

Microsoft Azure

Cloud Application Development – Day 1

Mehmet Kut

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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



Hands on Lab

GitHub

<https://github.com/mehmetkut/intertech-azure-training>



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



APACHE CORDOVA™

Management



Applications



PaaS &
DevOps



App Frameworks
& Tools



Databases &
Middleware



Infrastructure



redhat



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*



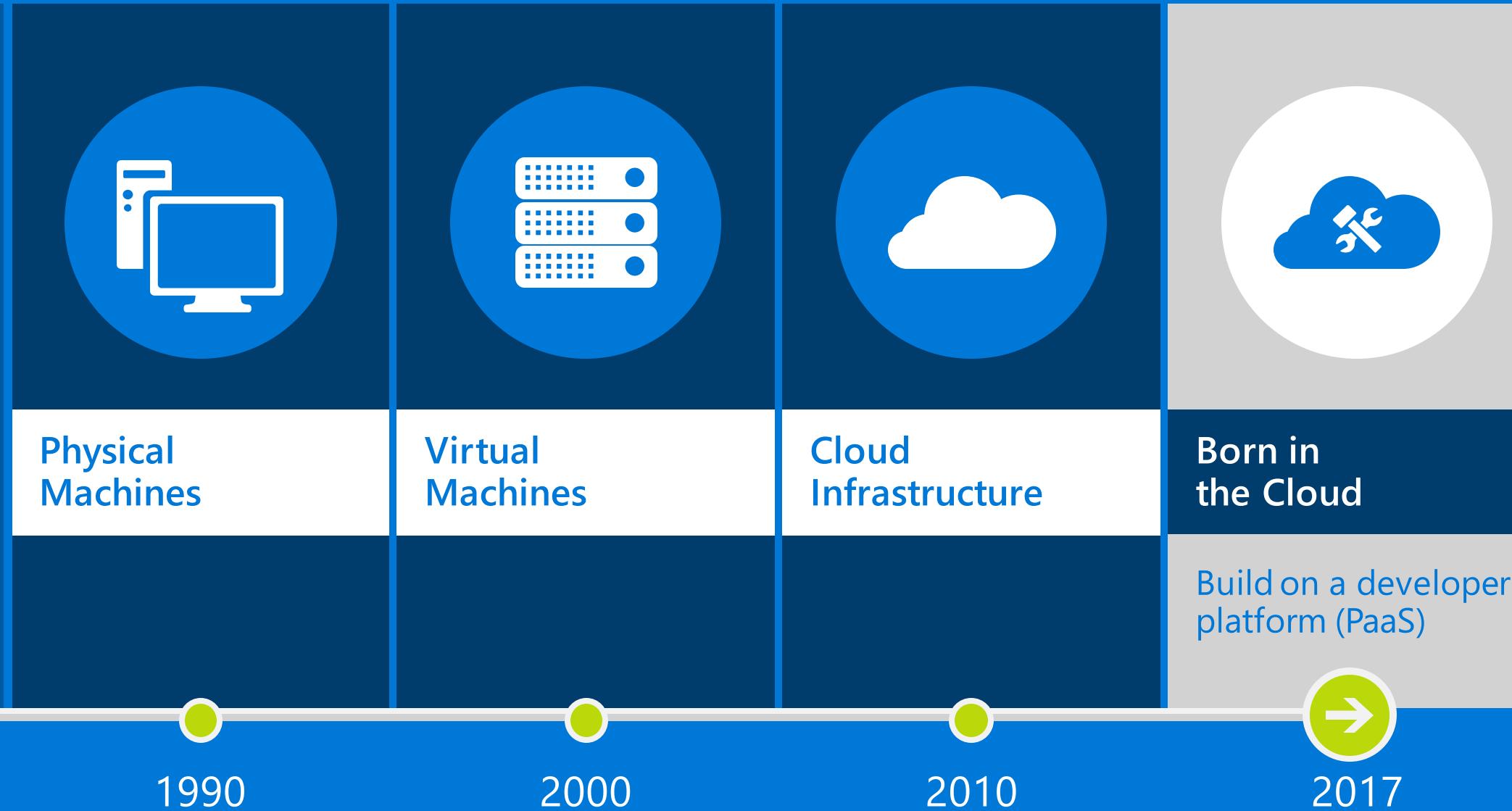
VPN Gateway



Application Gateway

Zaman içinde uygulama geliştirme değişimi

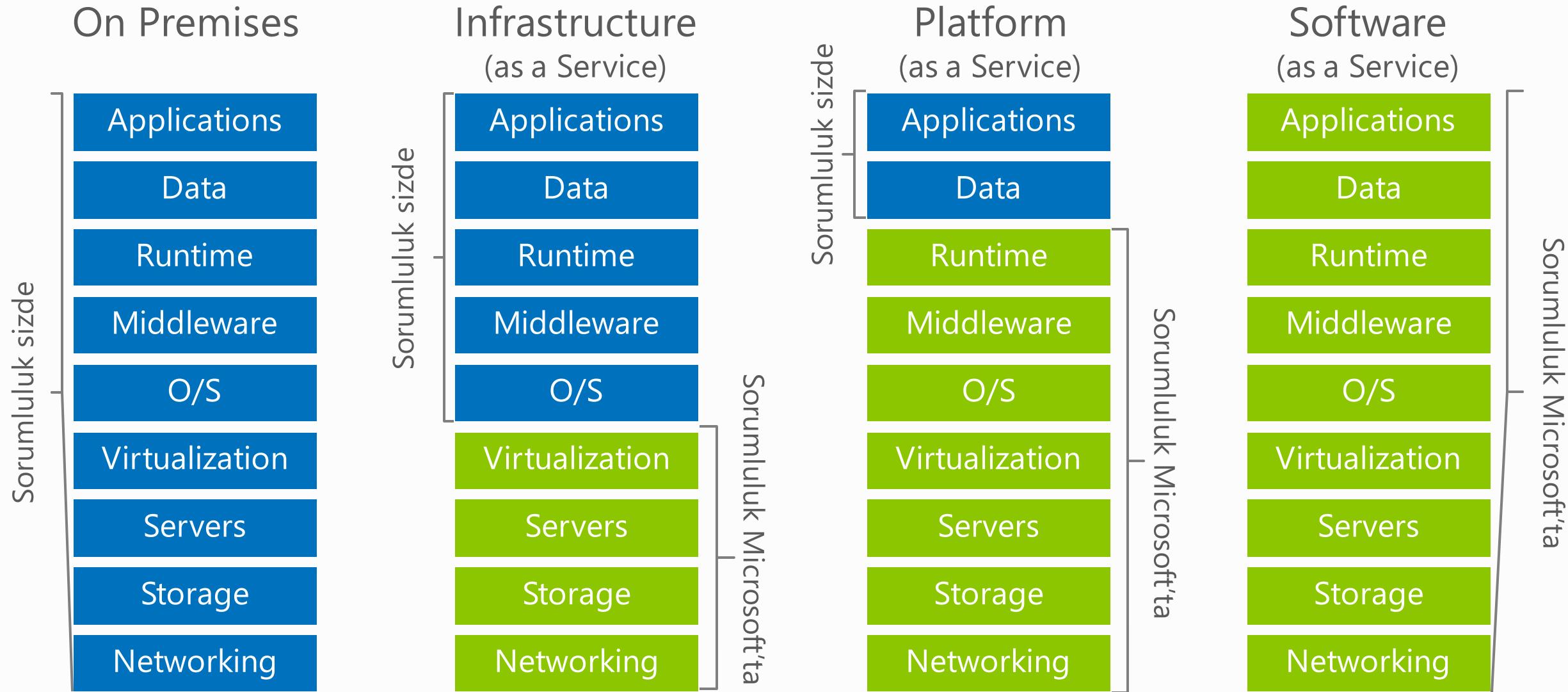
Mainframe
Monolithic
Client/Server
3 Tier
Component
RAD
Distributed
SOAP
SOA
Web
REST
Mobile
Microservices
Containers
Serverless



Eski ve Yeni Dünya

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

Bulut Servis Modelleri



Uygulamanızın bir araba olduğunu düşünürsek



IaaS

...arabaya sahip olabilirsiniz

PaaS

Sadece baygınla hizmet verebilirisiniz
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

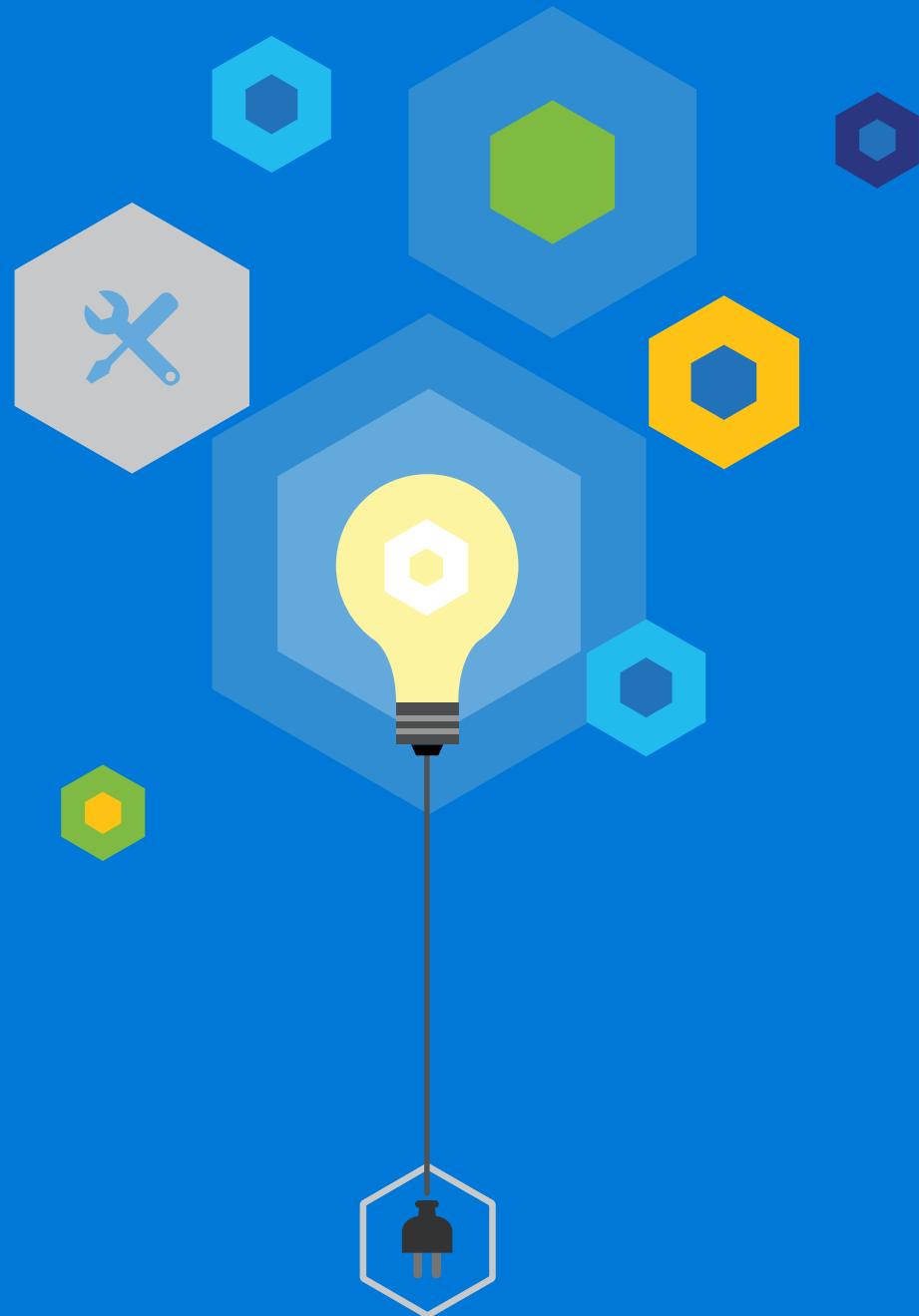
Sizin veya müşterilerinizin, Data Center konumunun nerede olduğu önemli mi?

-  Fiyatlandırma

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

Demo

- Hız Testi



Azure Yönetim Arayüzleri

Azure Yönetim Arayüzleri

manage.windowsazure.com

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

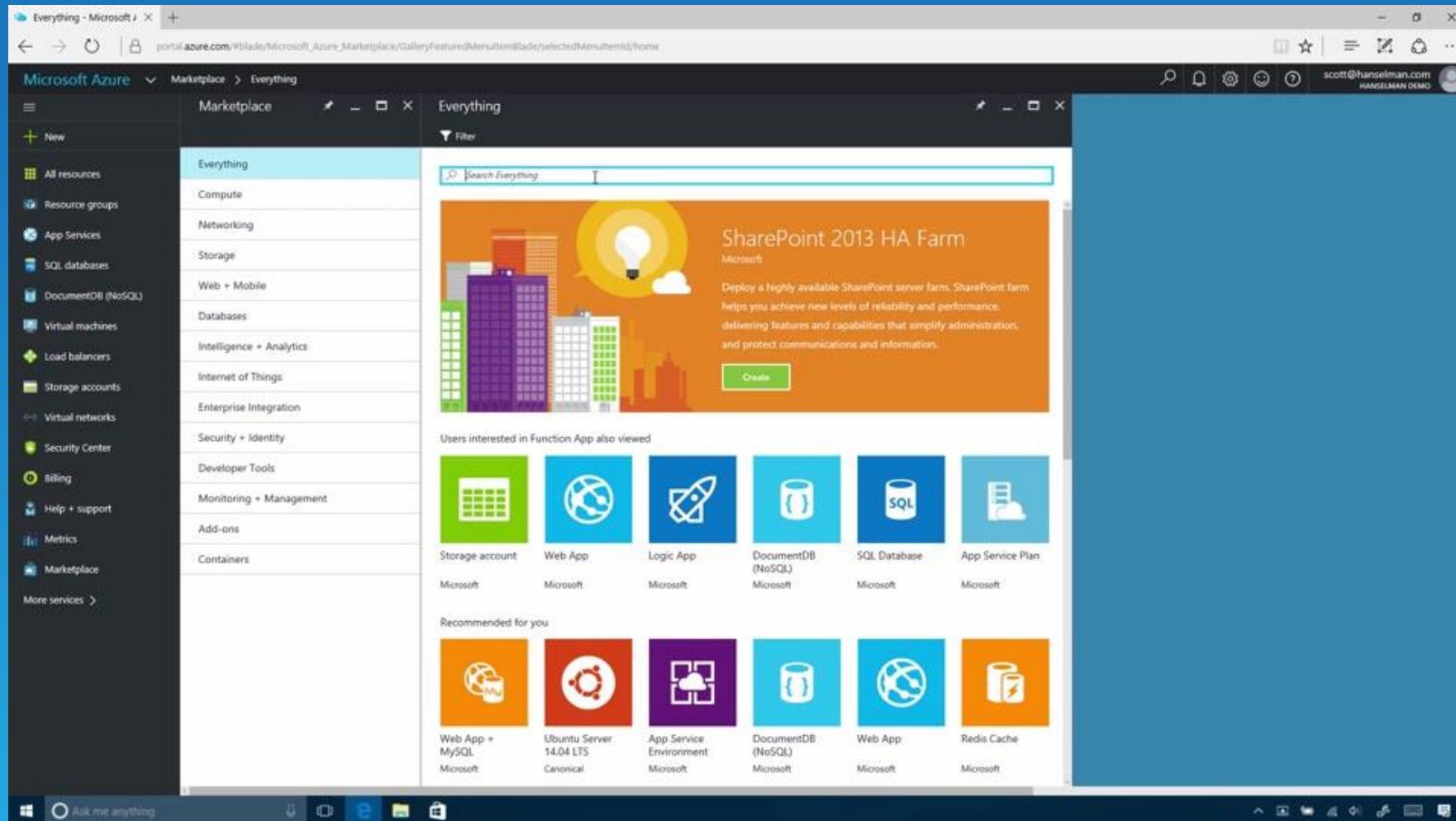
- Subscription merkezli
- Tüm kaynaklar gözüktür.
- İçeriğe göre değişen toolbar
- Yardım Sistemi
- ASM – Azure Service Management
- Classic – **Mümkünse Kullanmayın!**

portal.azure.com

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

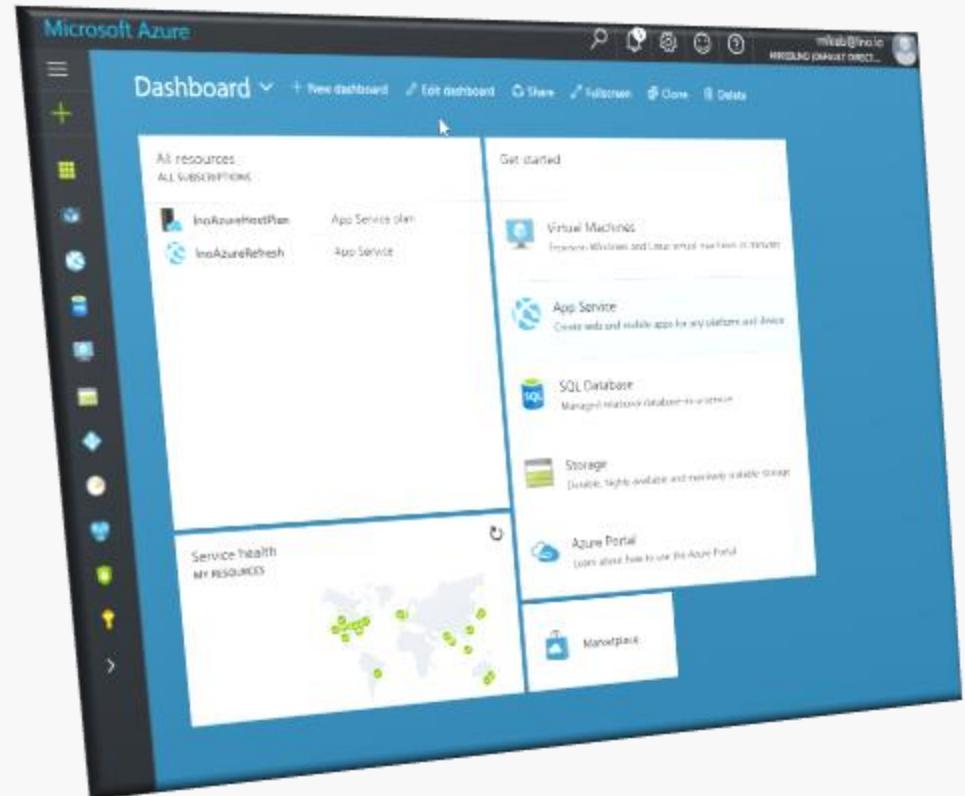
Modern Azure Portal

Microsoft Azure portalı, Azure kaynaklarınızı oluşturabileceğiniz ve yönetebileceğiniz portaldır.



