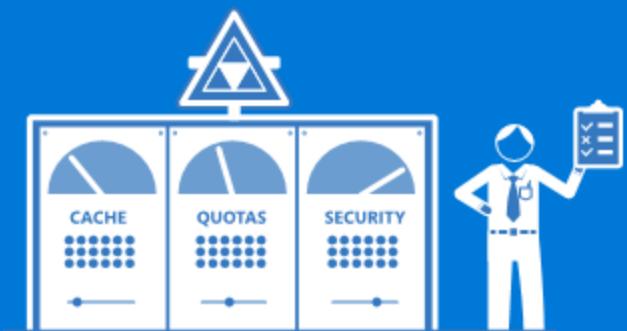
API Management



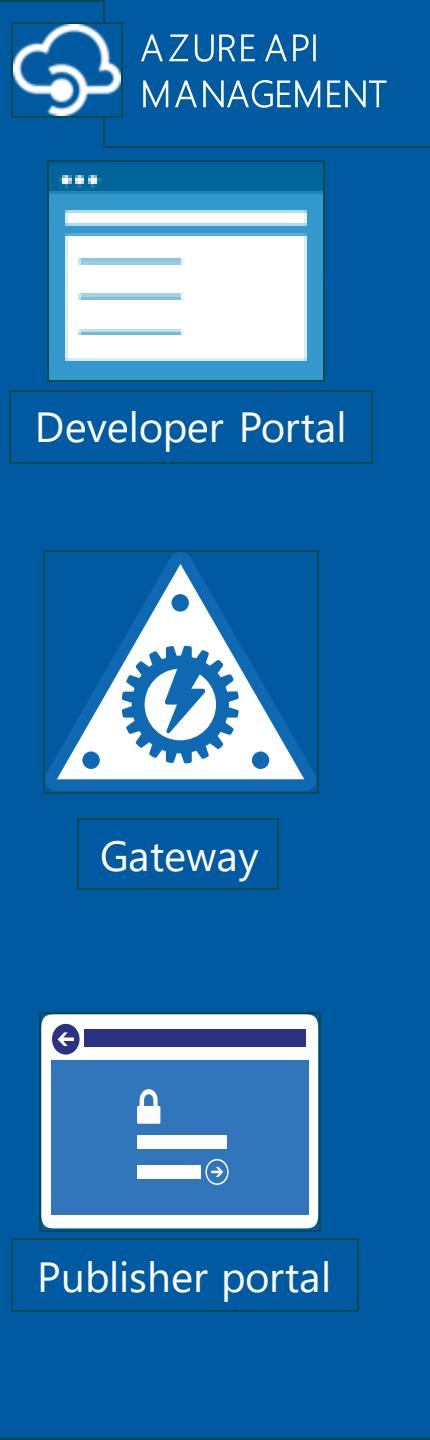
APP DEVELOPERS



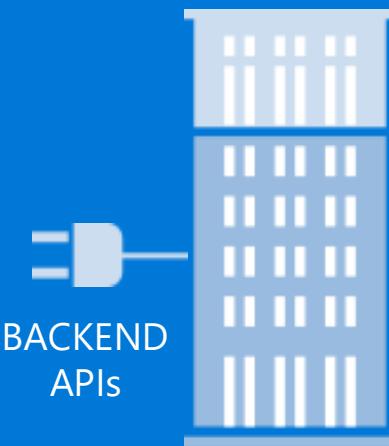
APPS



API PUBLISHERS



DIRECT OR  
VPN



BACKEND  
APIs

Hosted **anywhere**.

Developed using **any**  
technology.



# API Management Features

## Developer Experience

- Self-Registration
- Subscriptions
- Documentation
- Console
- Issues Forum
- Dashboard

## Admin Experience

- API specification
- Product management
- Policies Editor
- Developer management
- Content management
- Configurable notifications

## Proxy & Policies

- Call and bandwidth quotas
- Rate limit
- Caching
- HTTPS
- Authenticate with Basic
- CORS / x-domain calls
- Find and replace string
- Re-write URL
- Mask URLs
- JSONP
- JSON to/from XML
- Set header or parameter
- IP filter
- Wildcard operations

## Security

- Custom developer ID
- Social Developer ID
- API key authentication
- Basic Authentication

## Reports

- Calls
- Bandwidth
- Cache hits/misses
- Status codes
- API and service response time
- Proxy response time
- Filter any report by product API Operation

# Hands On Lab

HOL 6 - API Management

- API Management

# Traffic Manager

# Traffic Management Fundamentals



## Performance

Directs the user to the “best”/“closest” deployment

### Example:

Direct the user to the “best” deployment between US South and West Europe



## Failover

One deployment is primary  
Traffic is redirected to another deployment if the primary goes down

### Example:

All traffic is directed to US North; if it goes down, send all traffic to US South



## Geomapping

Allows users from defined geographic locations to be directed to particular deployment

### Example:

all users from US -> US North, all users from Asia -> US North, all users from Europe -> West Europe



## Ratio

Sends traffic to different deployments based on fixed ratio (N/M)

### Example:

Direct 20% of user traffic to US South and 80% to US North.