Modern Azure Portal

- Blades
- Customizable dashboards.
- Powerful search enables you to find anything by name or by type
- Support provisioning with ARM



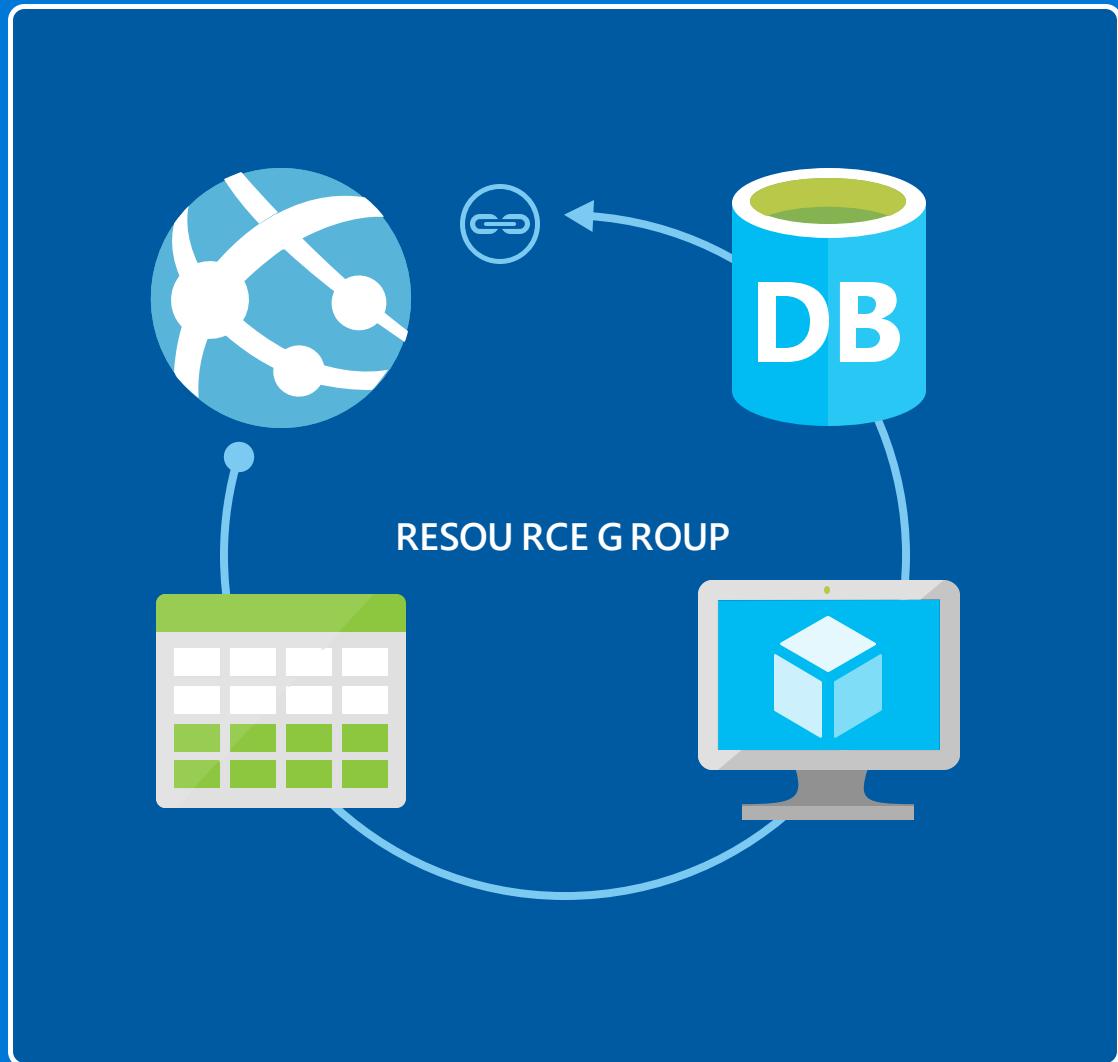
<http://portal.azure.com>

Azure Resource Manager

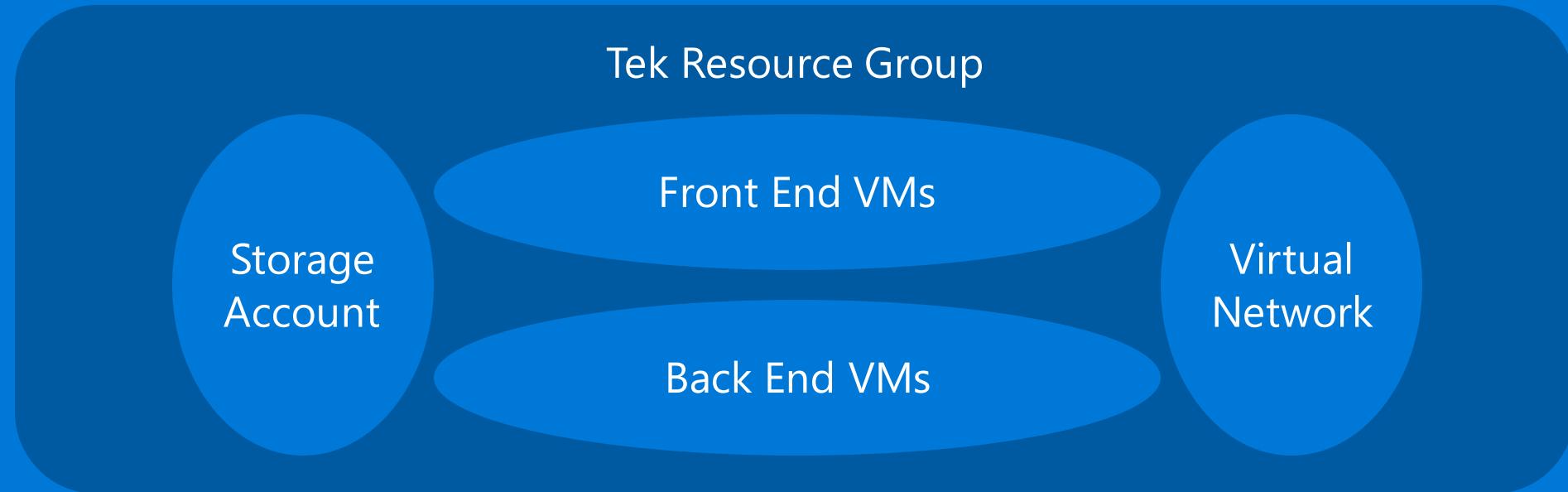
- JSON based service definition.
- Scriptable via PowerShell, .NET and other tools to provision services with specific settings.
- Repeatable!
- New Portal is ARM focused as well as RBAC enabled.

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

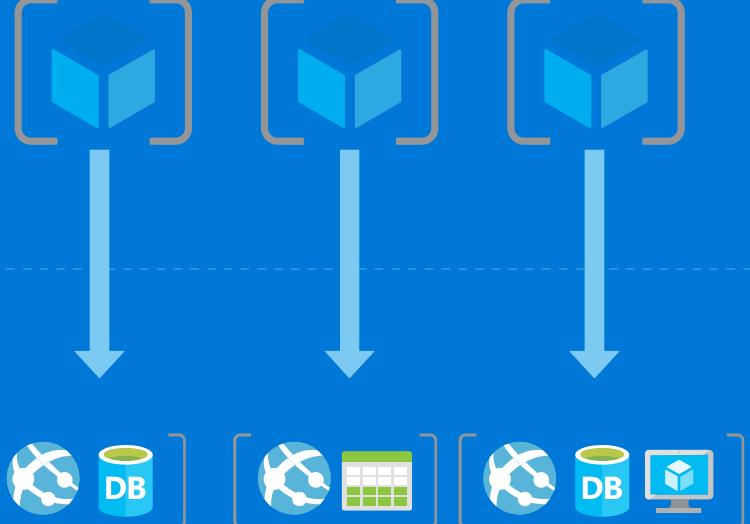
RG2:
Virtual
Network

Role Based Access Control

SUBSCRIPTION



RESOURCE GROUPS



RESOURCES



ACCESS INHERITANCE



CONTRIBUTORS

AAD USER(S)

OWNER

AAD USER



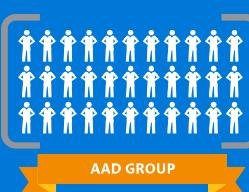
READERS



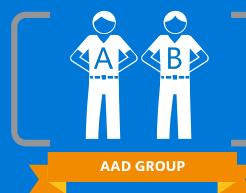
CONTRIBUTORS



OWNER



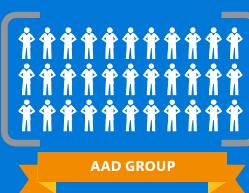
READERS



CONTRIBUTORS



OWNER



READERS

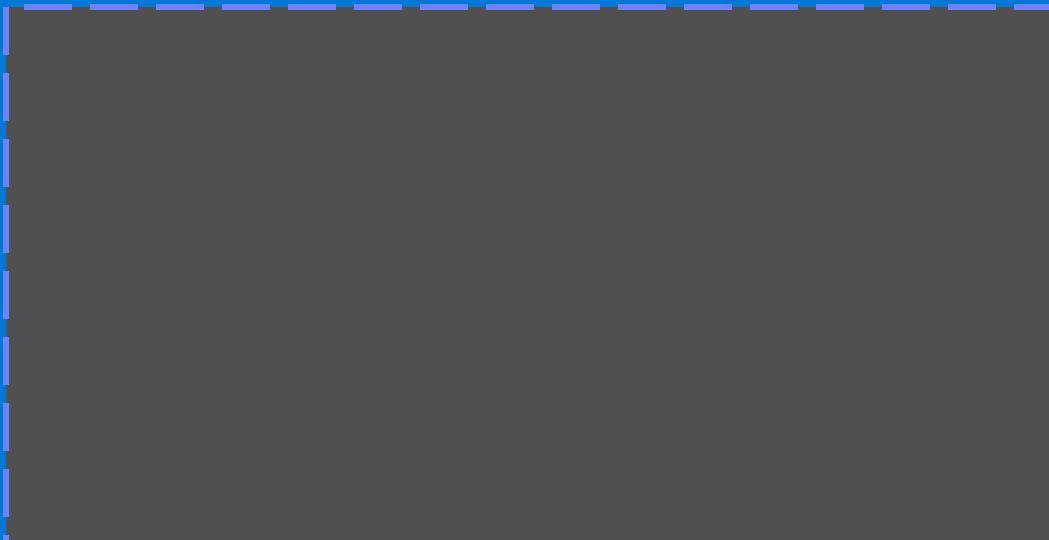
Örnek: ARM kaynak yapısı

Microsoft Azure Subscription

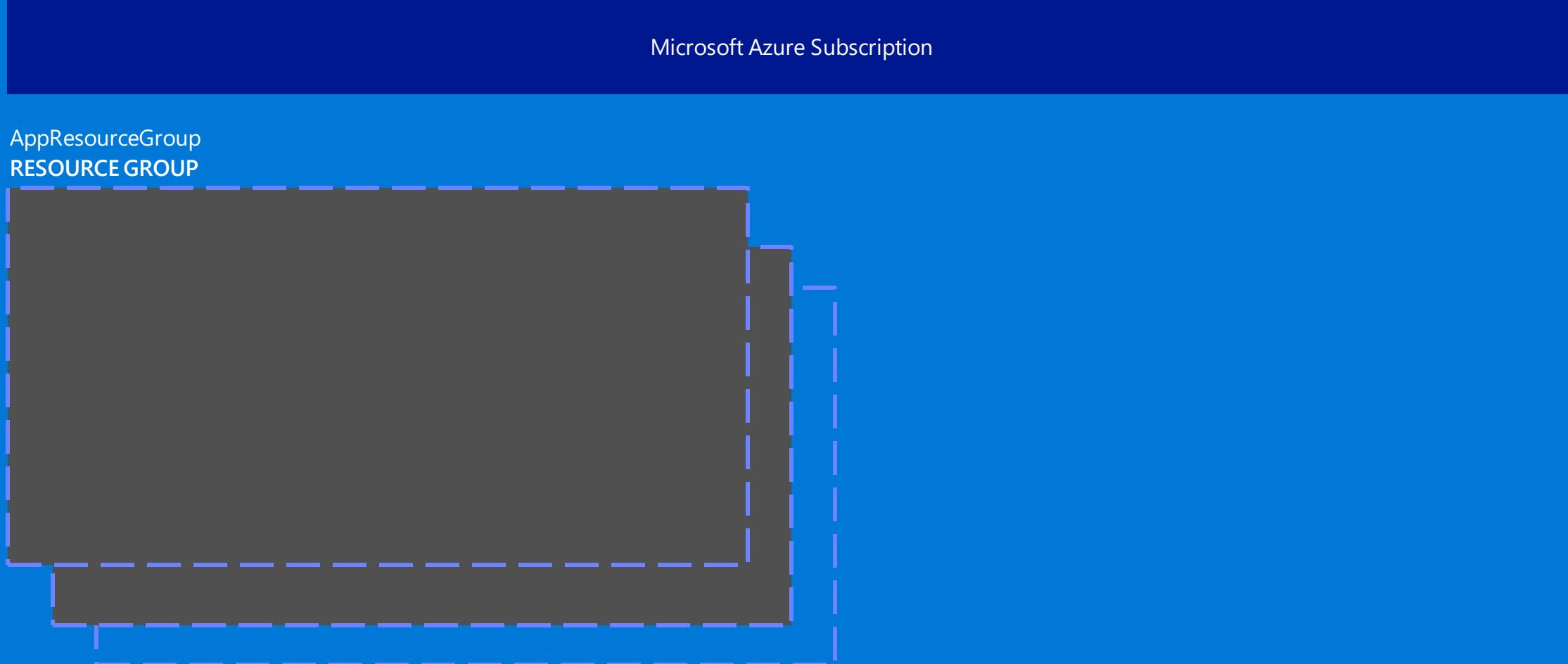
Örnek: ARM kaynak yapısı

Microsoft Azure Subscription

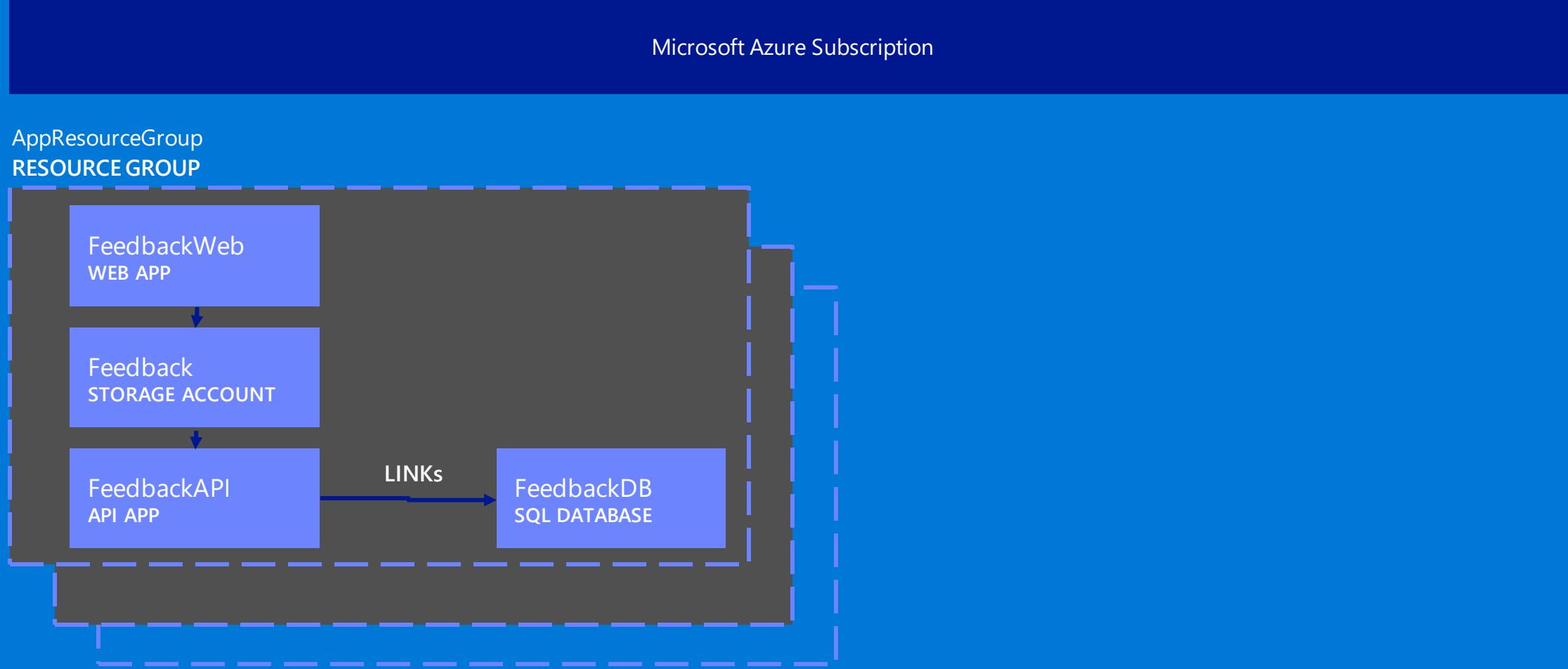
AppResourceGroup
RESOURCE GROUP



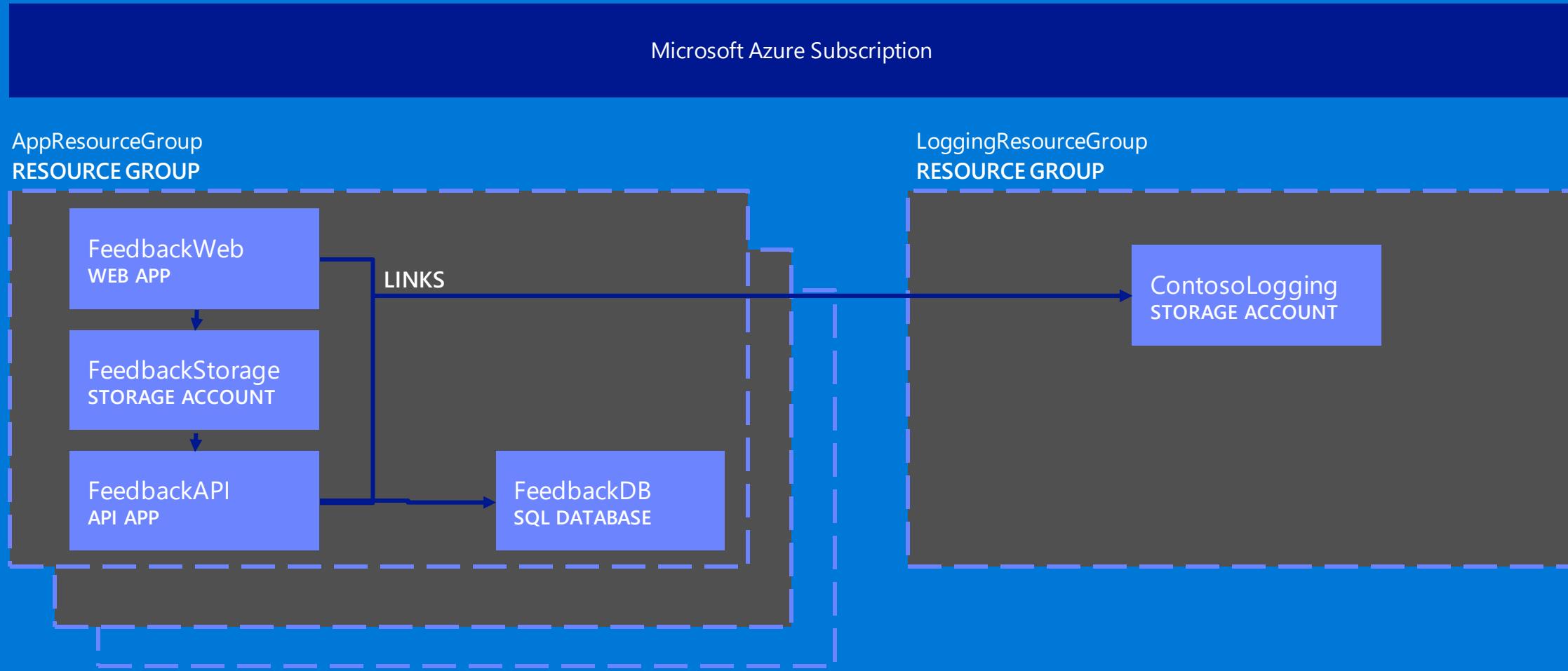
Örnek: ARM kaynak yapısı



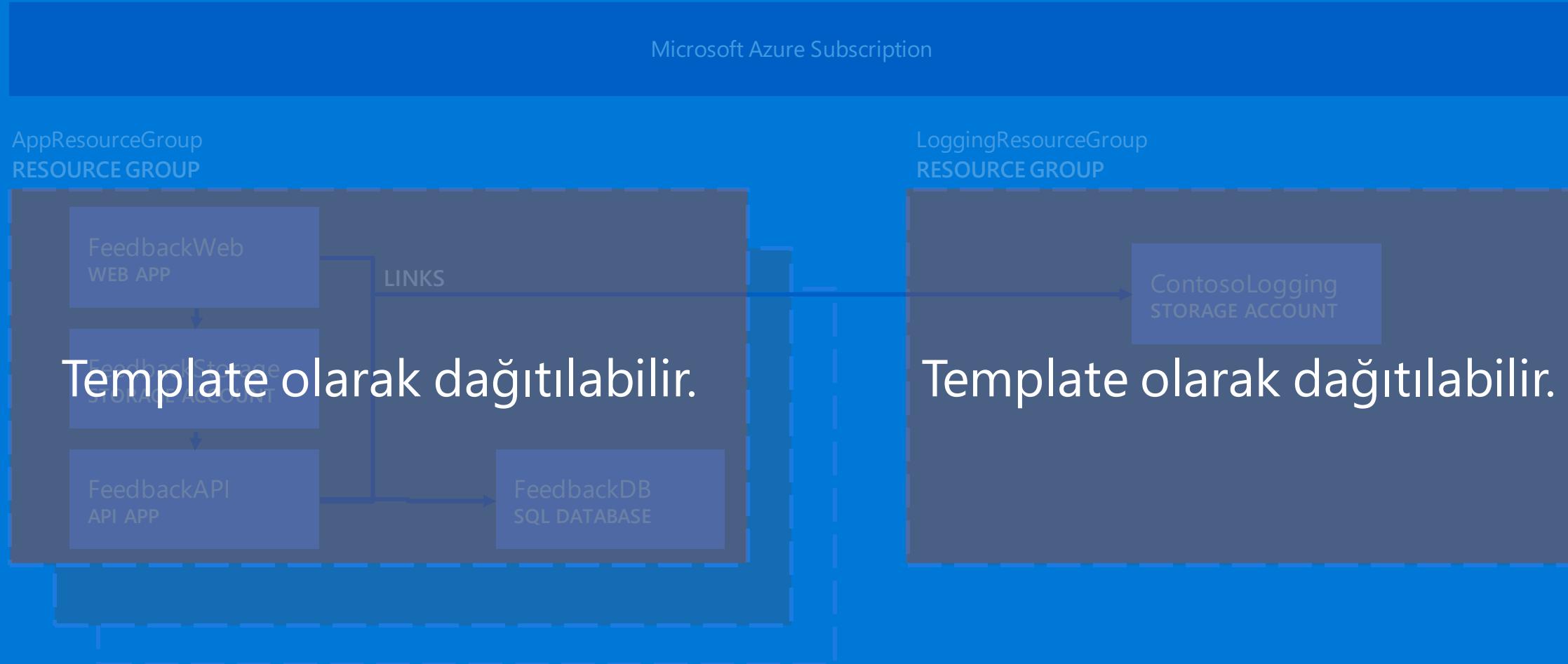
Örnek: ARM kaynak yapısı



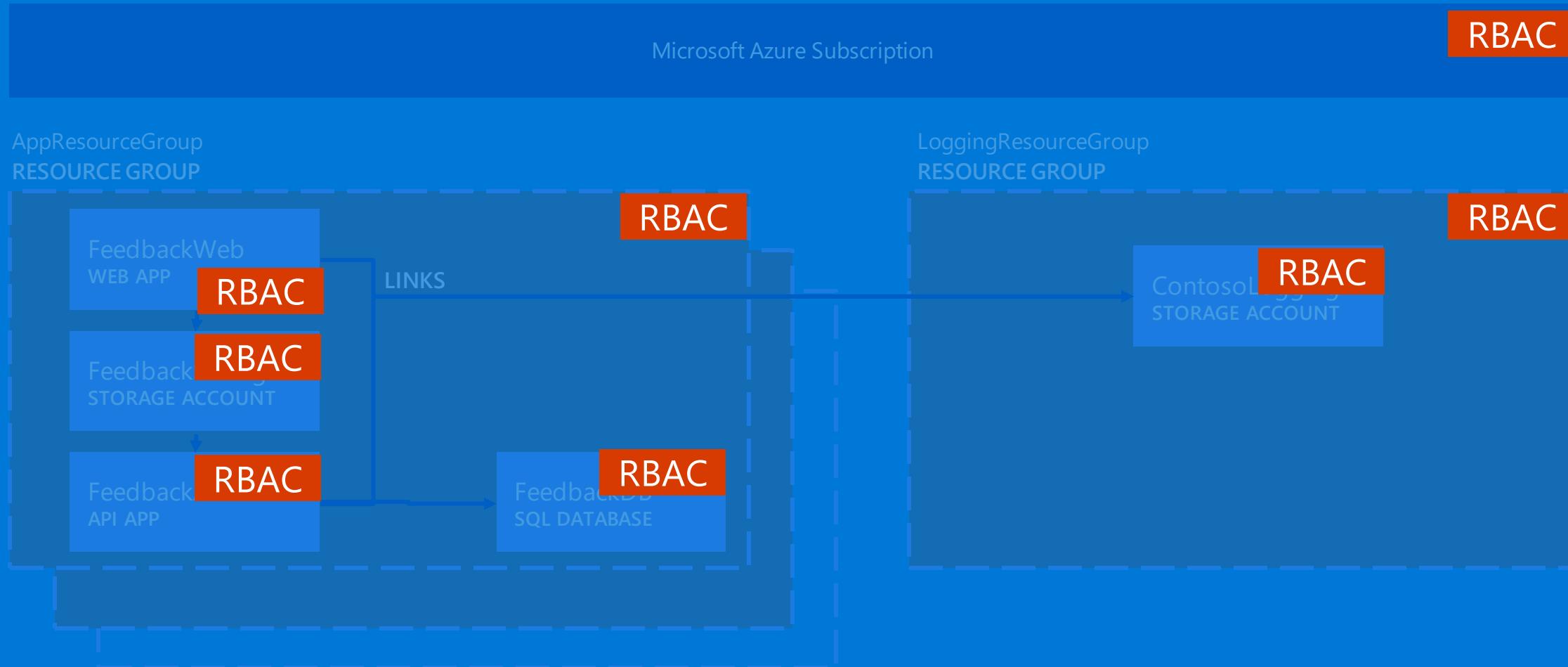
Örnek: ARM kaynak yapısı



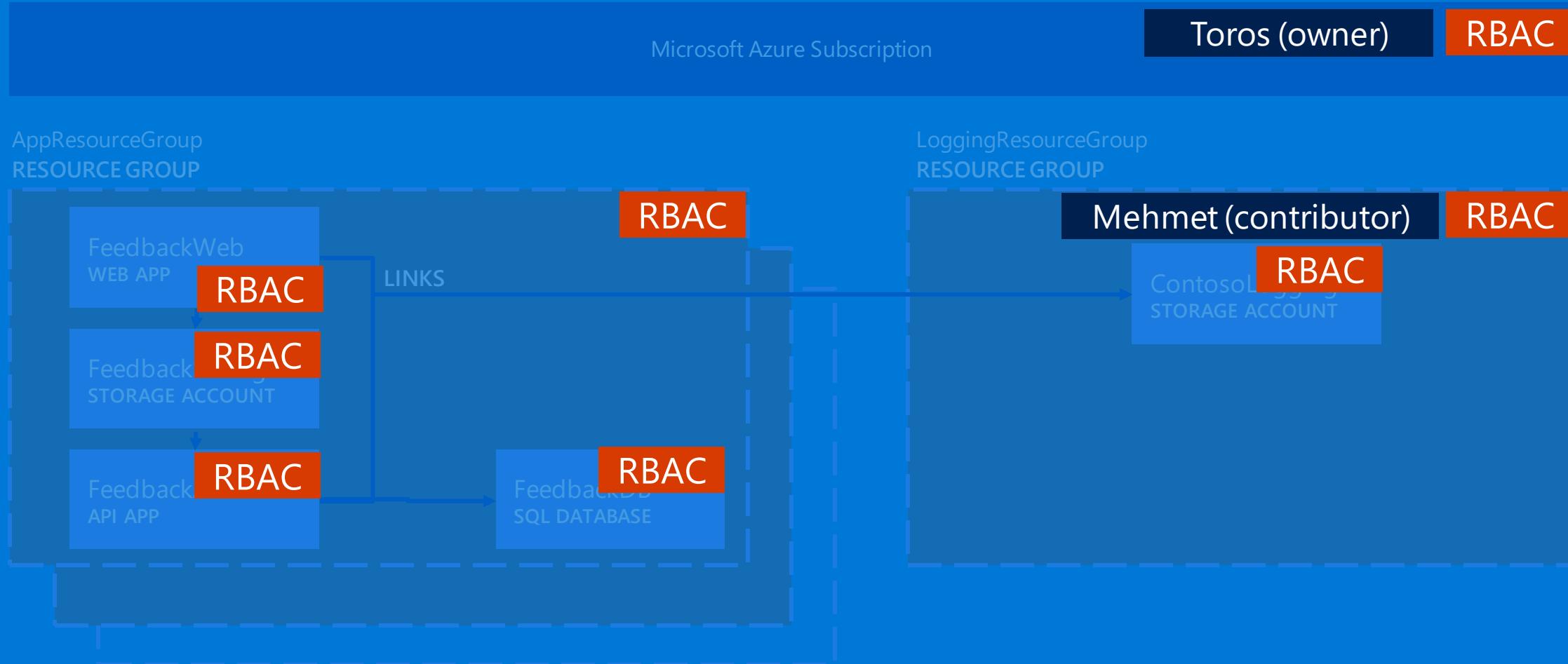
Örnek: ARM kaynak yapısı



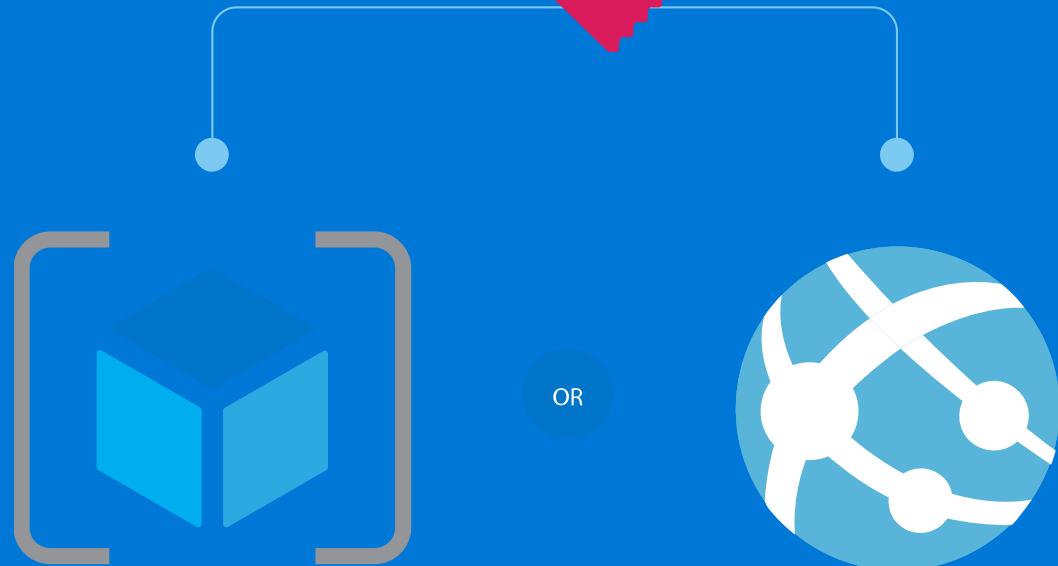
Örnek: ARM kaynak yapısı



Örnek: ARM kaynak yapısı



Resource Tags



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

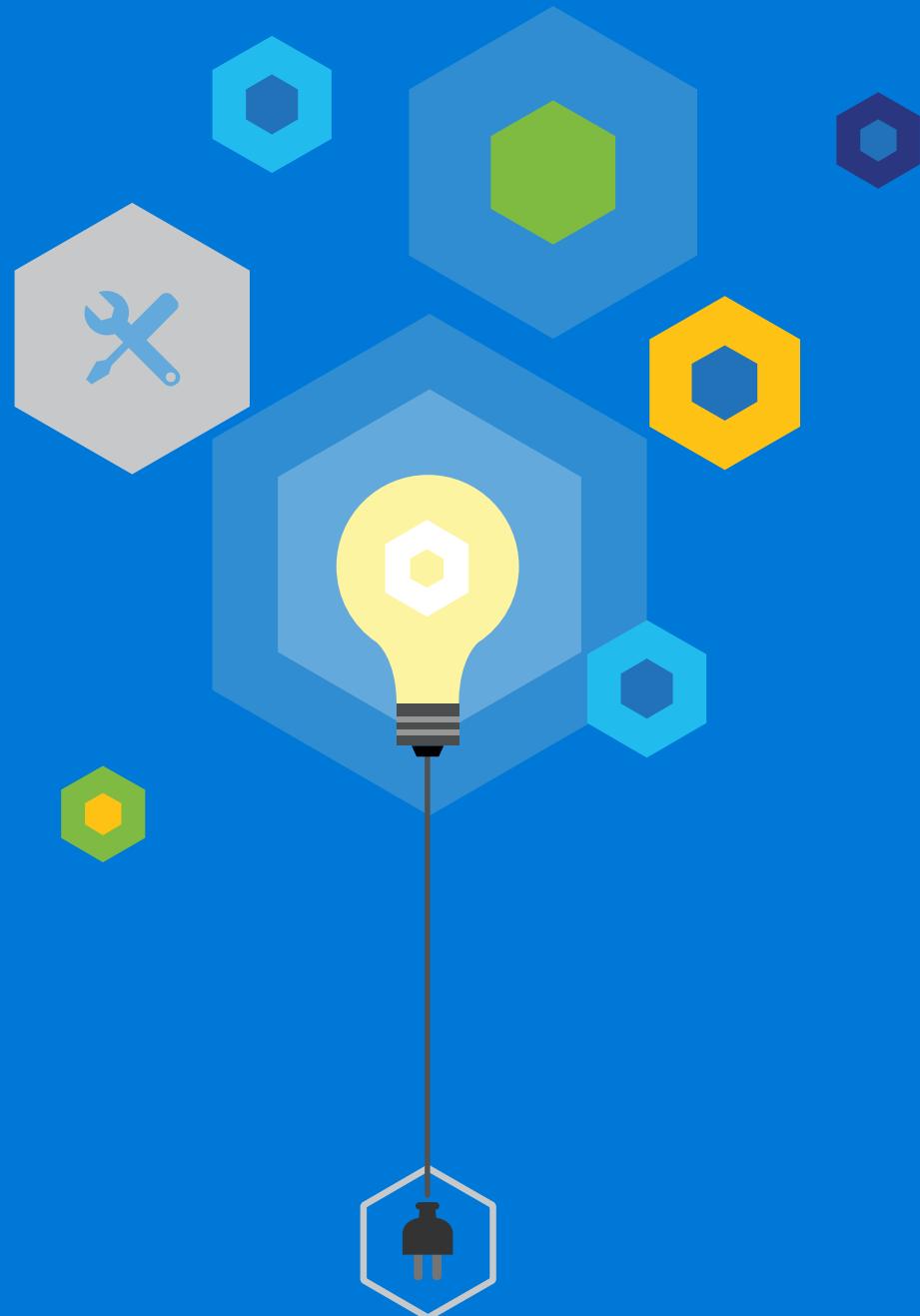
Taglama önerileri

- 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

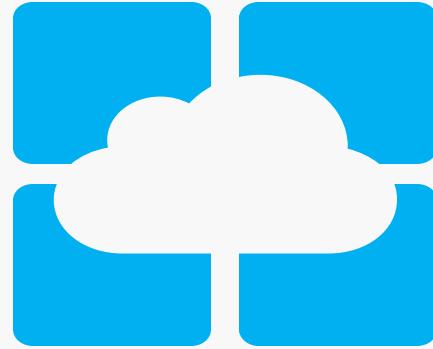
Hands On Lab

HOL 01 - Intro to Azure Portal

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