# Policy Building Blocks

Deployment  
Health

Customer  
metadata

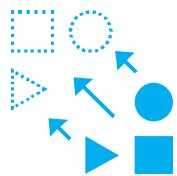
## Policy



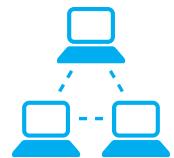
Geographic



Performance

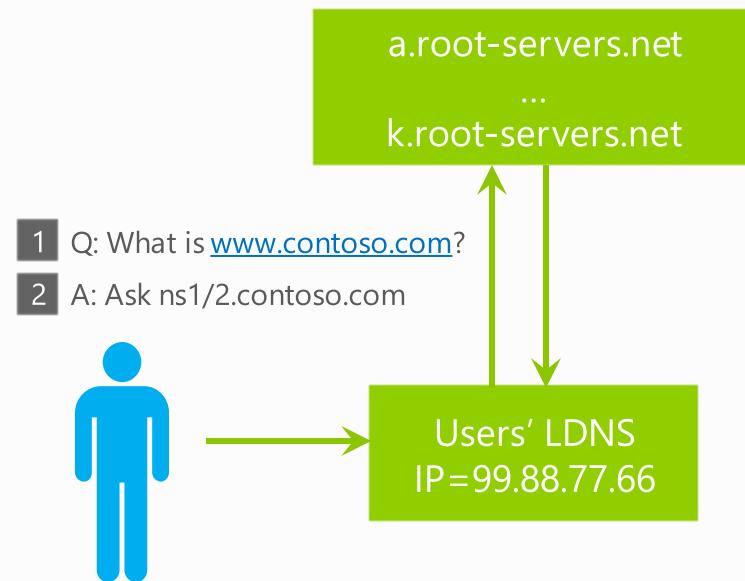


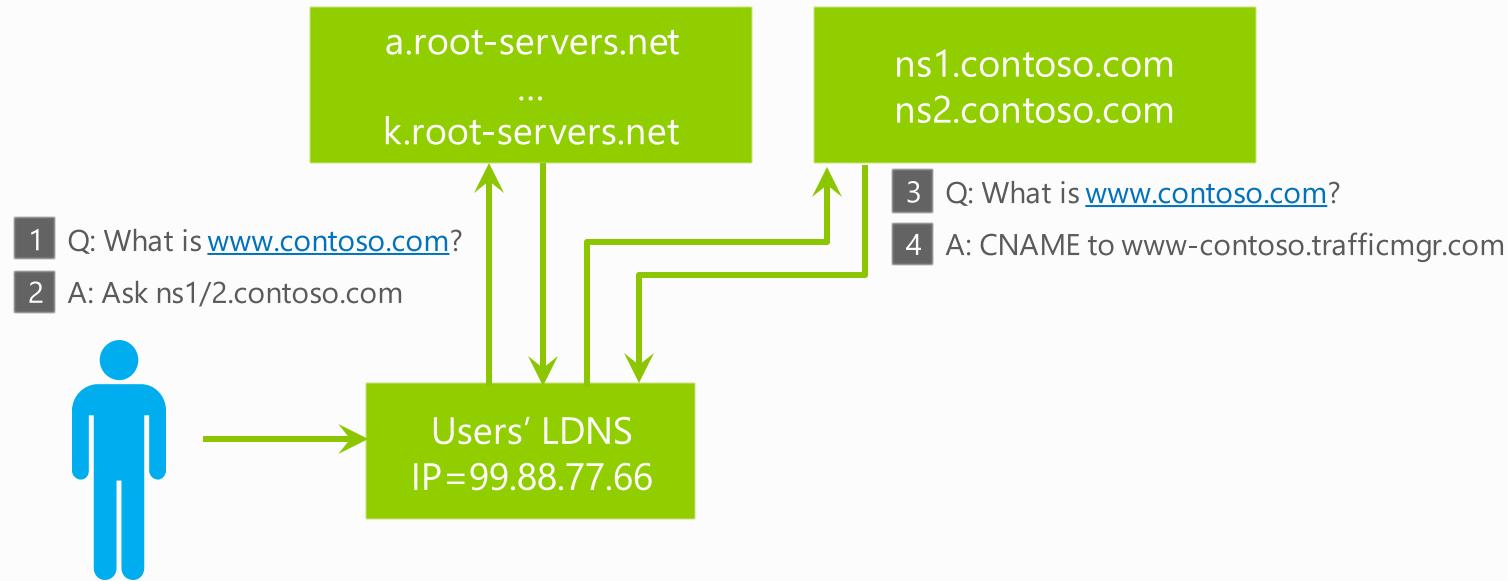
Ratio