Azure App Service



Azure App Service

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



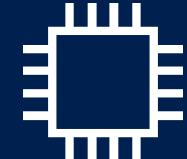
>9B

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

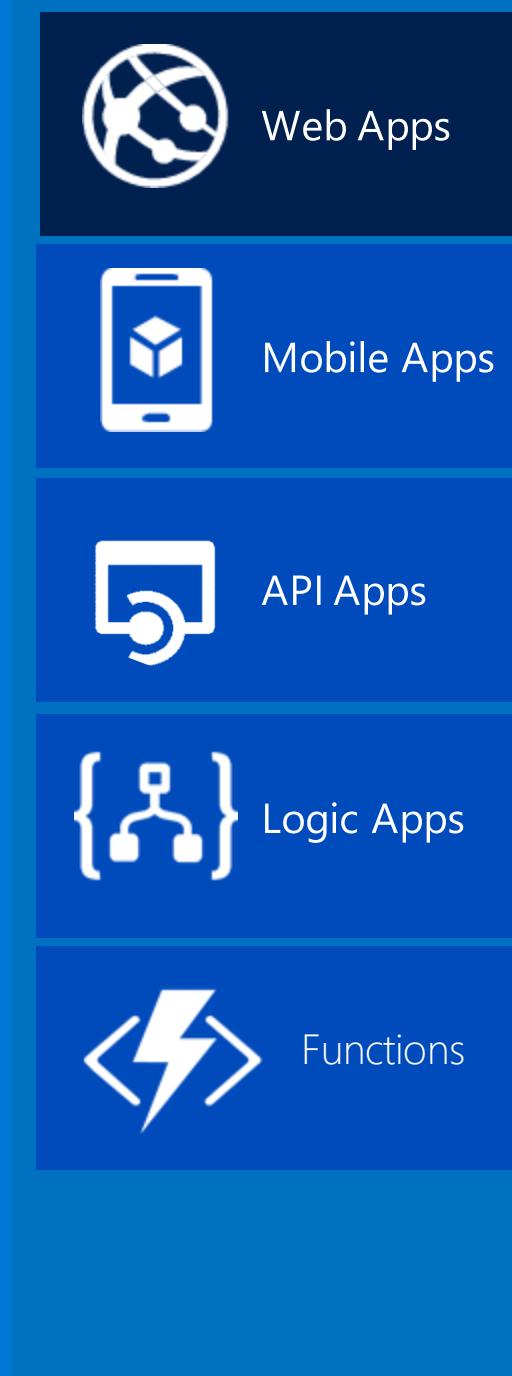
Web Farm Yapısına Uygunluk Gereksinimi

- 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



ISO/IEC 27018



PCI-DSS



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

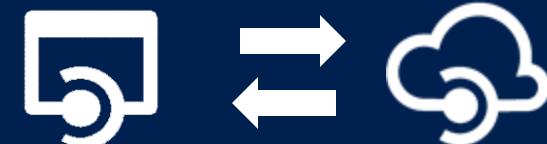


Power Apps



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



BizTalk
Server
Connector

Automate EAI, B2B/EDI, and business processes



{JSON}

Flatfile



AS2/X12/
Edifact

Format conversion

Enterprise messaging

B2B

Enhance integration solution with Azure services



Functions



API
management



Cognitive
services



Machine
learning

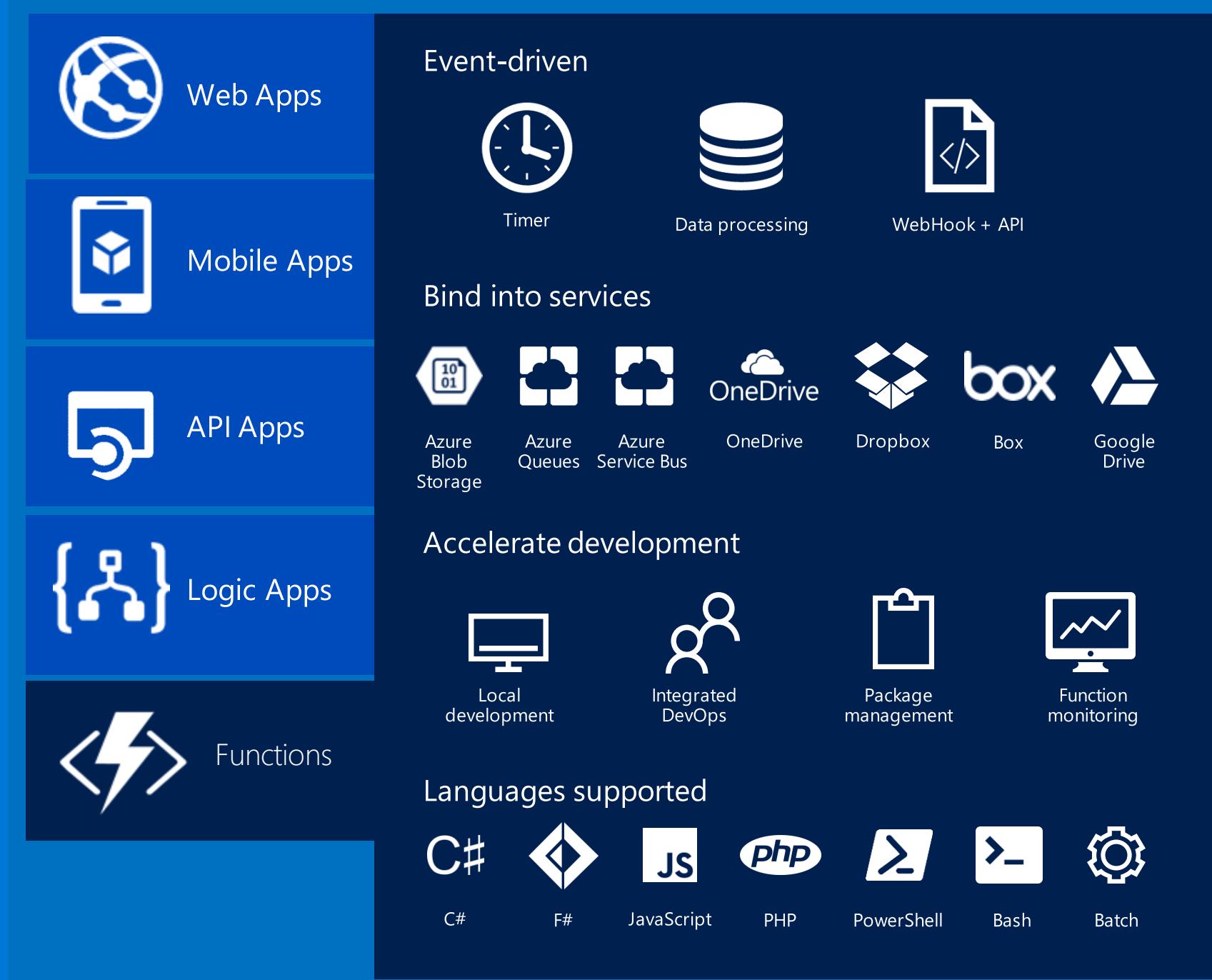


Blob
storage



SQL
database

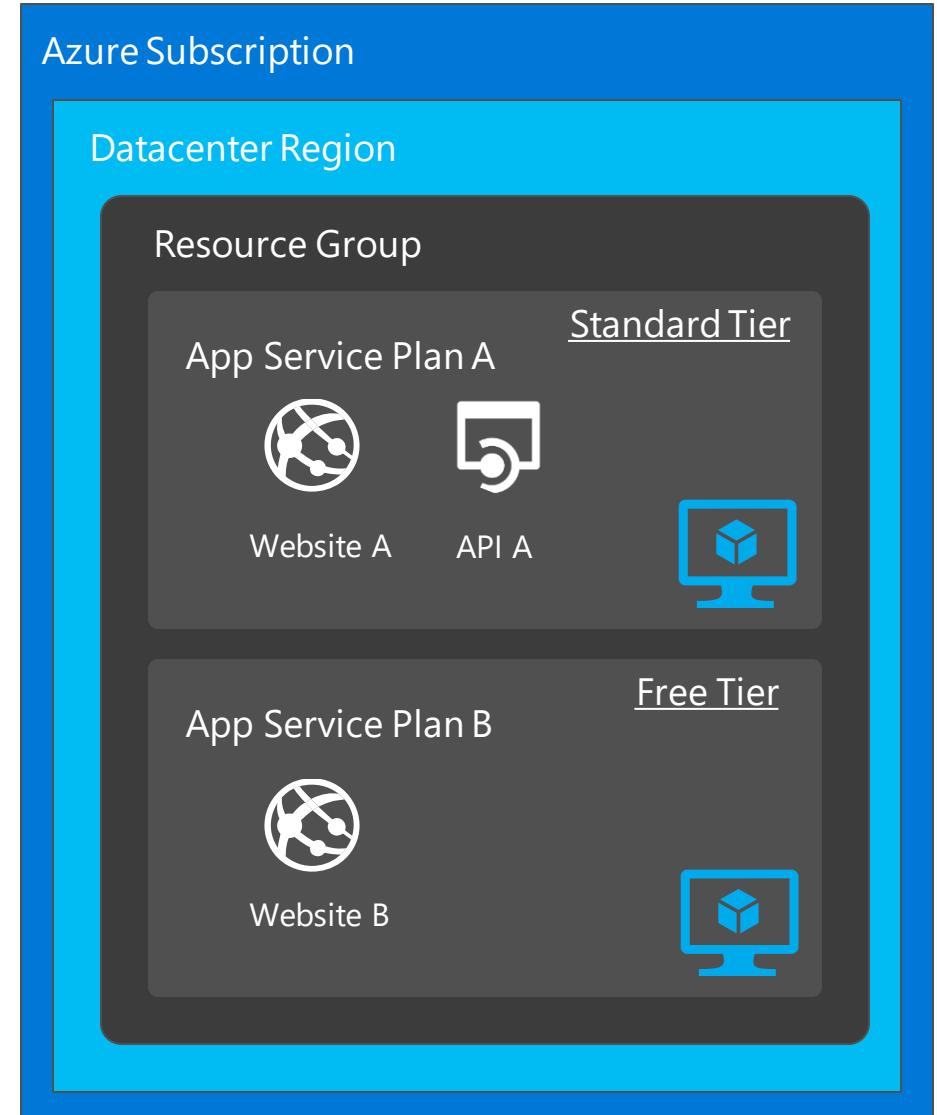
App Service



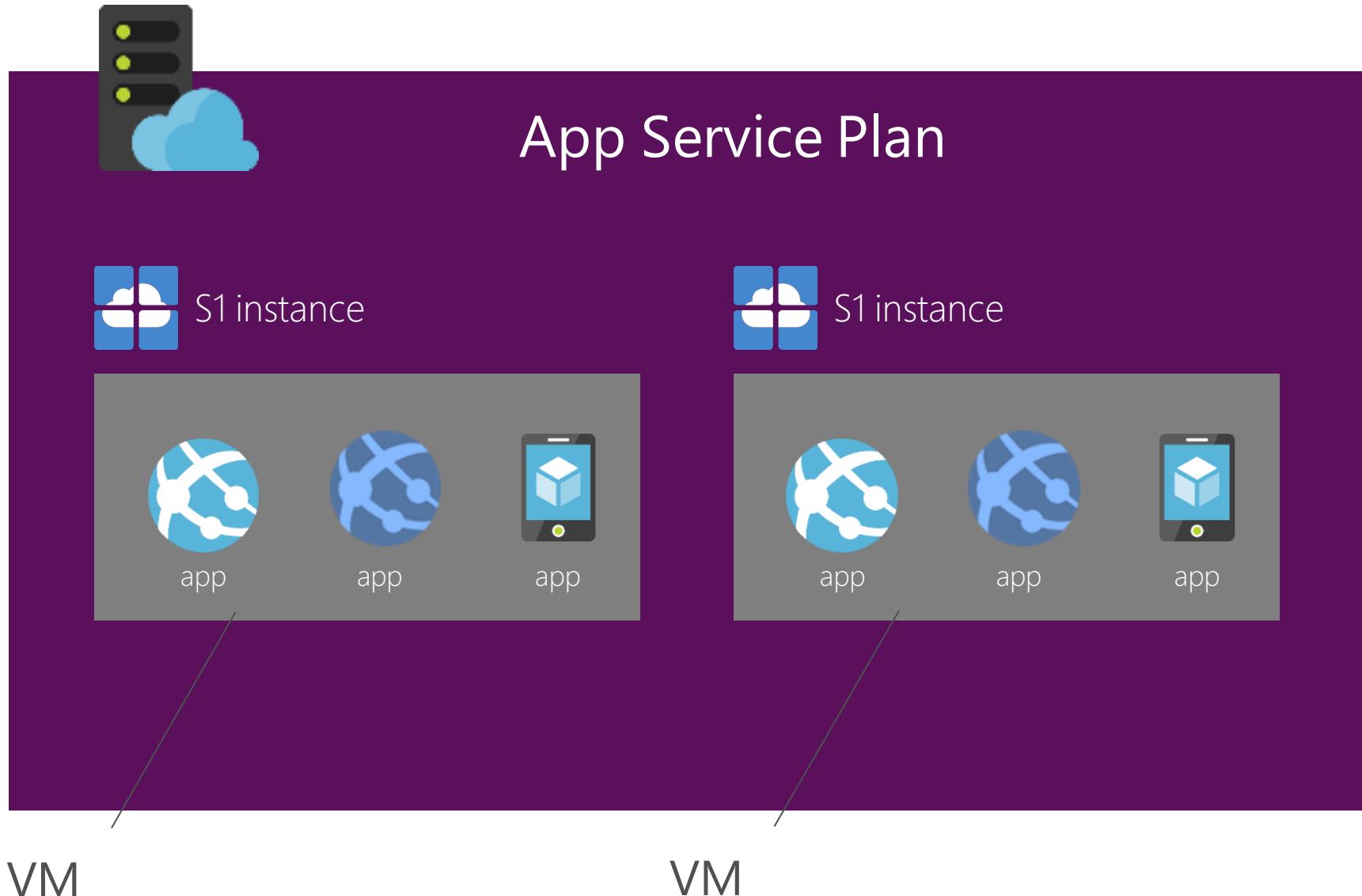
Azure App Service Plan

App Service Plan

- Bir webapp sadece **bir app service plan** içerisinde bulunabilir.
- Aynı service plan içerisinde bulunan webapp ler Azure üzerinde **aynı kaynaklar** üzerinde çalışır.