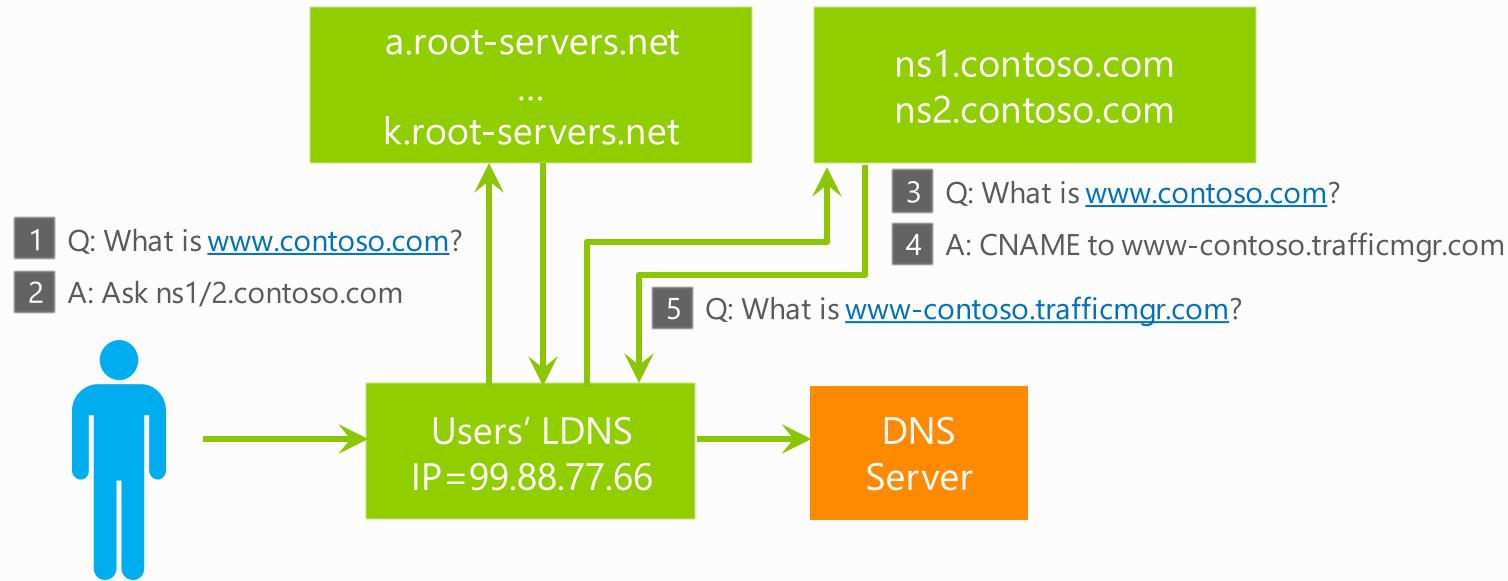


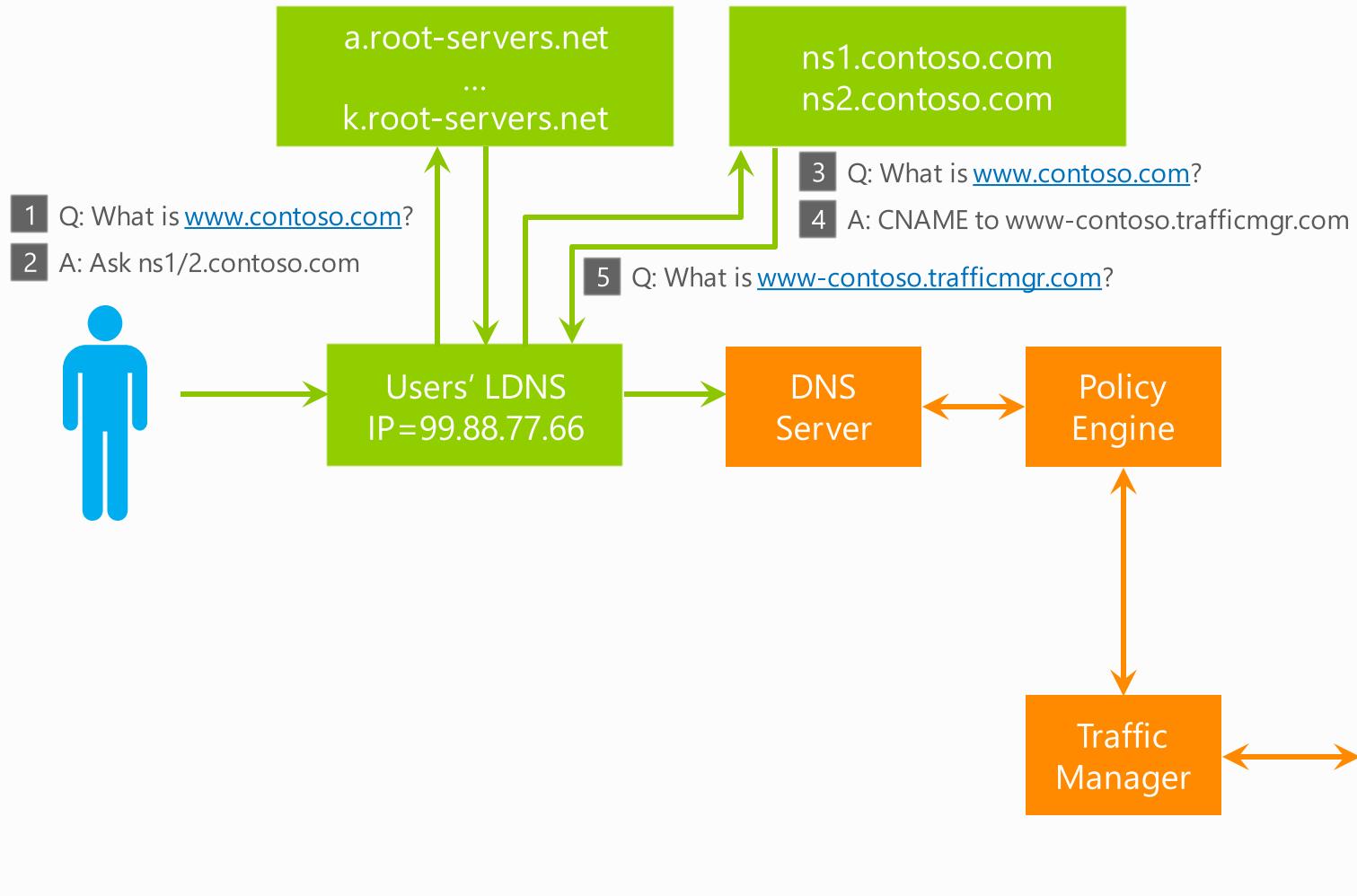
Failover

Network  
Intelligence  
GeolP data

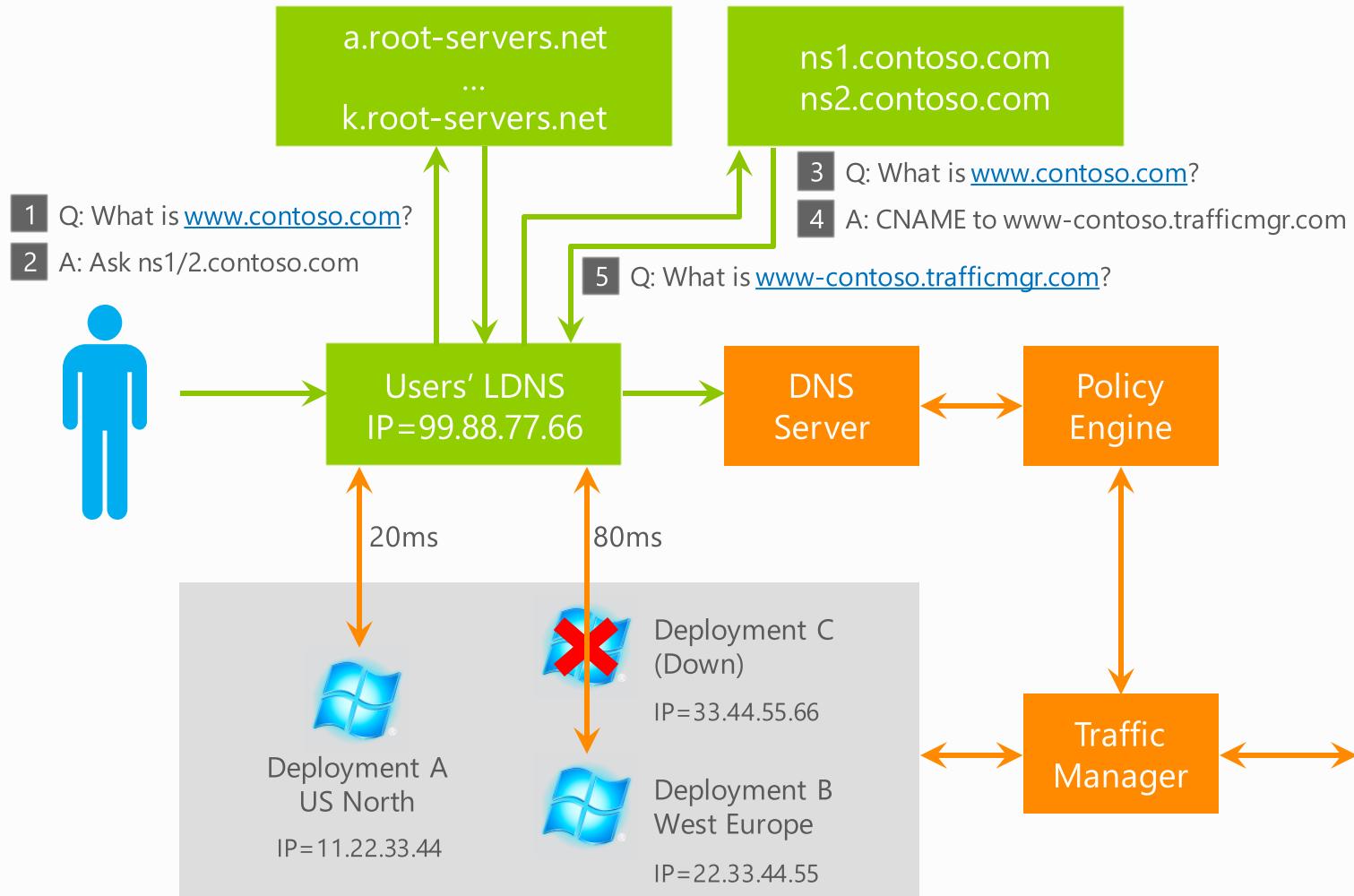




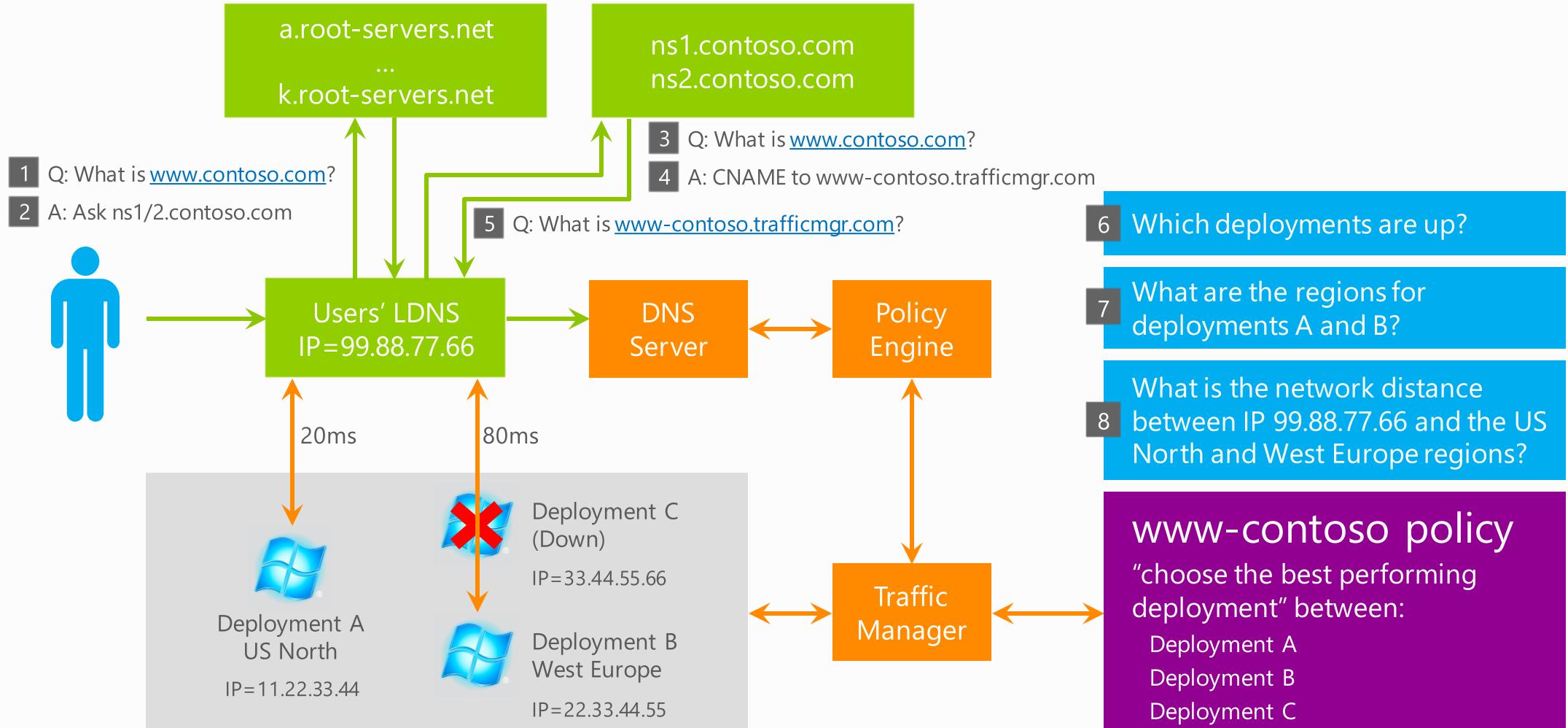


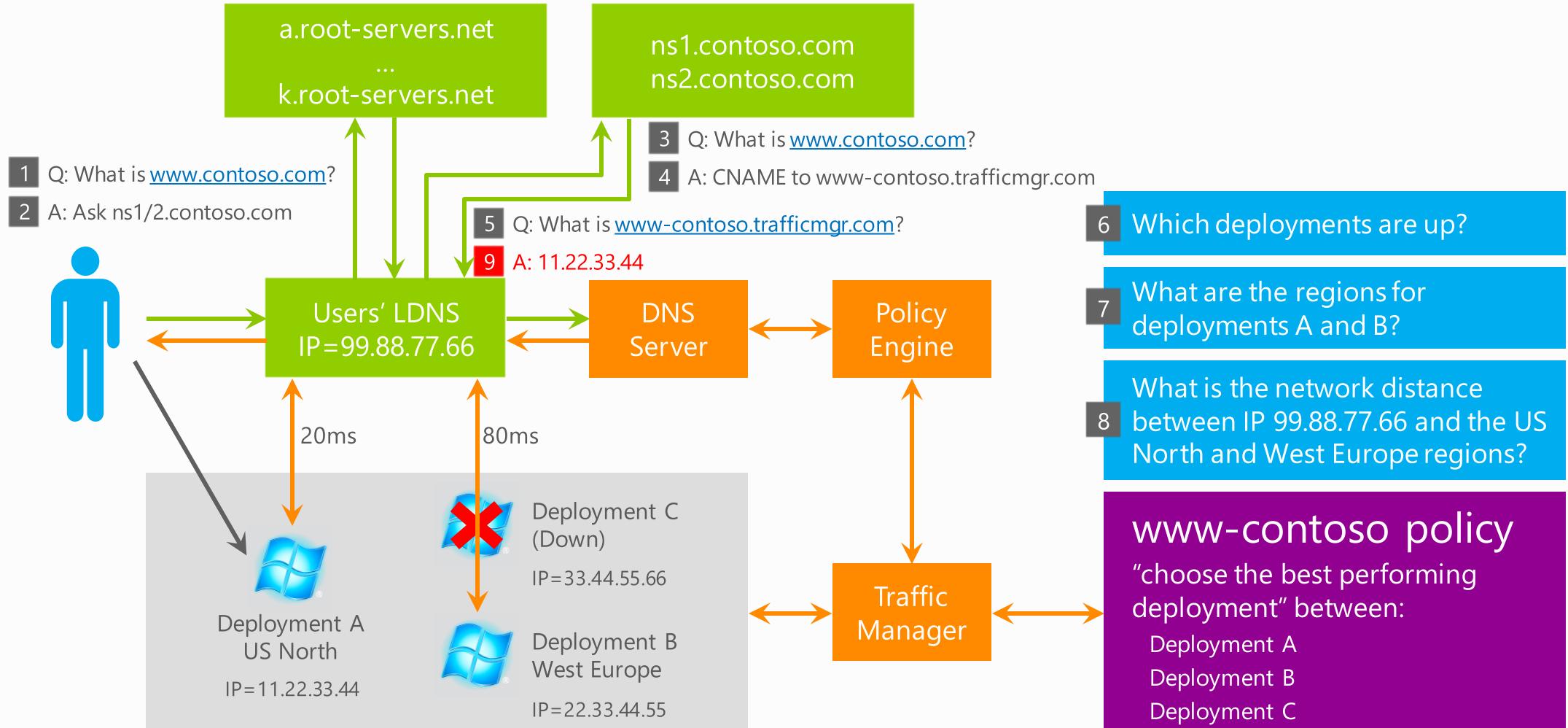


**www-contoso policy**  
"choose the best performing deployment" between:  
Deployment A  
Deployment B  
Deployment C



**www-contoso policy**  
“choose the best performing deployment” between:  
Deployment A  
Deployment B  
Deployment C





# Performance

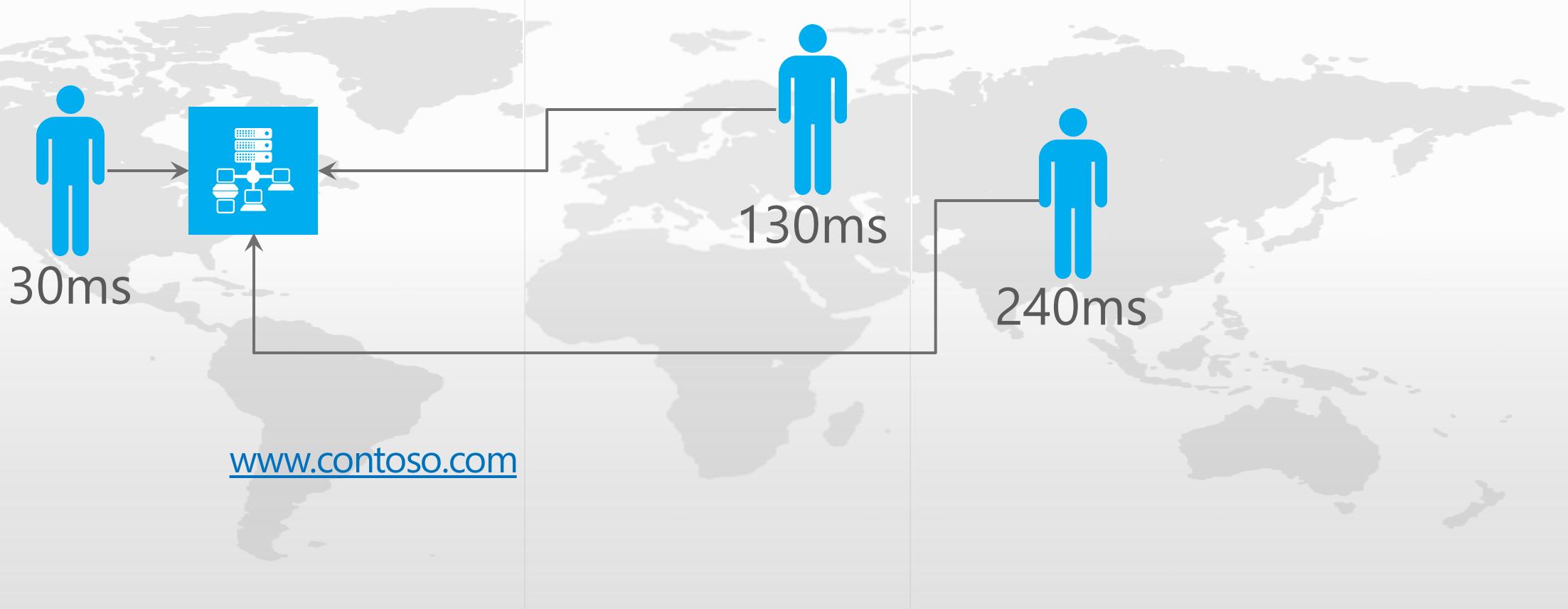