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

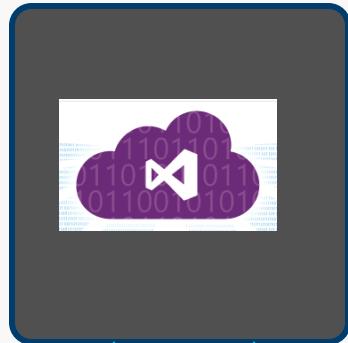
Build and scale great web apps





Web Apps

2) Code Repository



3) Build



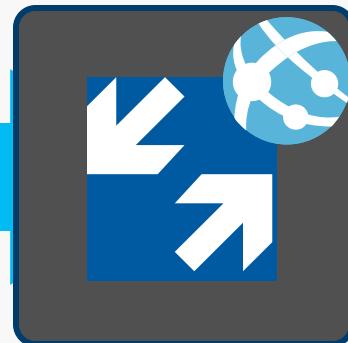
4) Deploy to stage



5) Validate



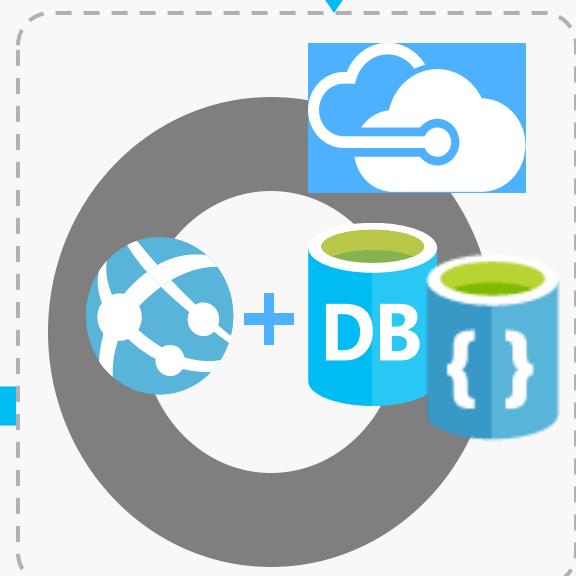
6) Publish



1) Develop



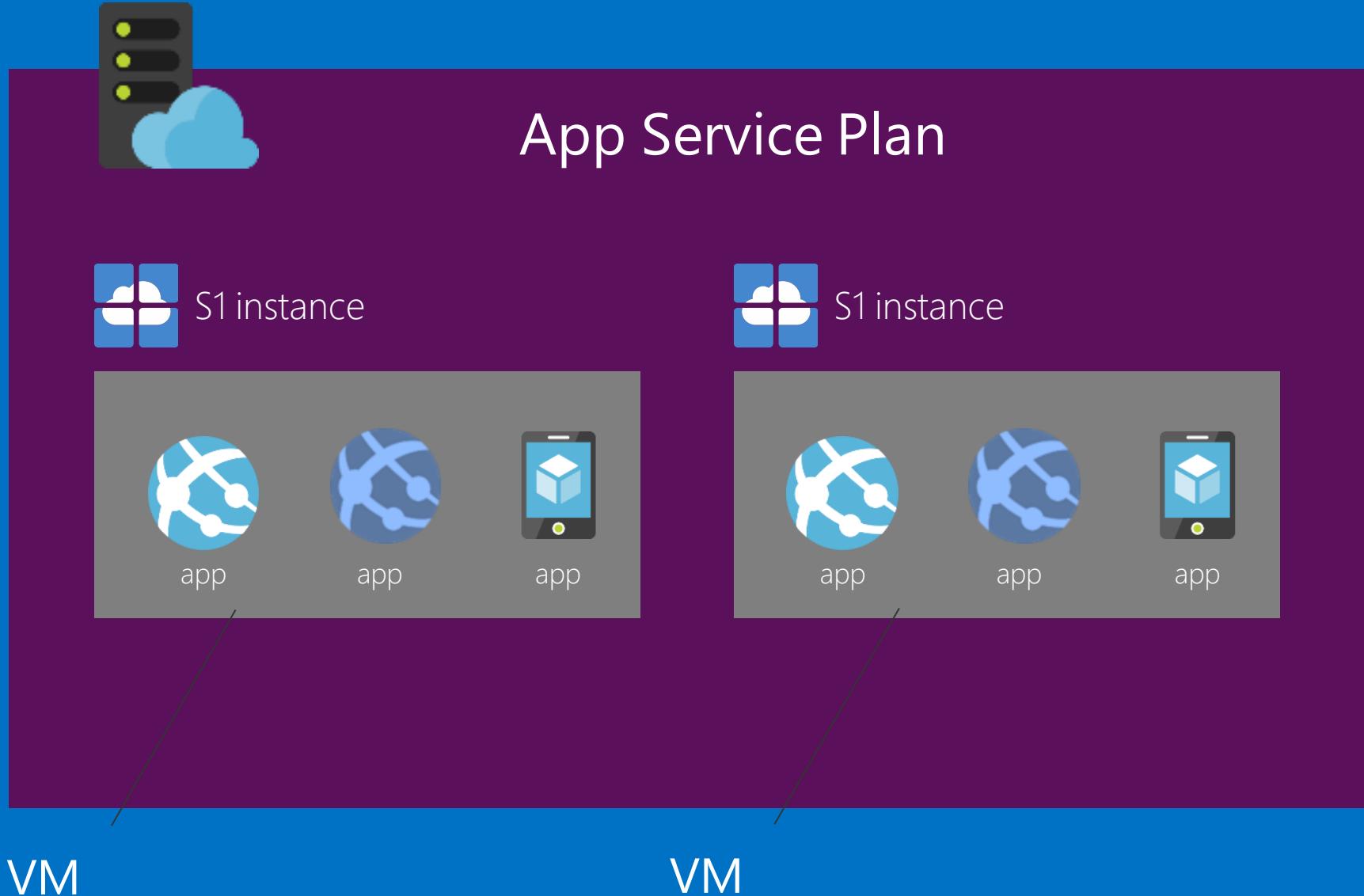
8) Monitor and Improve



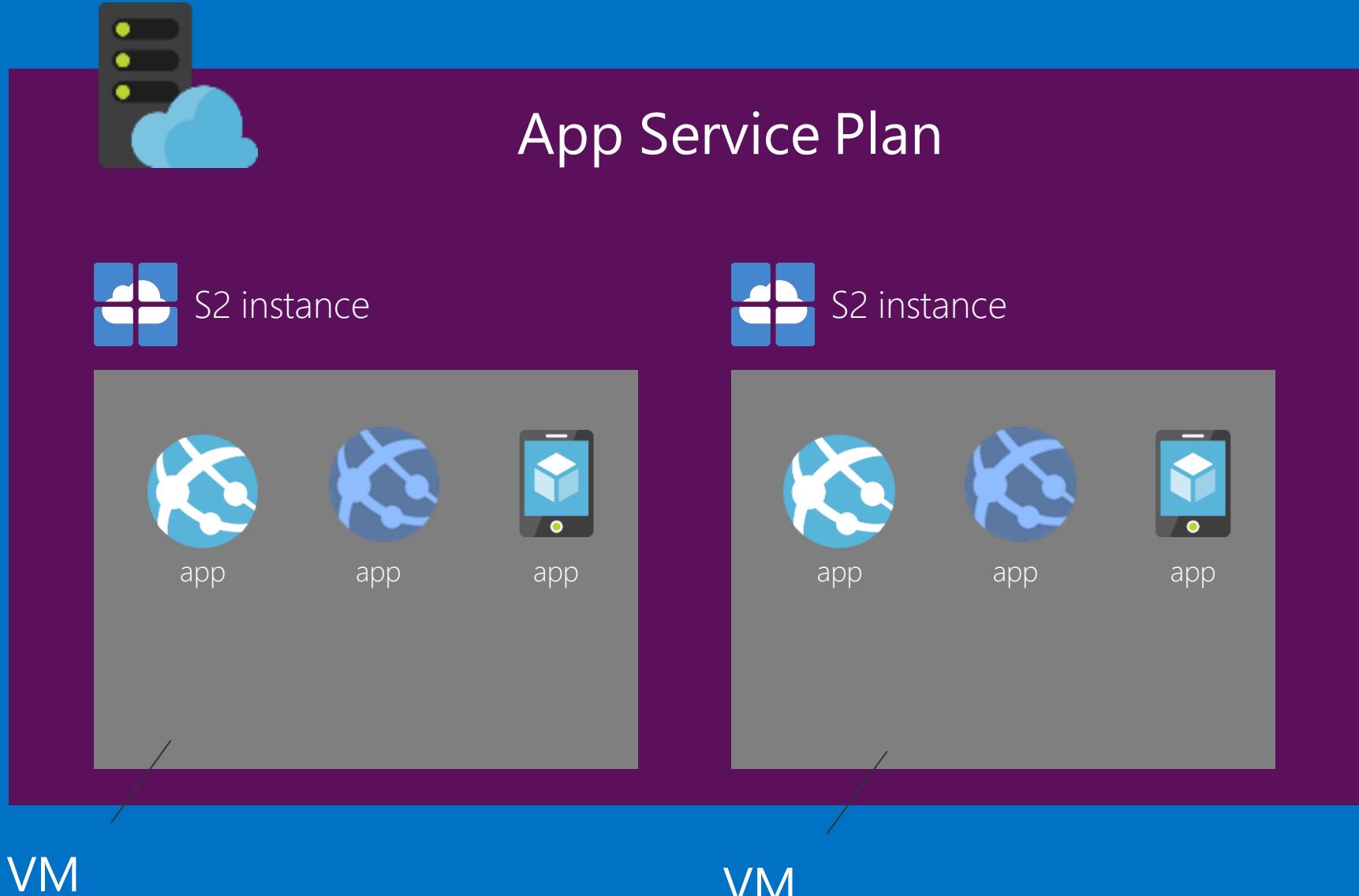
7) Deploy to Cloud

Instance Count 1  6 Instances





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

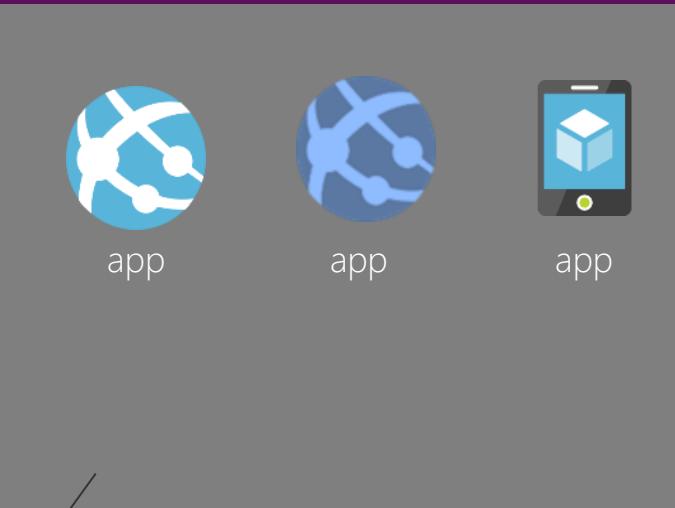


Price tier: Standard
Compute Resource: S2
Scale: 3
Apps: running 3 apps

App Service Plan



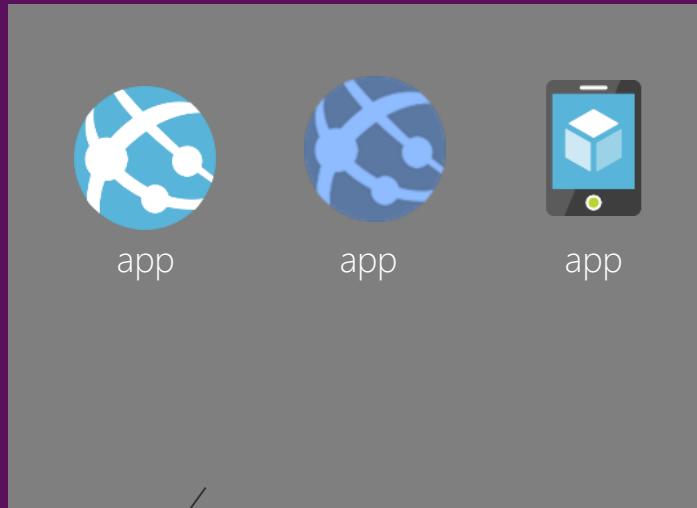
S2 instance



VM



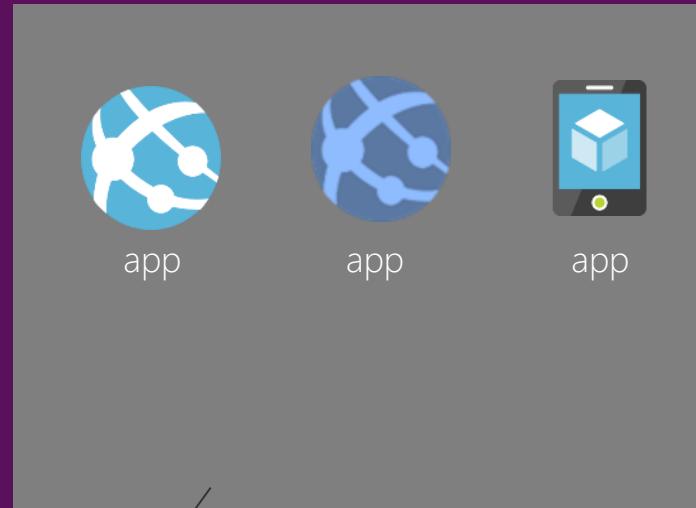
S2 instance



VM



S2 instance

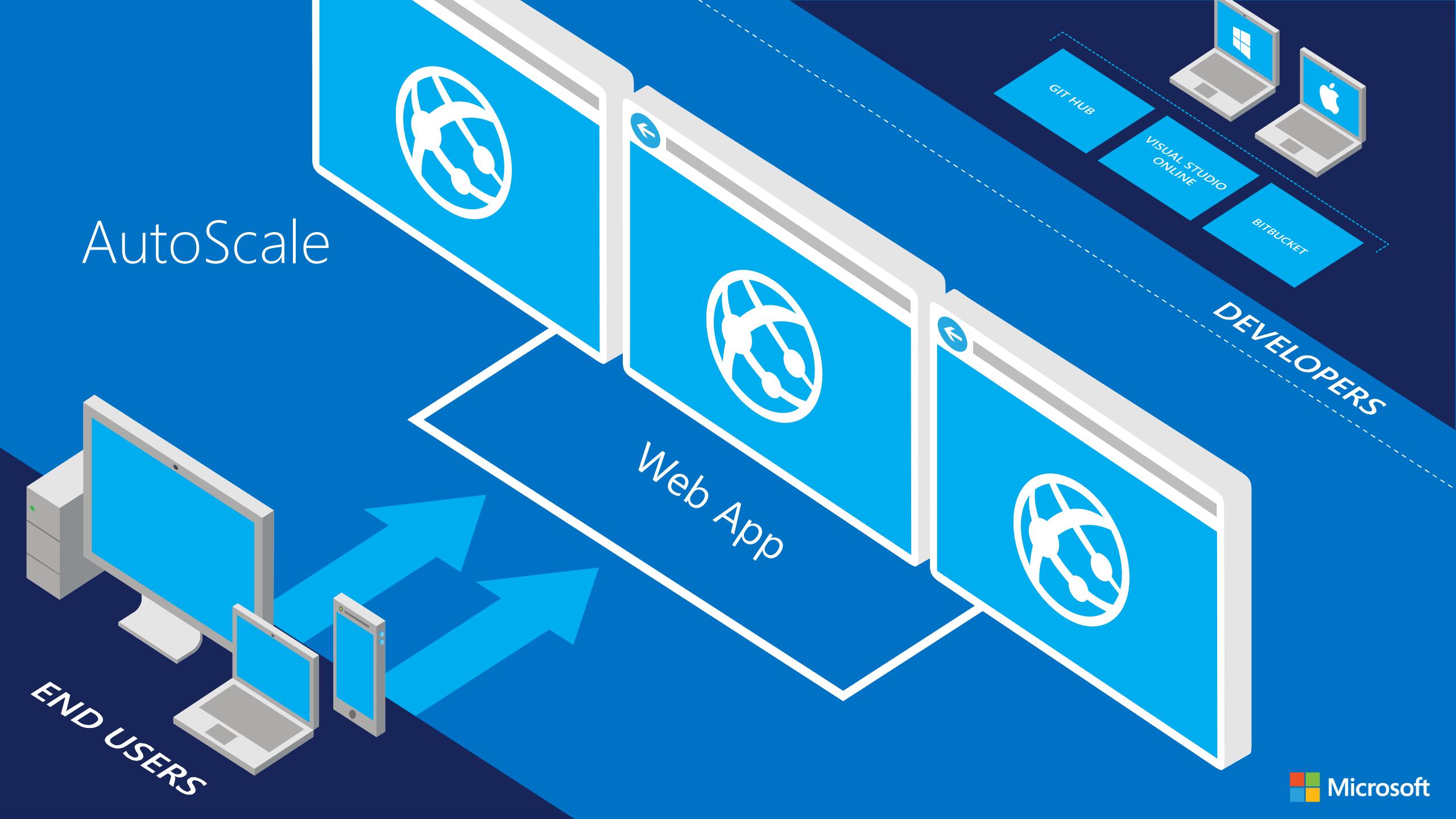


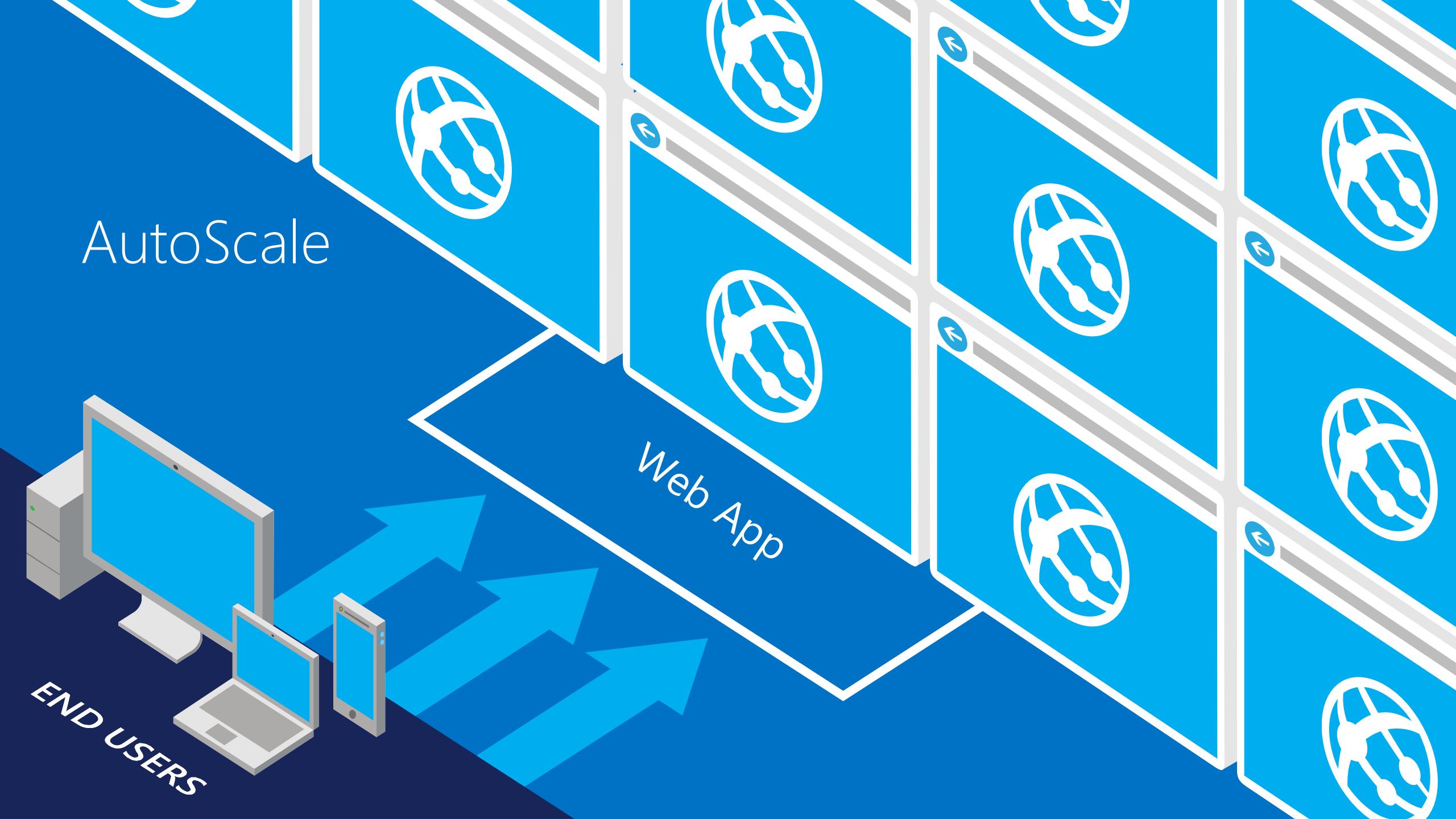
VM

 Microsoft

AutoScale



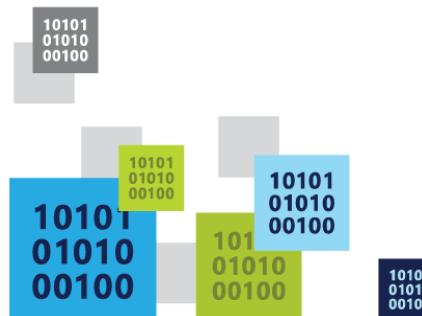




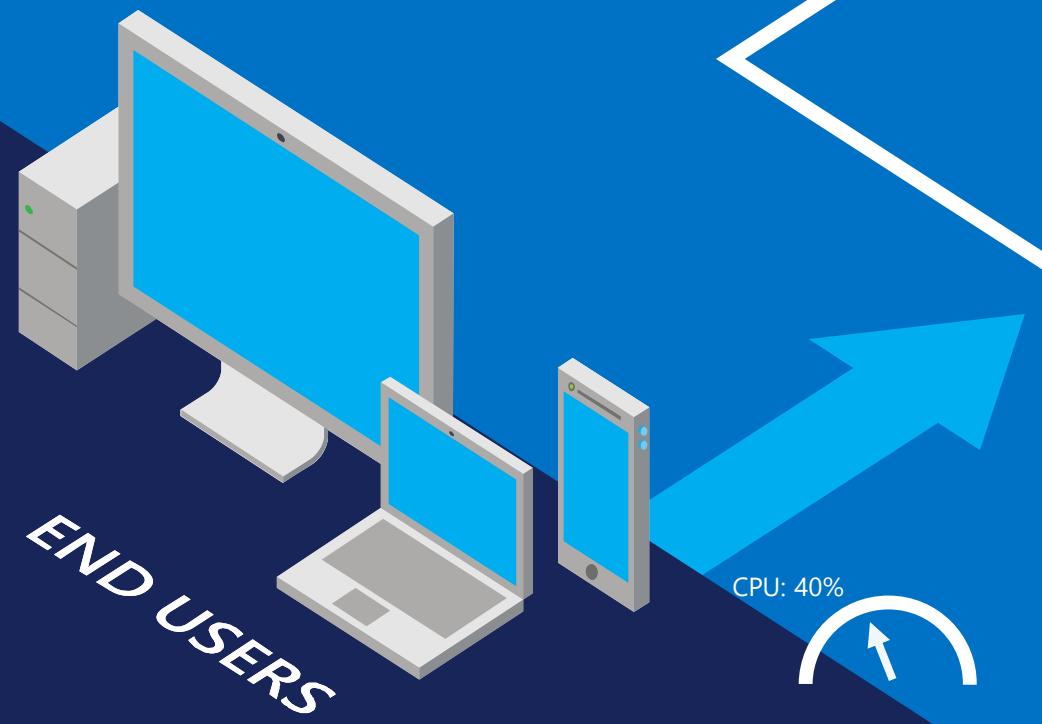
Auto-Scaling (Metrics)



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



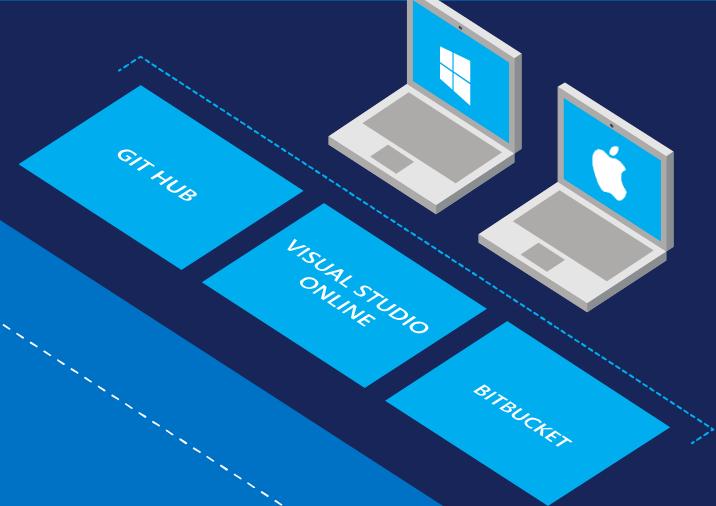
AutoScale Rule



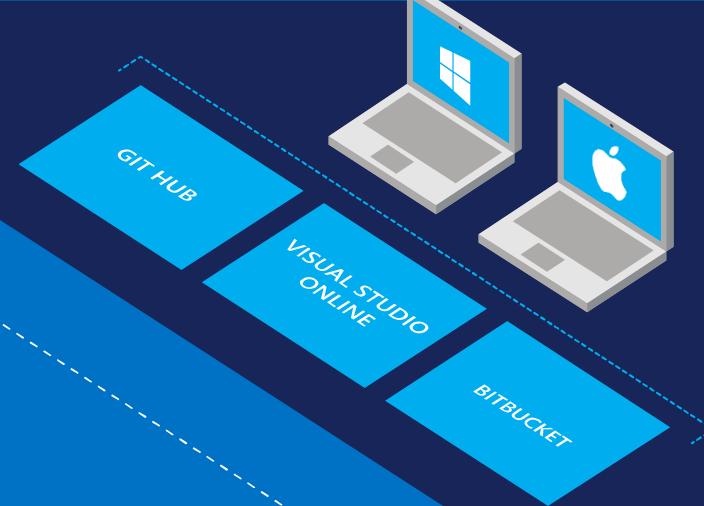
CPU: 40%



Web App



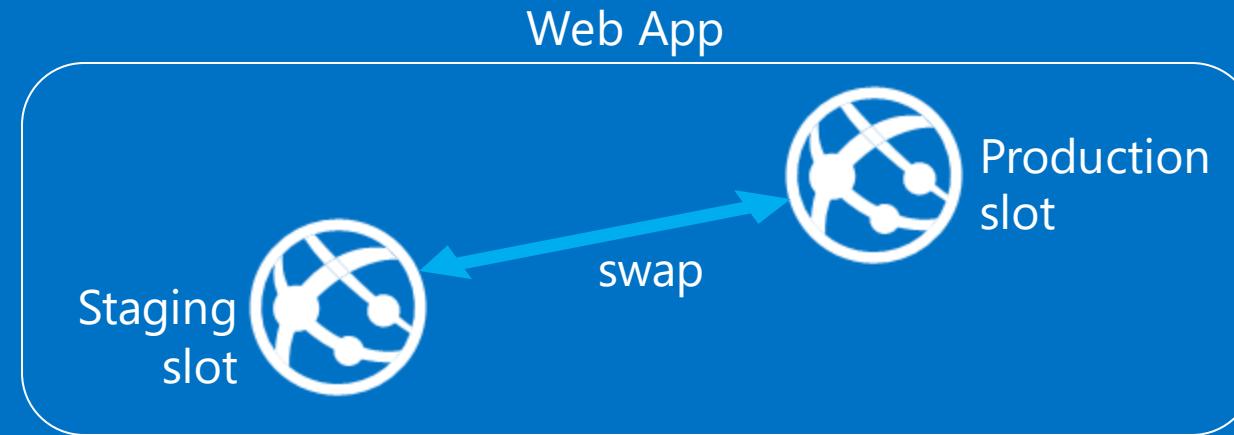
AutoScale
Rule



DEVELOPERS

Deployment Slots

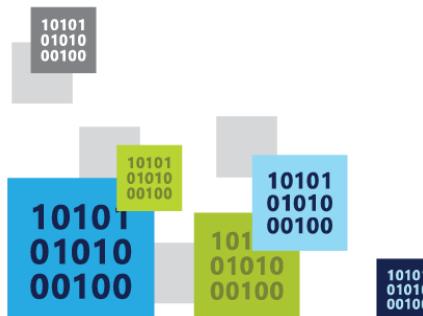
Bir Web App. Birden çok deployment.



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

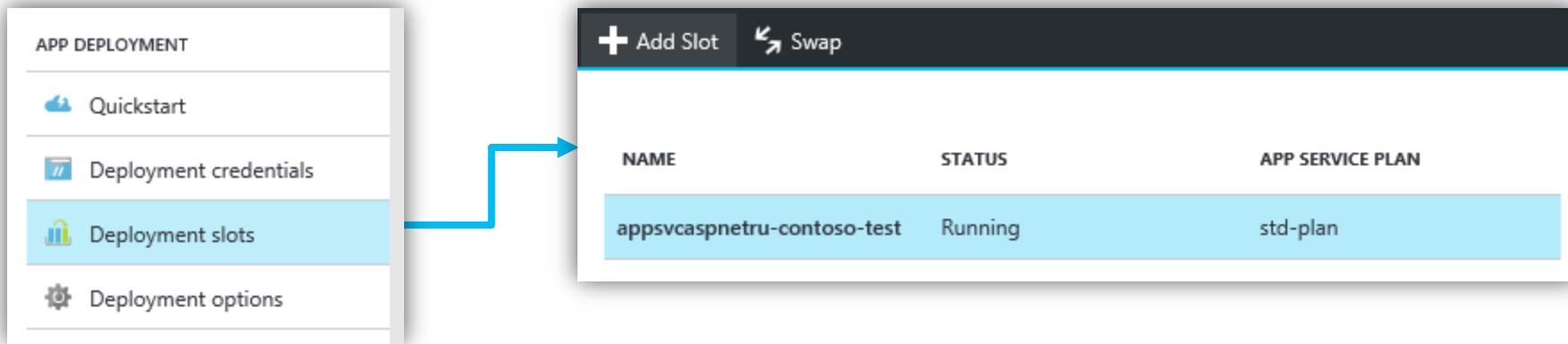
İki slot arasında swap işlemi nerdeyse anlık.

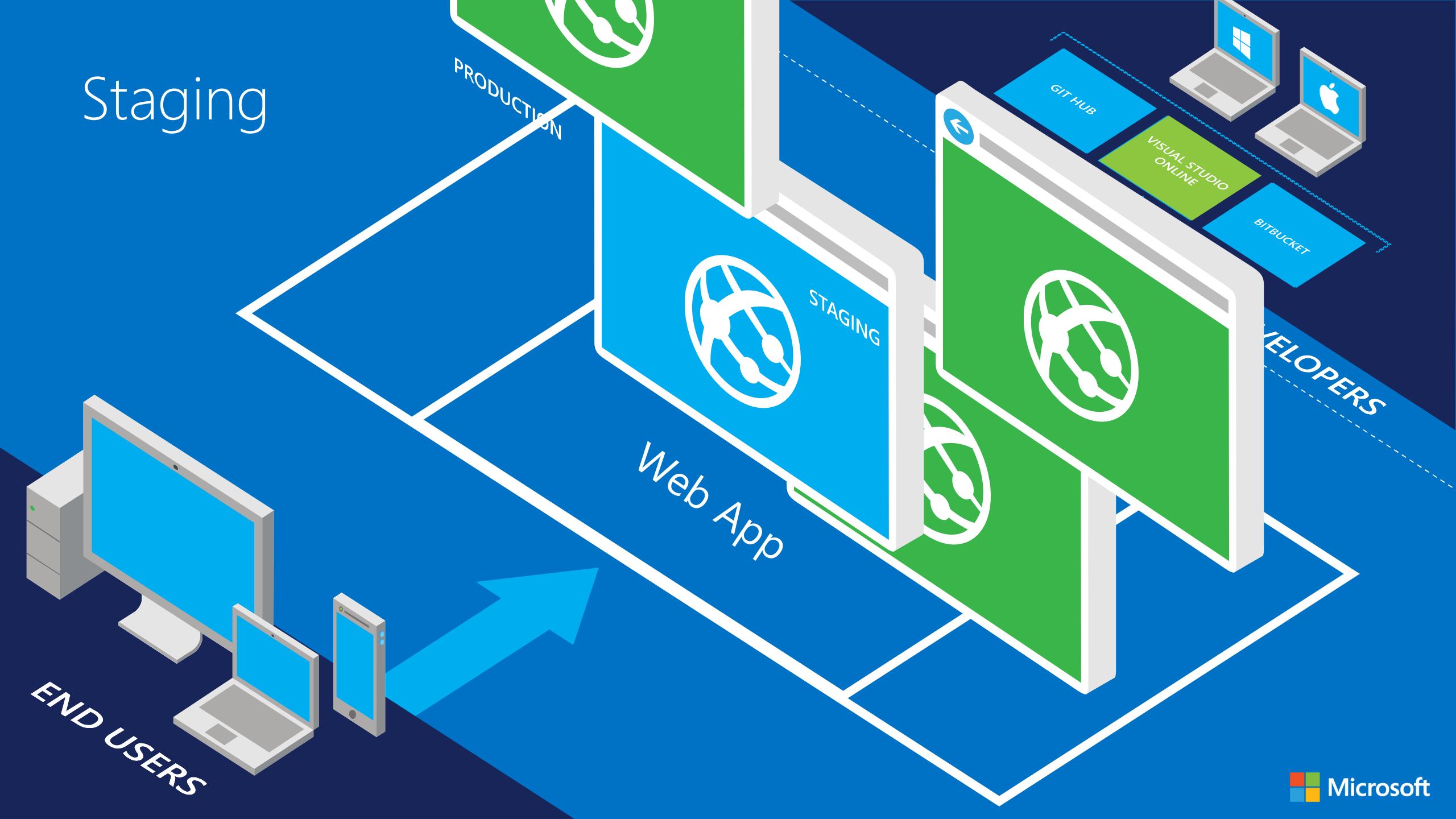
İhtiyaç halinde uygulamayı çalışan son hale geri getirebilme.



Deployment Slots

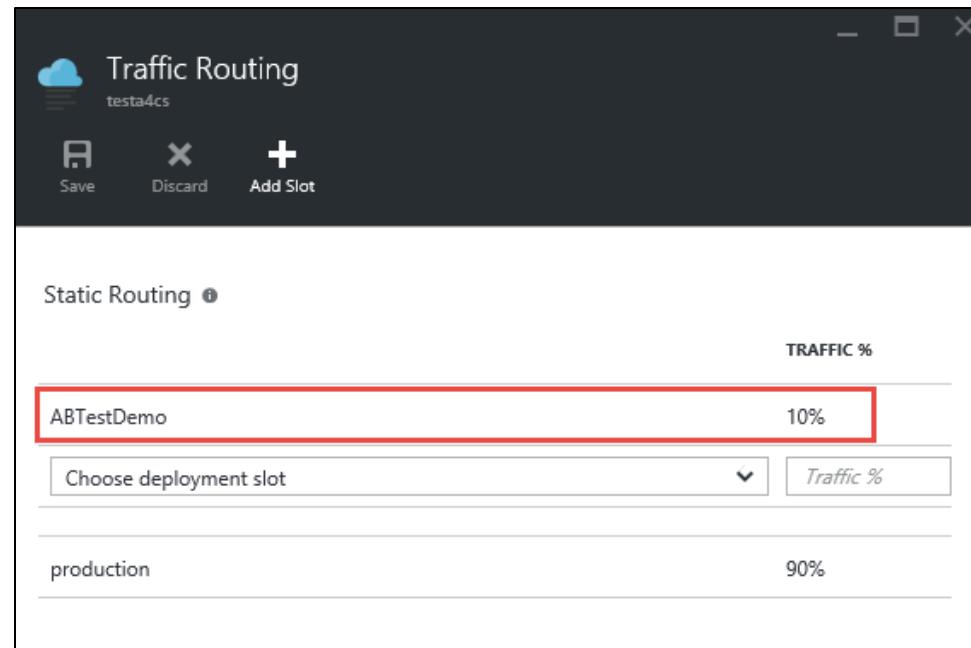
- Asıl (production) web app'a bağlı olan ayrı bir web app. Aynı app service plan üzerinde çalışırlar.
- Her slot kendine özel bir URL'e sahiptir.





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 3rd party source-control providers



Git



Visual Studio
Team Services



GitHub

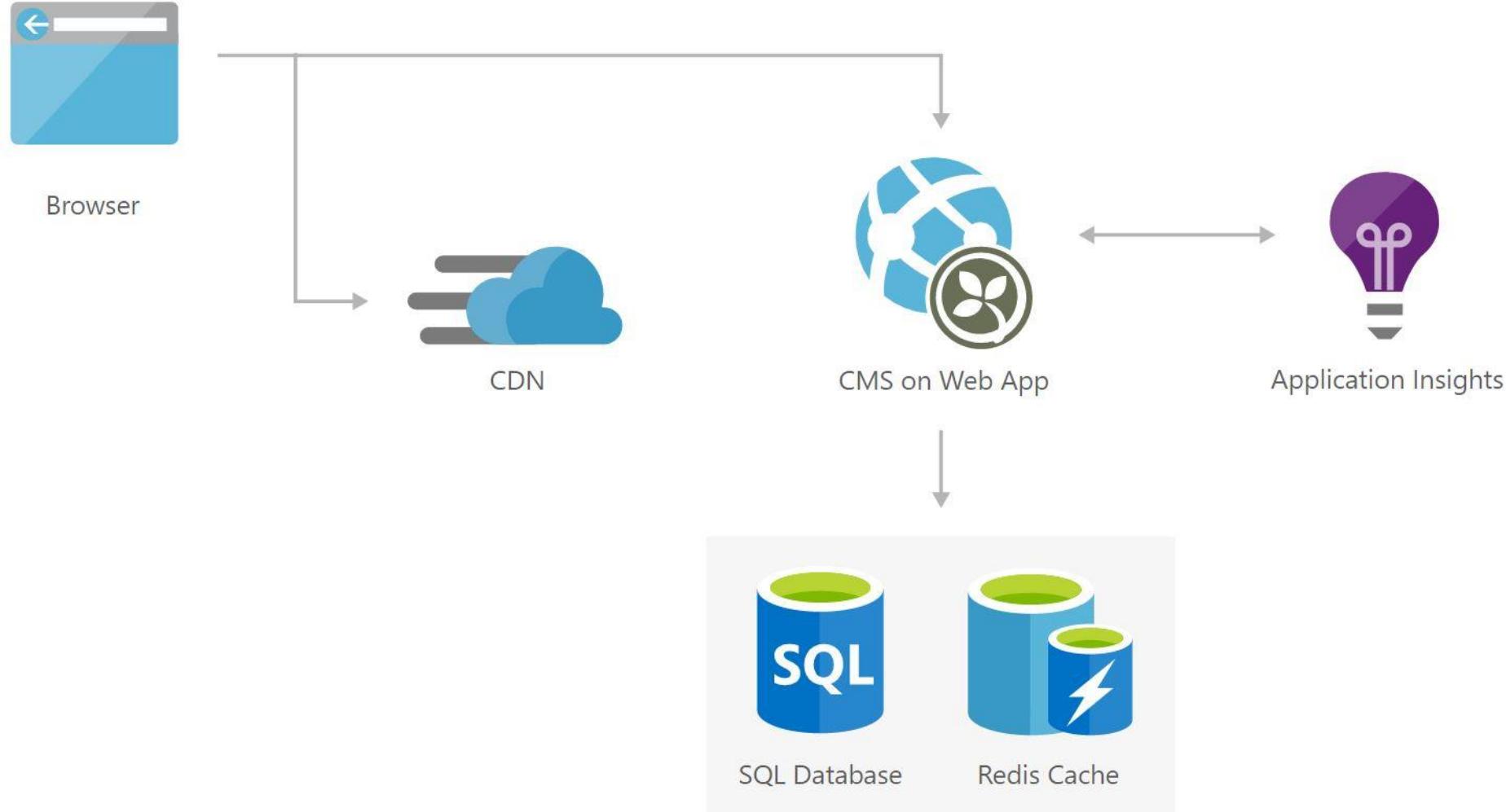


BitBucket



DropBox

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



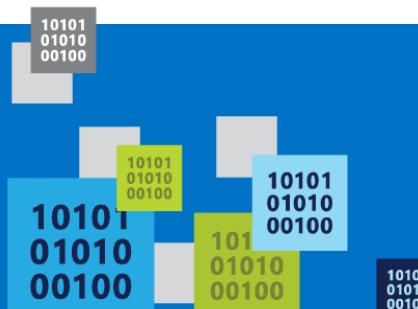
run.js

Job Type: On-Demand, Scheduled, Continuous

Scale: Singleton, Multi-instance

WebJobs SDK Feature: BlobTrigger, TableTrigger, QueueTrigger, ServicebusTrigger

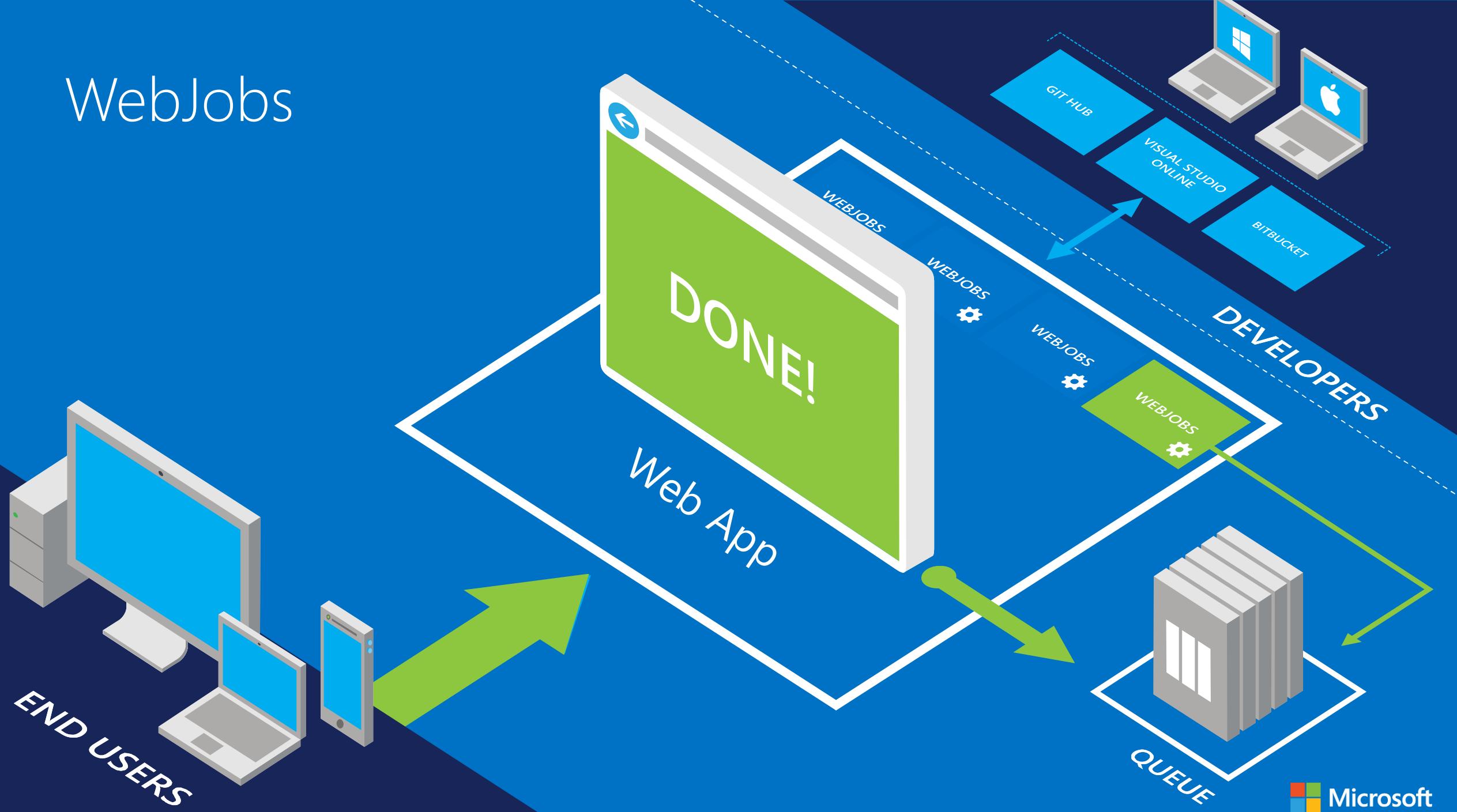
Deployment: Portal, Visual Studio, CLI, Git



WebJobs



WebJobs



Hands On Lab

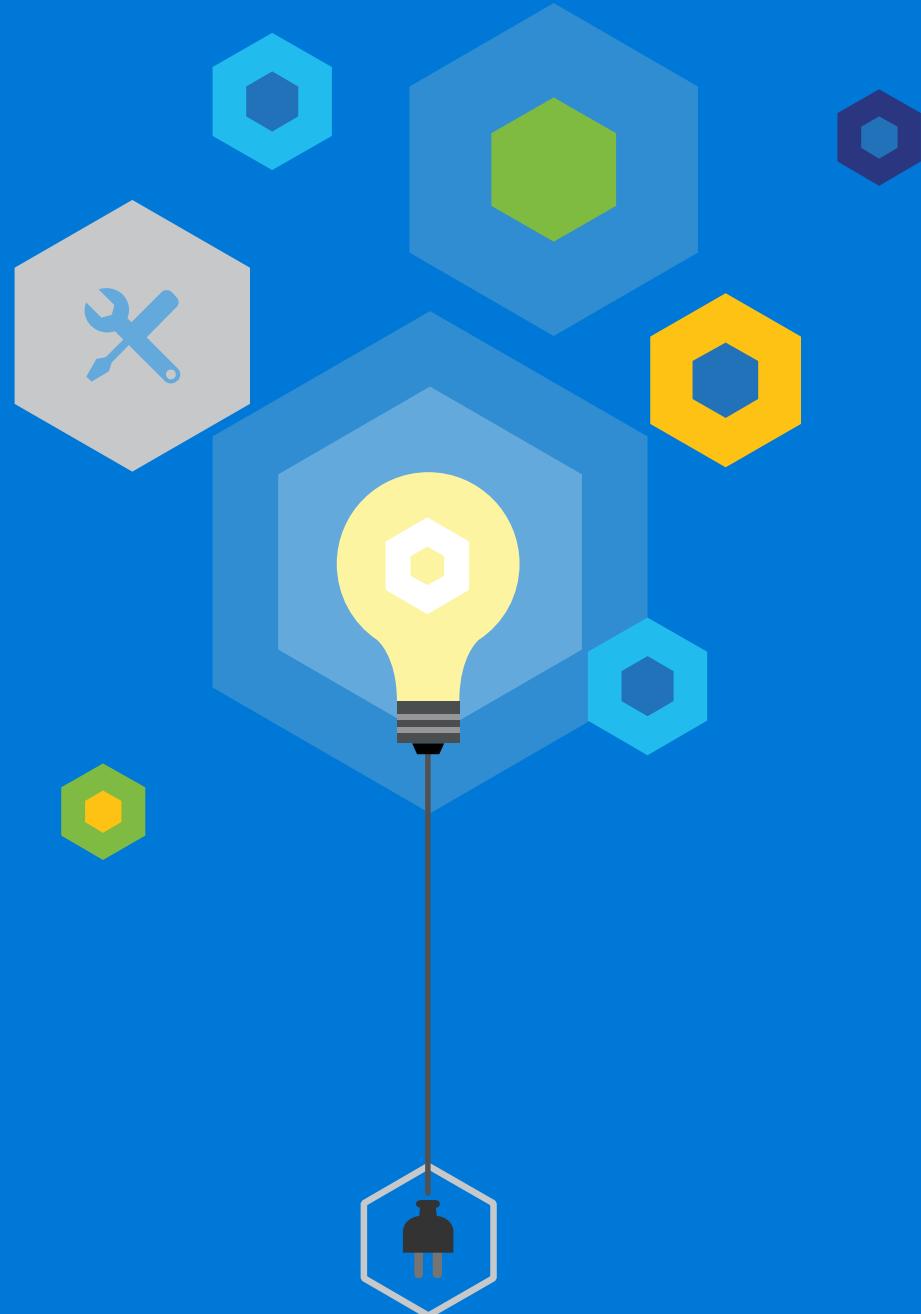
HOL 02.1 - Azure Web Apps

- 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
*API Management**
Traffic Manager

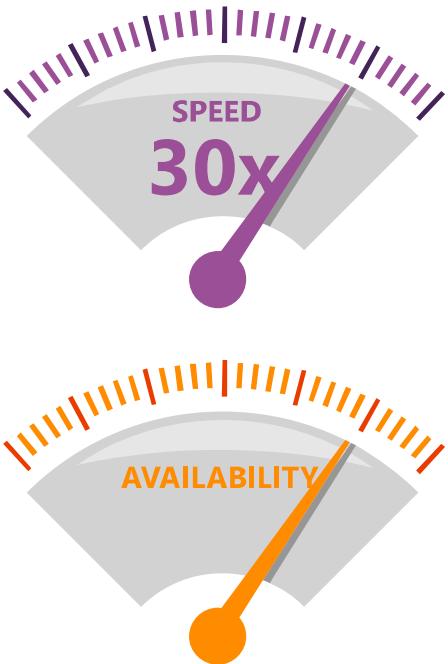
*Start deployment before break!

Azure Functions

What is “serverless”



Abstraction
of servers

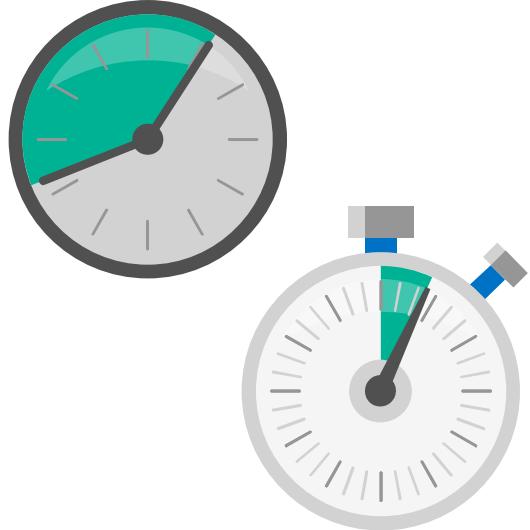


Fast

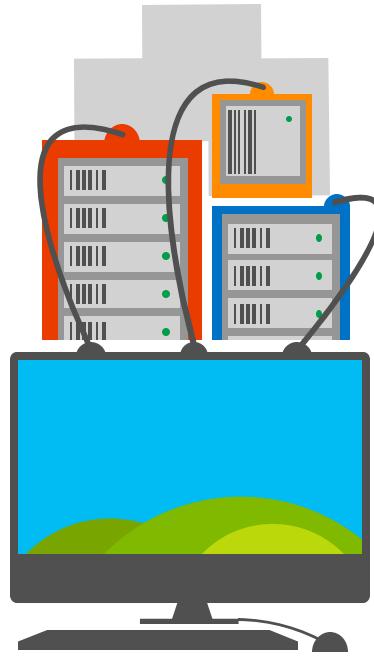


Sub-second
billing

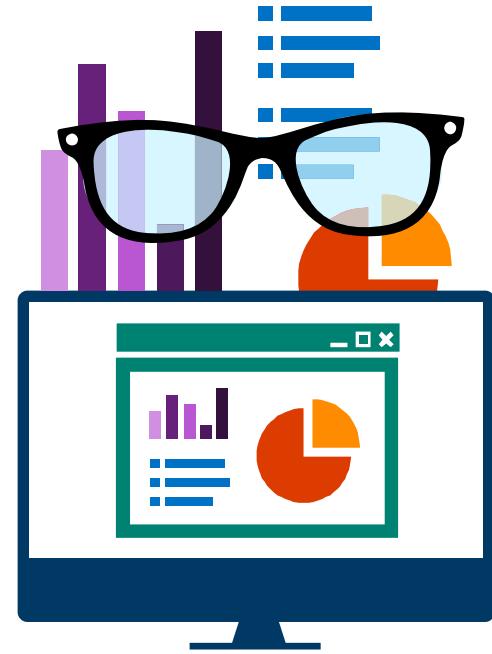
Benefits of “serverless”



Quick start



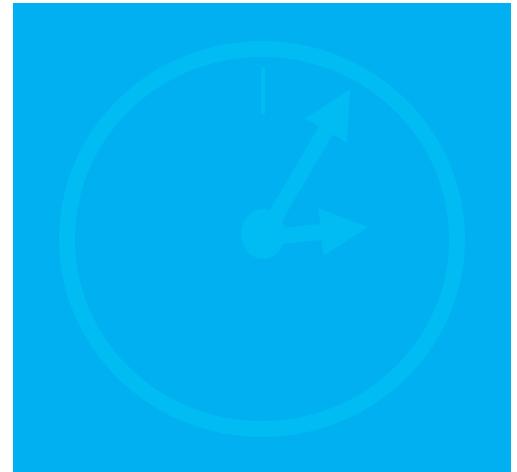
Managed for
you



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



Fast



No Ops

Accelerate development

nodeJS

C#



Develop
your way

Local
development

Bind into services



OneDrive



Box



Twilio



Dropbox



Sendgrid



Azure storage



Azure queue
storage



Azure event hub



AzureDocDb

Languages

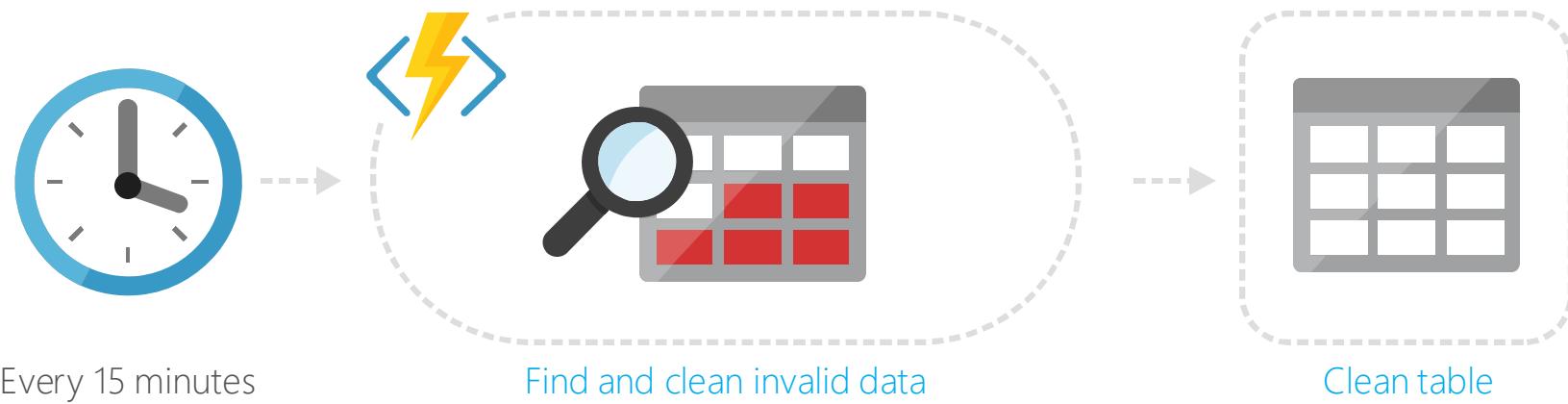
- Node/JavaScript
- C#
- F#
- Python
- PHP
- Batch
- Bash
- PowerShell

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)