# Performance Load Balancing

North America Region

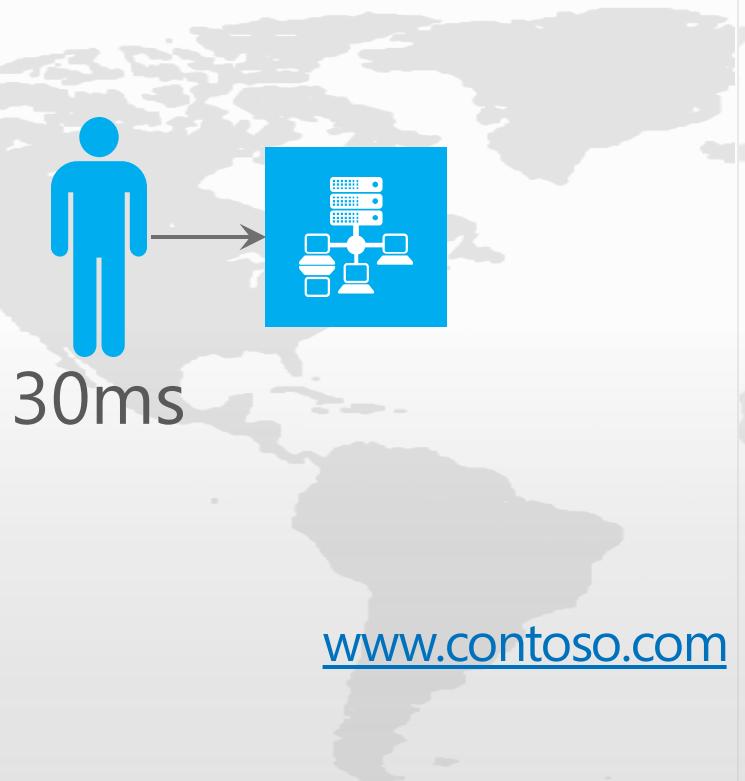
Europe Region

Asia Pacific Region

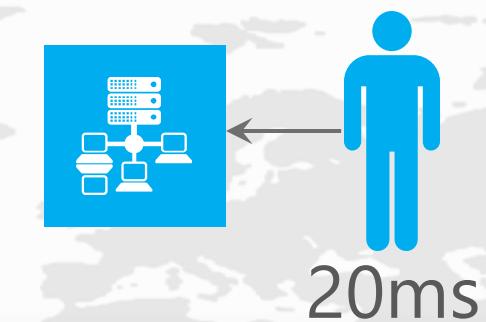


# Performance Load Balancing

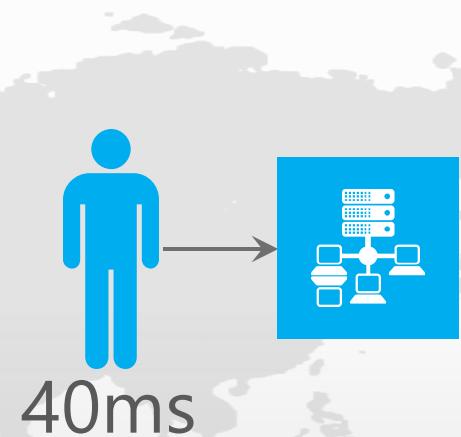
North America Region