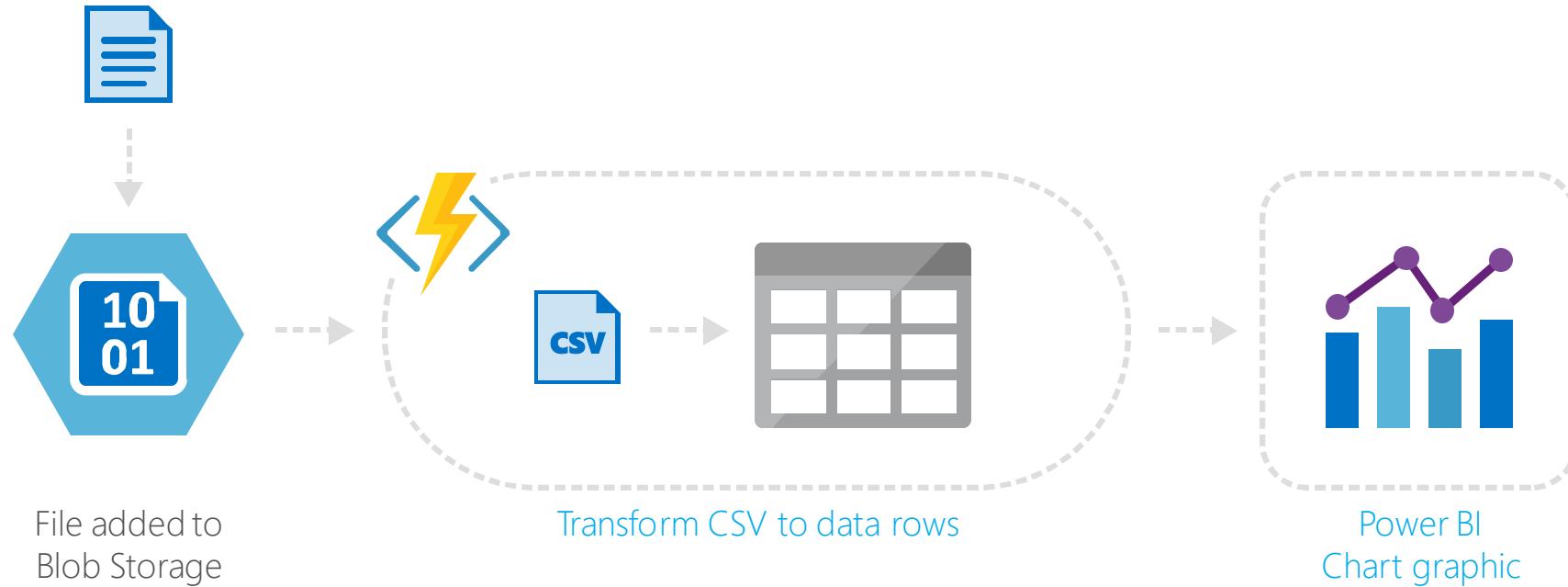
Applications

Example: Timer based processing



Applications

Example: Azure service event processing



Async background processing

Example: Serverless Mobile back ends



Hands On Lab

HOL 03.1 - Azure Functions

HOL 03.2 - Azure Functions

- Azure Functions

Logic Apps

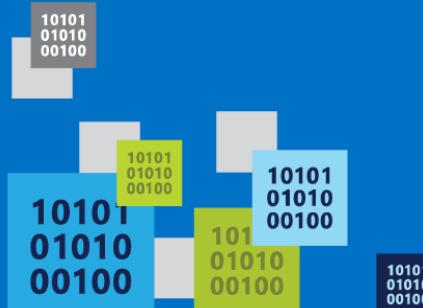
Logic Apps for easy automation



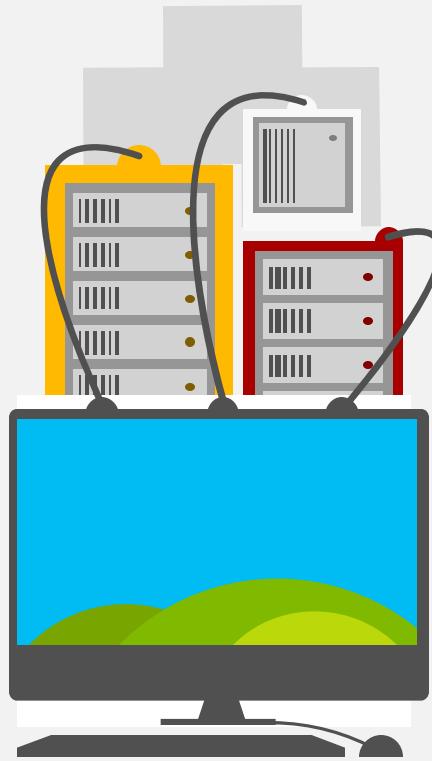
LOGIC APPS

Automate SaaS and
on-premises systems

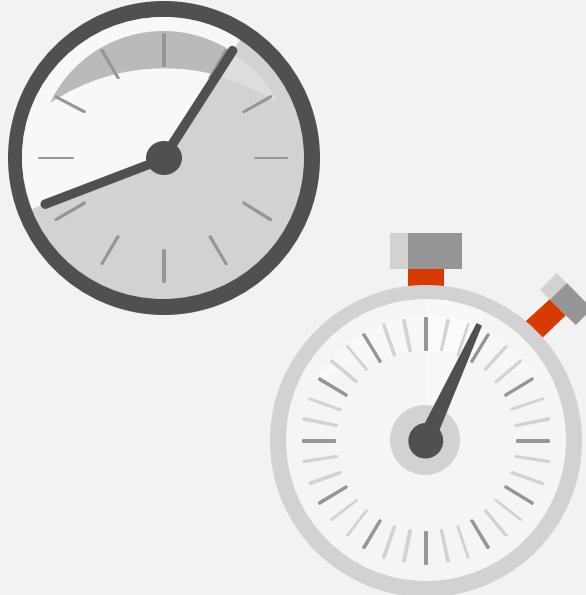
- No code designer for rapid creation
- Dozens of pre-built templates to get started
- Out of box support for popular SaaS and on-premises apps
- Use with custom API apps of your own
- Biztalk APIs for expert integration scenarios



Logic Apps is Serverless



Reduced
devops



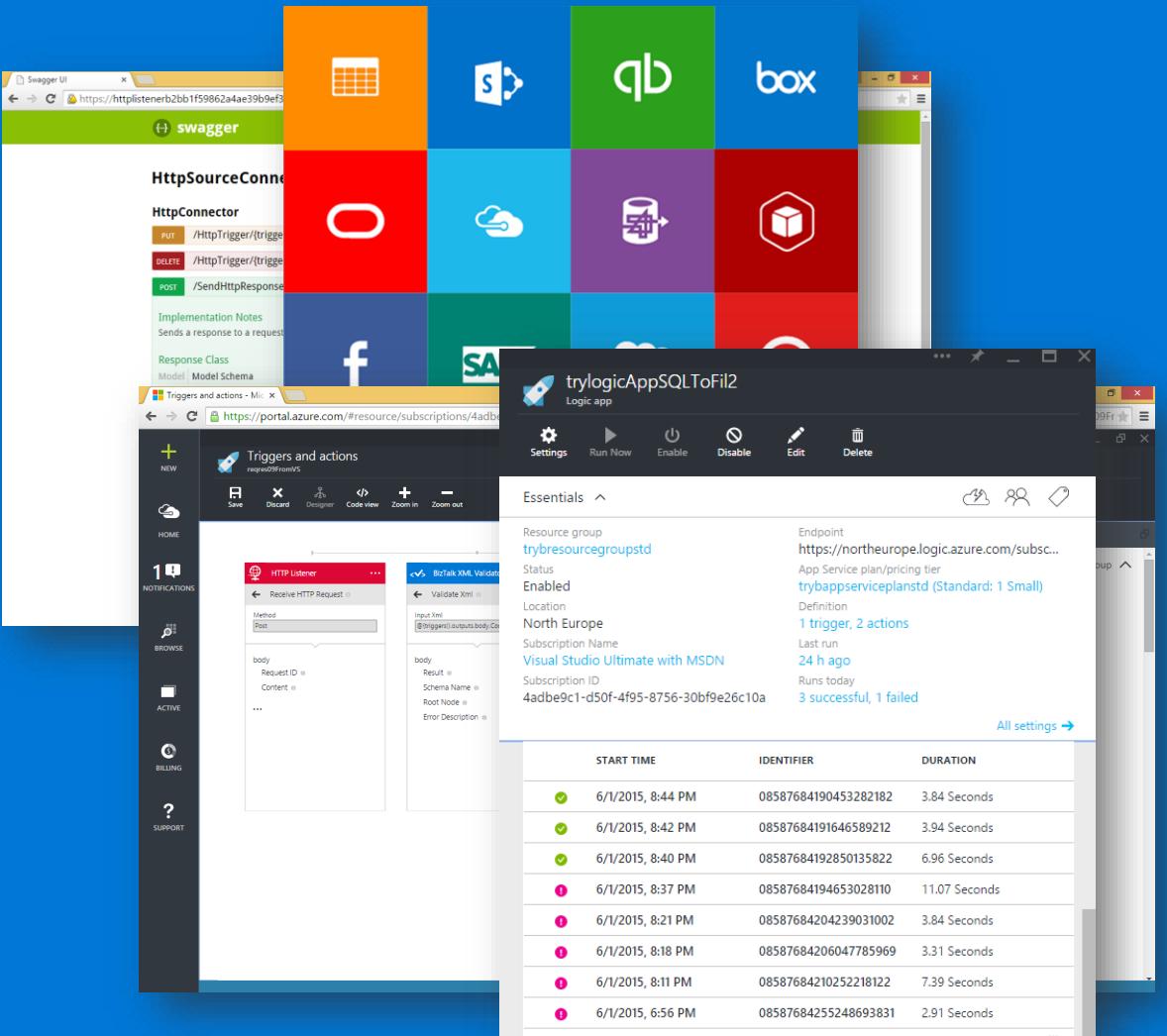
Reduced time
to market



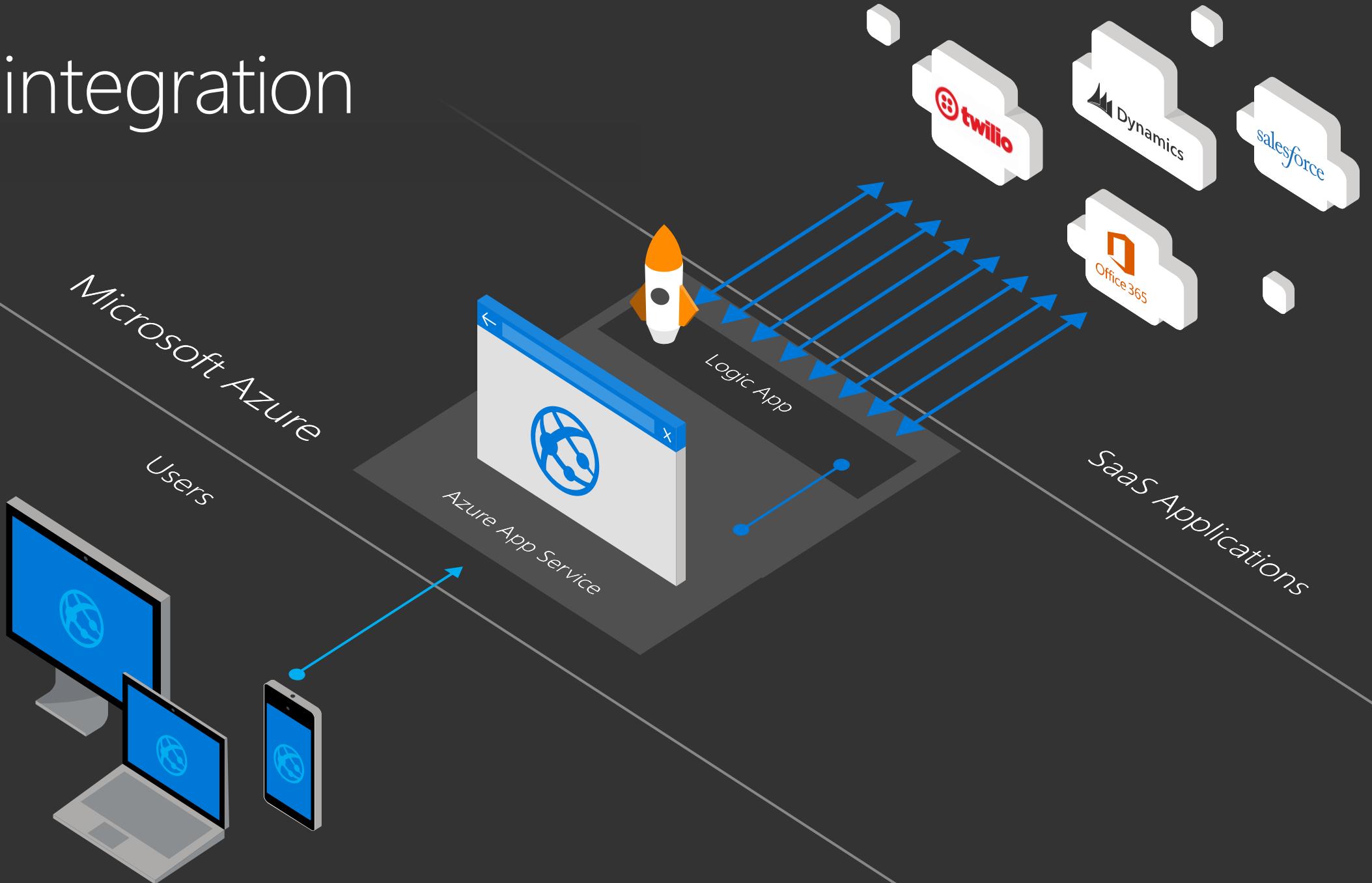
Per action billing

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

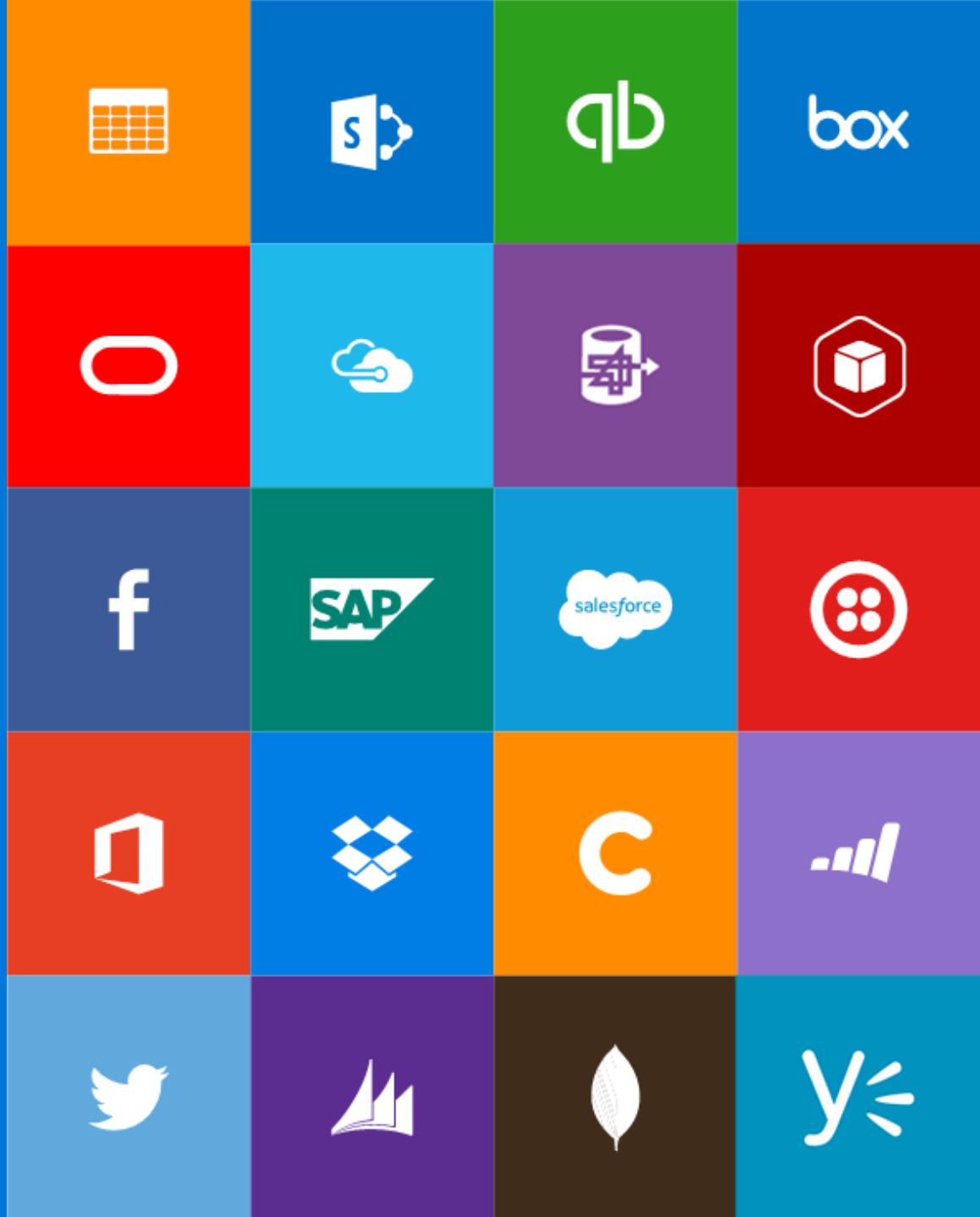
- Box
- Chatter
- Delay
- Dropbox
- Azure HD Insight
- Marketo
- Azure Media Services
- OneDrive
- SharePoint
- SQL Server
- Office 365
- Oracle
- QuickBooks
- SalesForce
- Sugar CRM
- SAP
- Azure Service Bus
- Azure Storage
- Timer / Recurrence
- Twilio
- Twitter
- IBM DB2
- Informix
- Websphere MQ
- 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 04.1 - Logic Apps

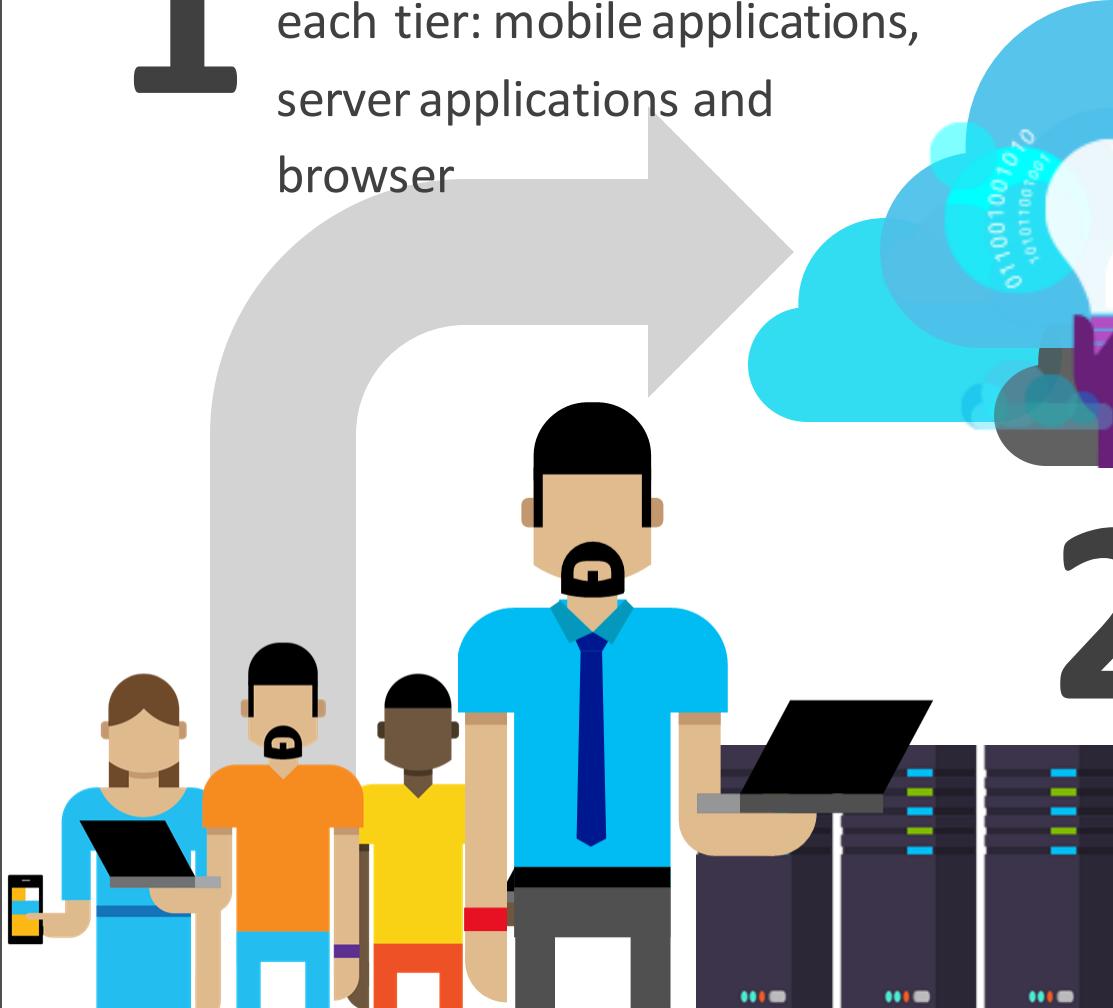
HOL 04.2 - Logic Apps

- Logic Apps

Application Insights

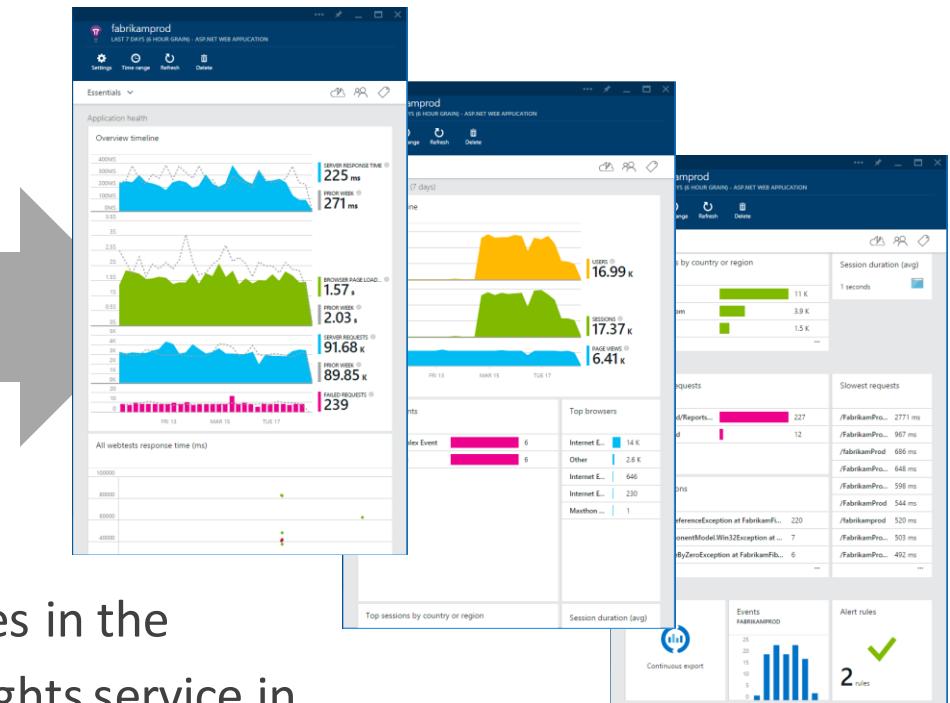
1

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

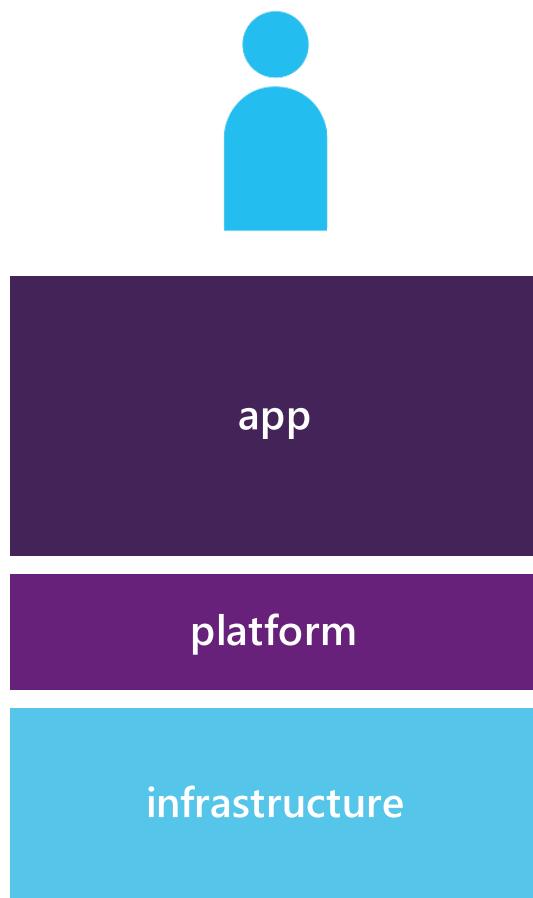


2

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



Sources of Telemetry

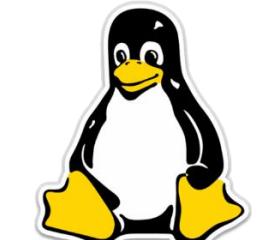
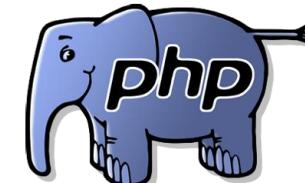
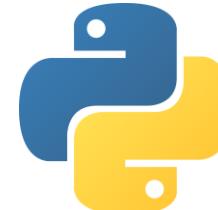