Europe Region



Asia Pacific Region

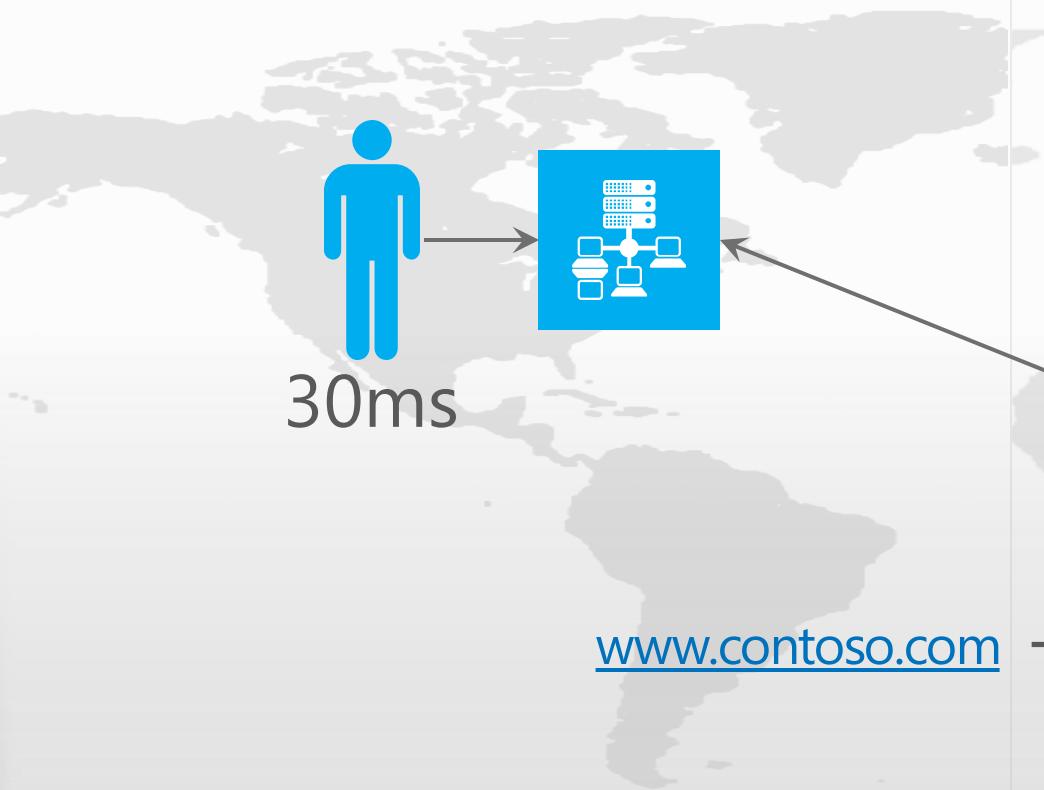


# Disaster Recovery

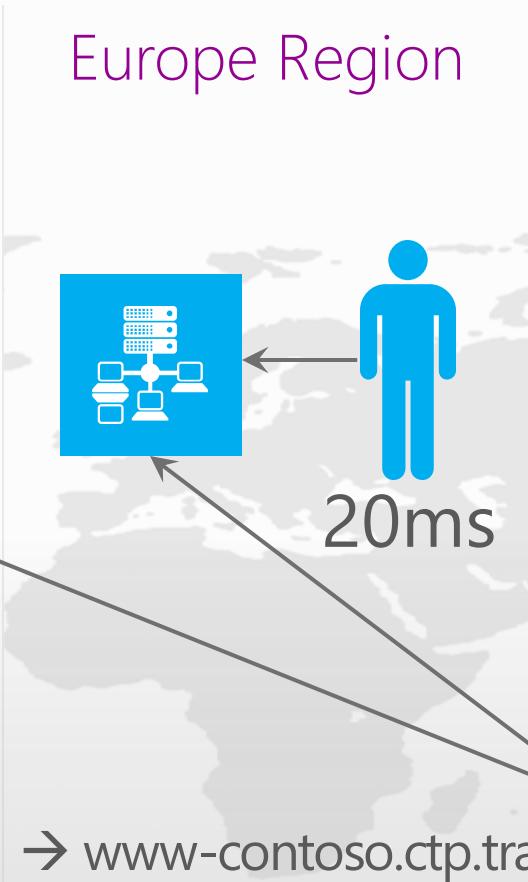


# Disaster Recovery

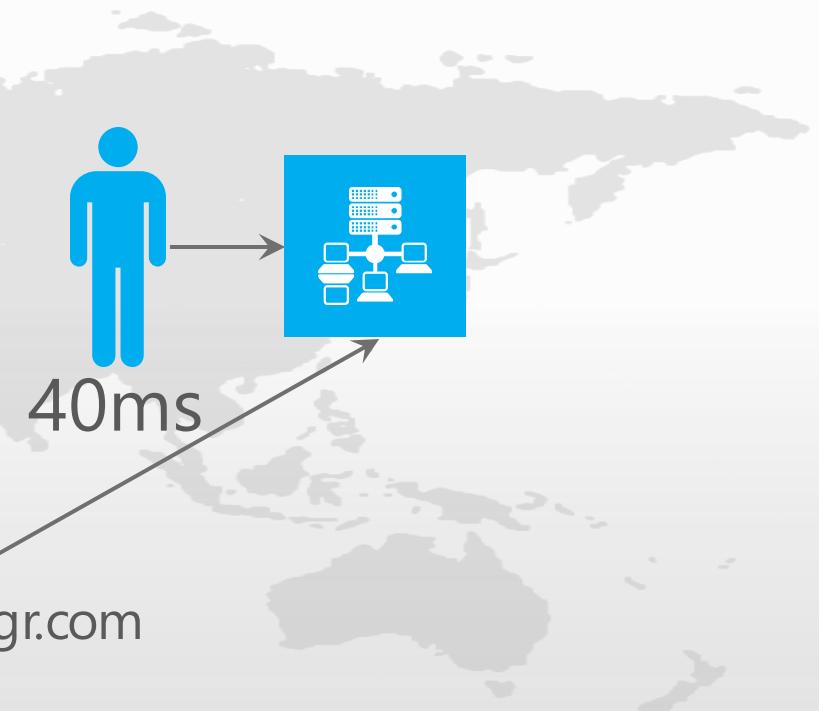
North America Region



Europe Region



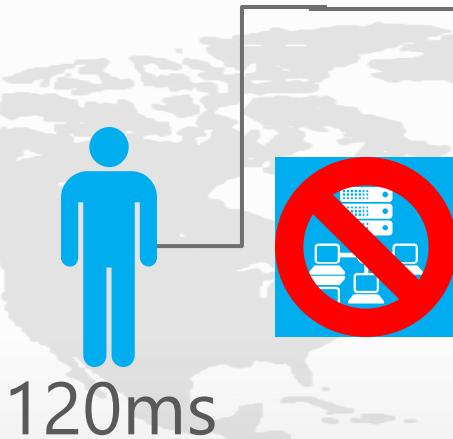
Asia Pacific Region



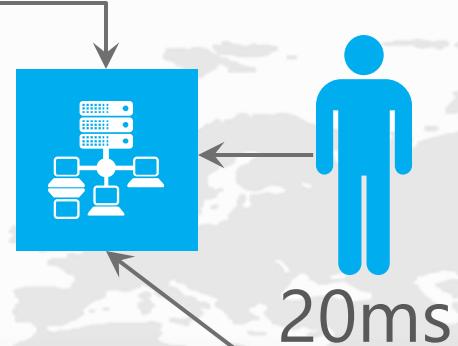
[www.contoso.com](http://www.contoso.com) → [www-contoso.ctp.trafficmgr.com](http://www-contoso.ctp.trafficmgr.com)

# Disaster Recovery – 8 Minute MTR

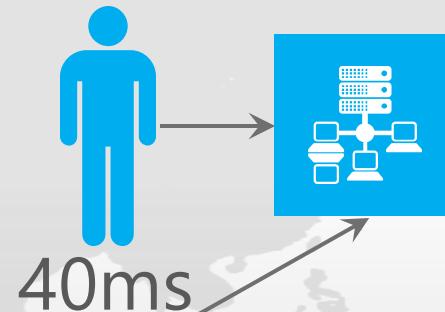
North America Region



Europe Region

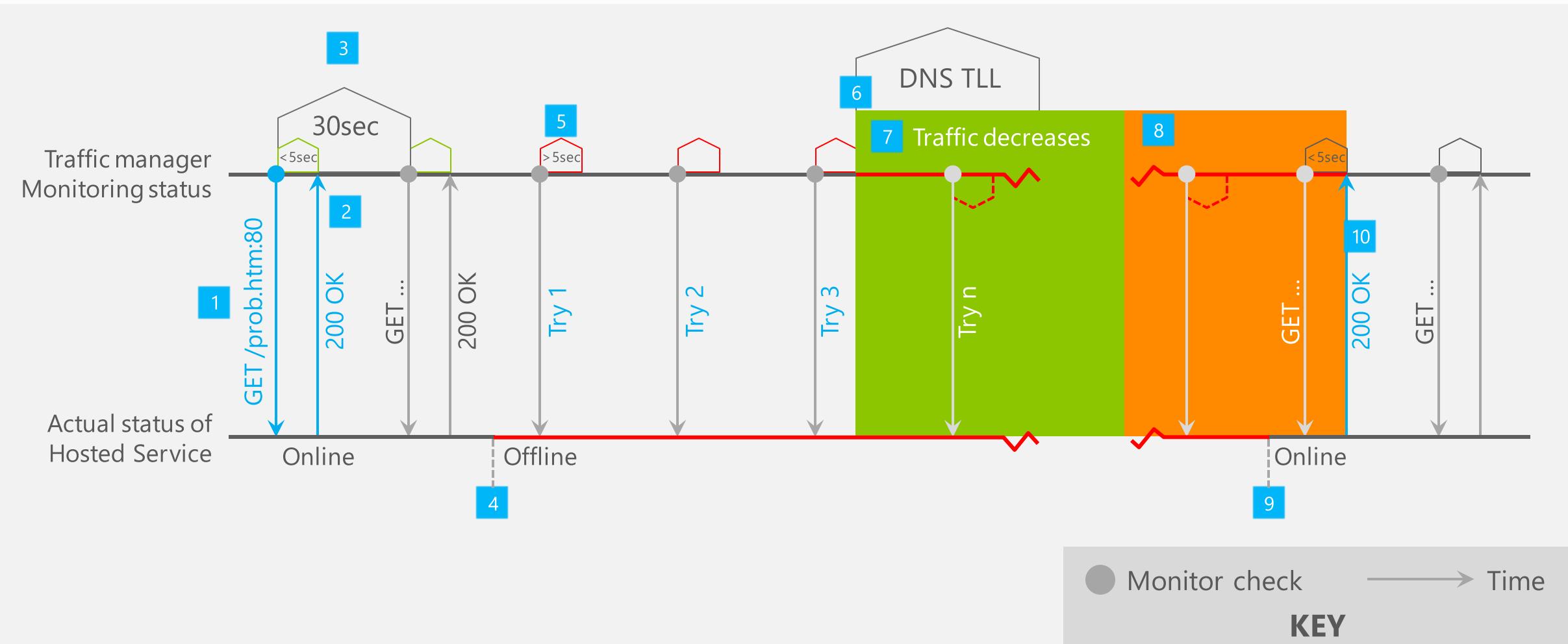


Asia Pacific Region



[www.contoso.com](http://www.contoso.com) → www-contoso.ctp.trafficmgr.com

# Health Polling Updates DNS



# Hands On Lab

HOL 7 - Traffic Manager

- Traffic Manager

Teşekkürler.