- 1 **Outside-in monitoring**
URL pings and web tests from 16 global points of presence
- 2 **Observed user behavior**
How is the application being used?
- 3 **Developer traces and events**
Whatever the developer would like to send to Application Insights
- 4 **Observed application behavior**
No coding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

Supported platforms

Any app support

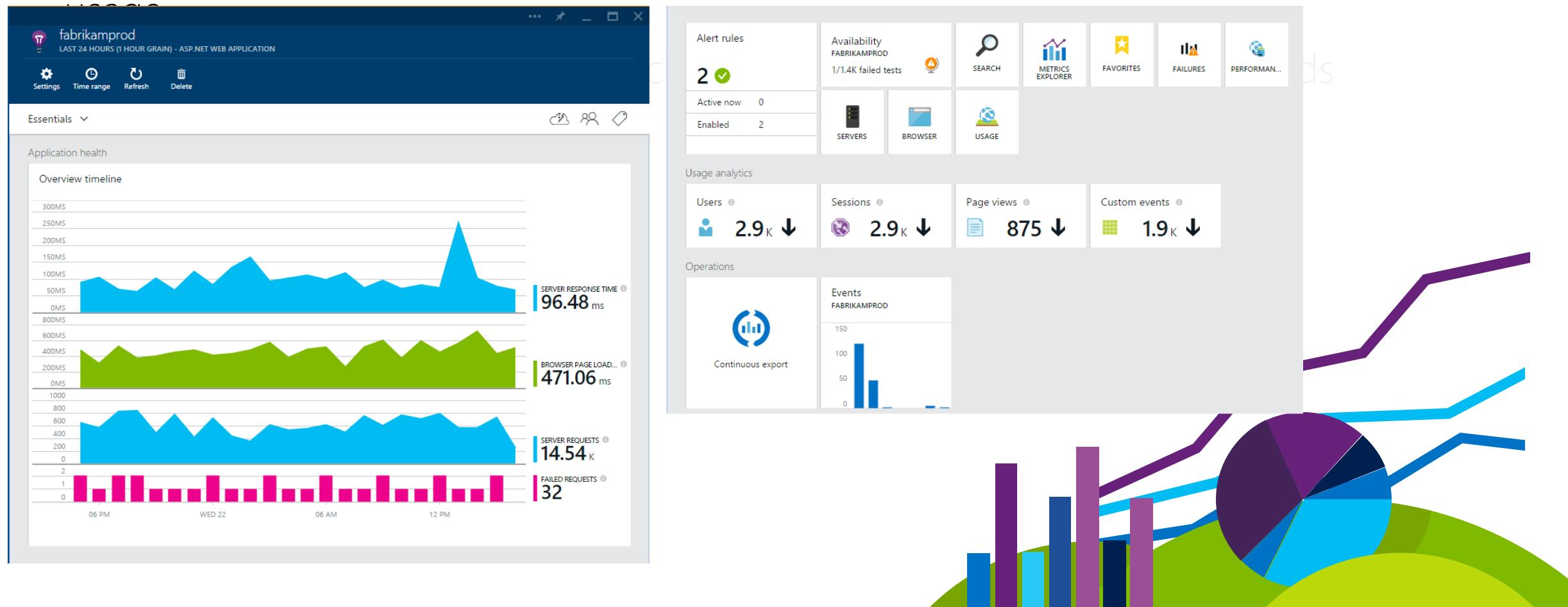
- Easily add analytics across multiple platforms including: ASP.NET, Java/J2EE, iOS, Android, Windows, as well as OSS technologies such as Node.JS, PHP, Ruby, Python, etc.
- Open source SDK:
<https://github.com/Microsoft/ApplicationInsights-Home>
- Logging framework:
[Log4Net](https://log4net.net/), [nLog](https://nlog-project.org/), [System.Diagnostics](https://msdn.microsoft.com/en-us/library/system.diagnostics.aspx)
[Log4J](https://logback.qos.ch/), [Logback](https://logback.qos.ch/)



Overview Blade

Out of the box experience

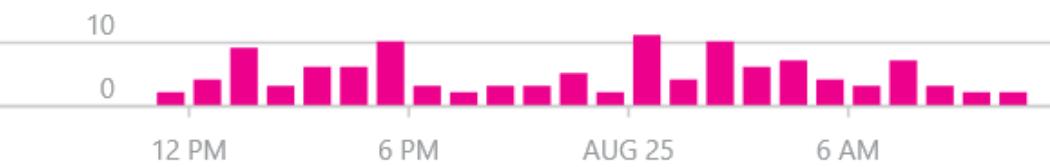
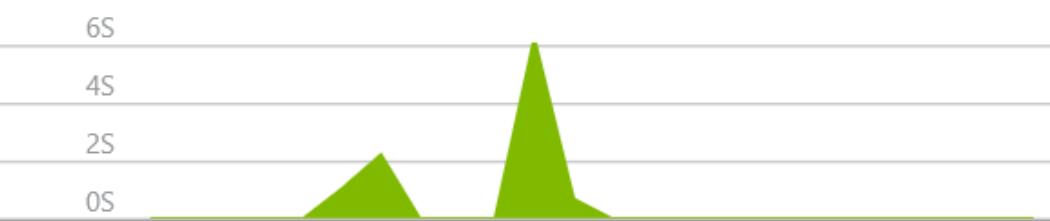
- Provides a summary of the application's health - availability, performance and usage



Application health

Overview timeline

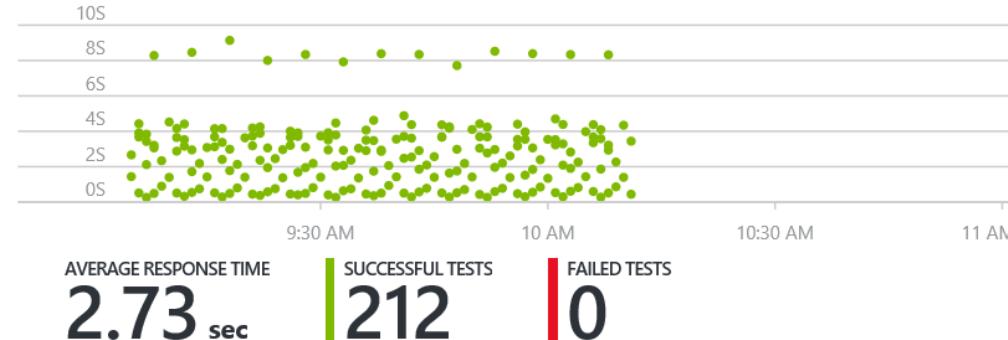
TEAMSYSTEMCAFE



All web tests response time (ms)

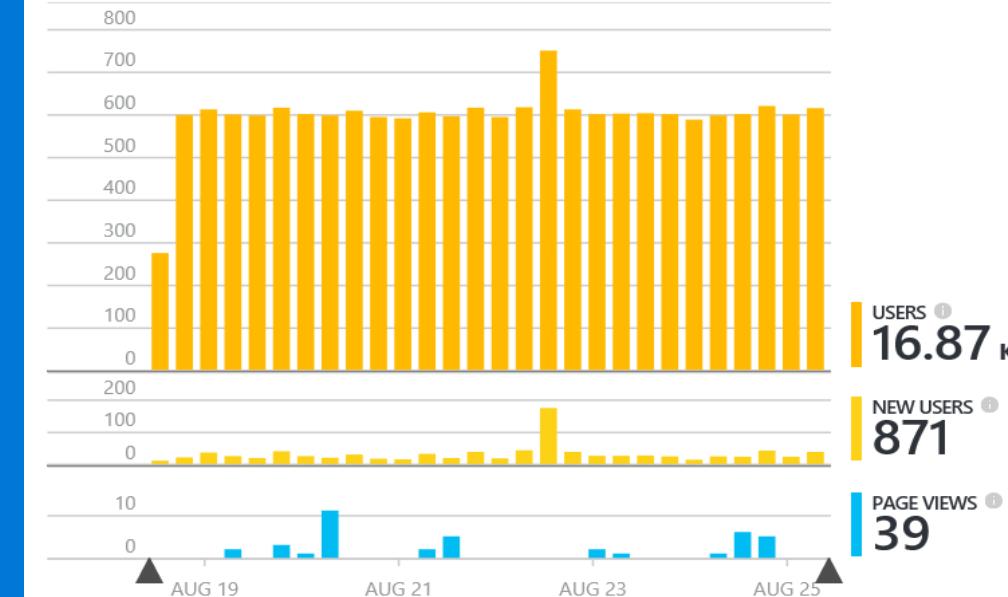


Filtered on tests between 8/25/2015 9:04 AM and 8/25/2015 11:00 AM



Filtered on Real user traffic x

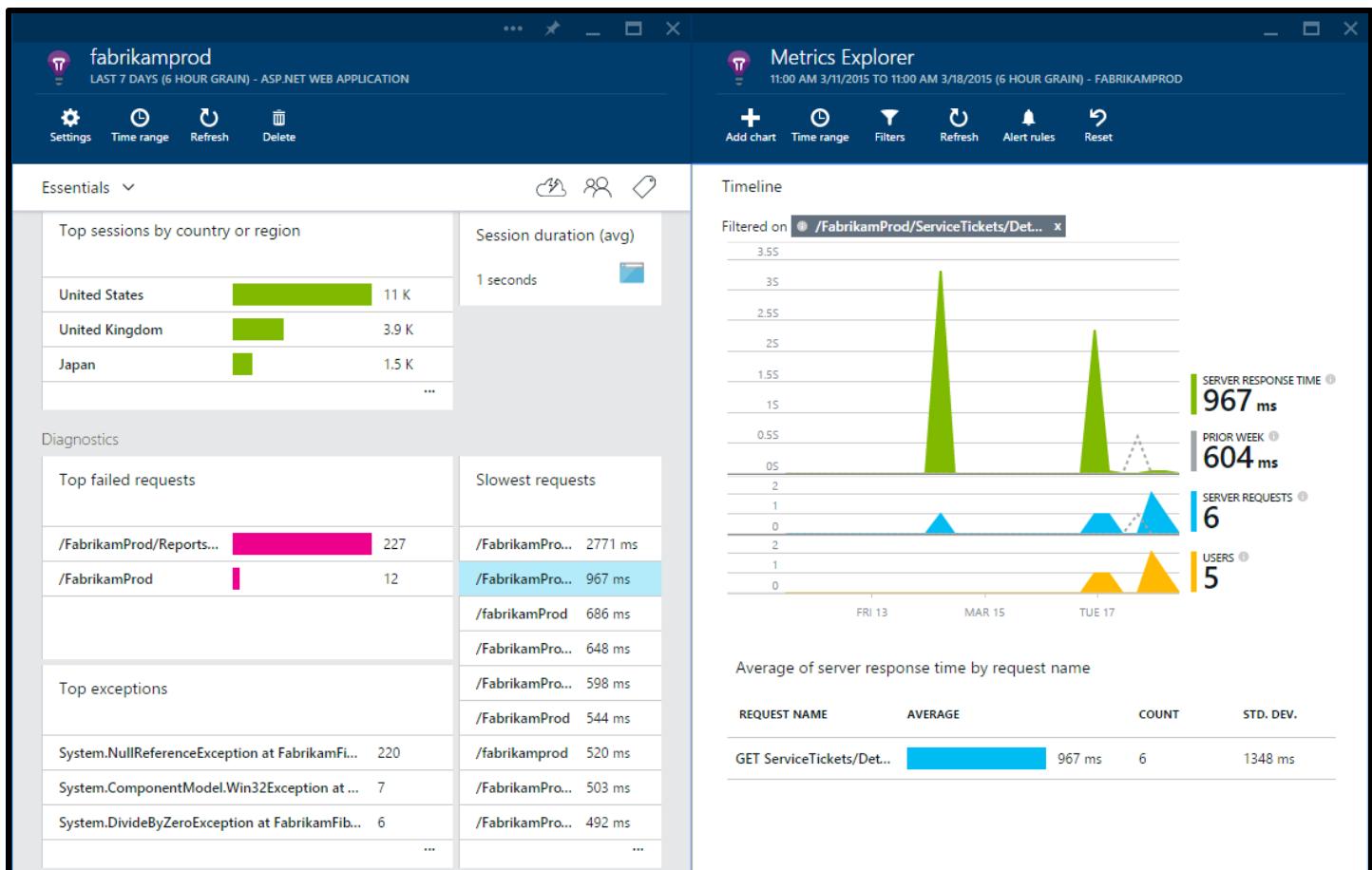
Timeline



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?”

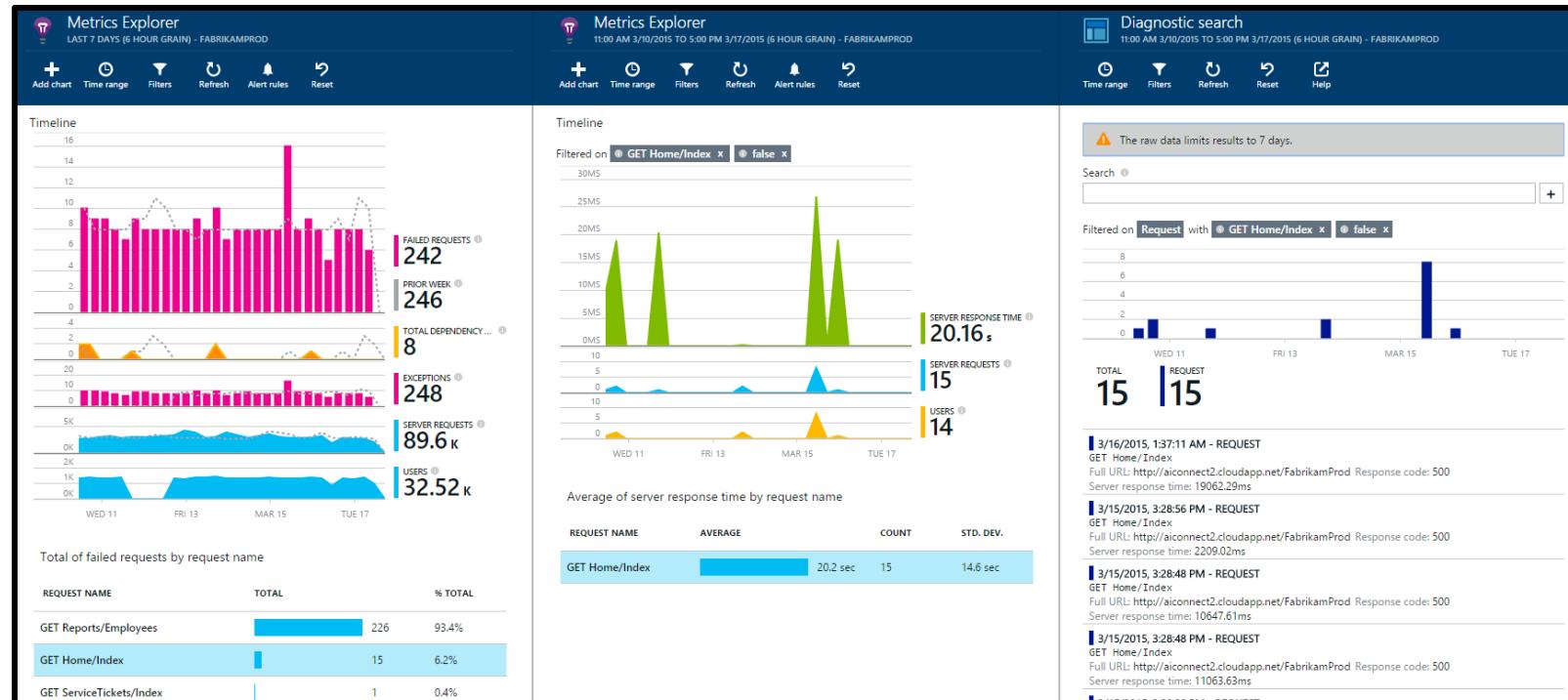


Drill down tools

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

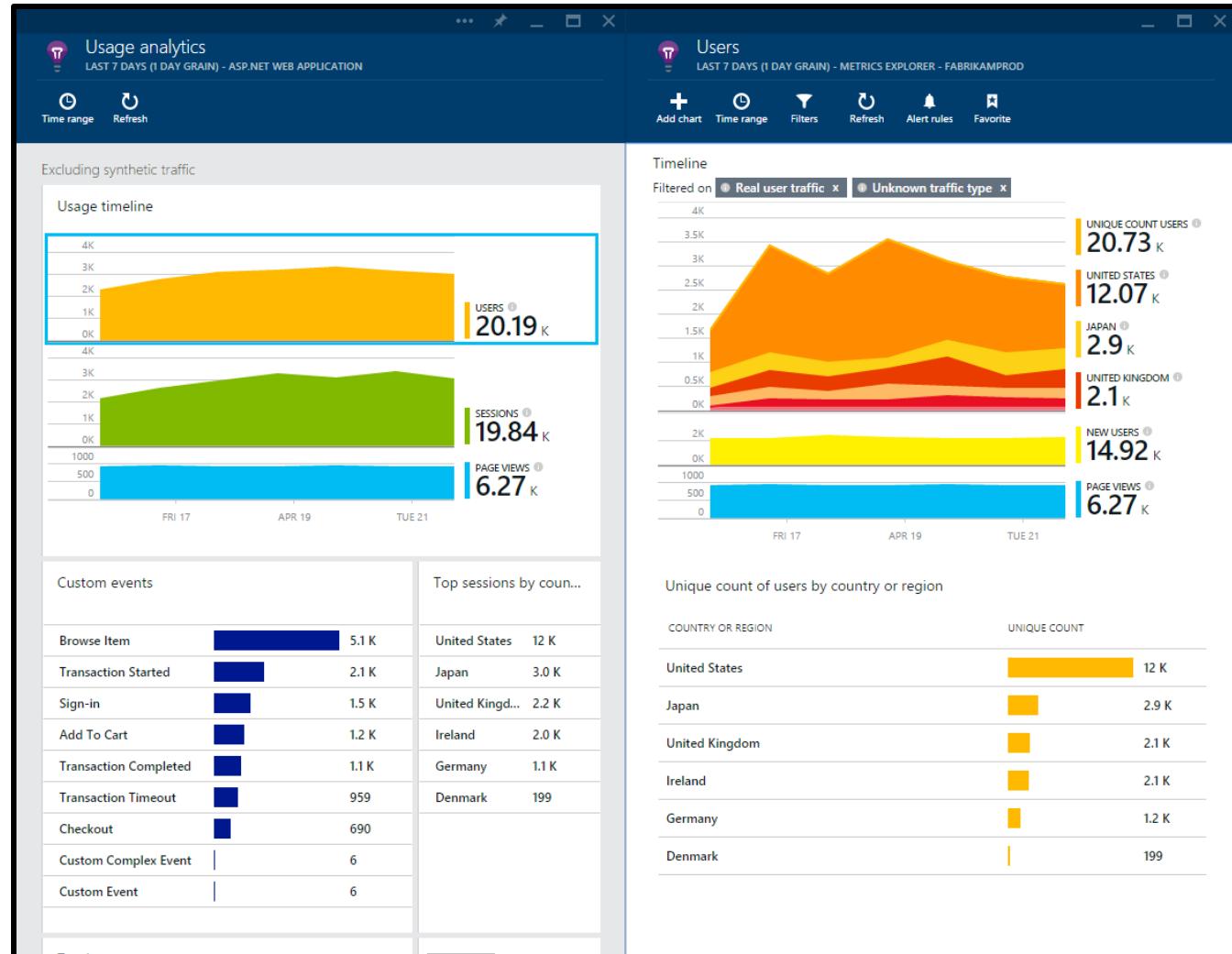
- **Diagnostic Search** enables efficient search over large sets of data using the query experience



Fast and powerful insights

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.

DATE	MESSAGE
3/16/2015, 1:11:28 PM	CUSTOM EVENT Custom Event Device Id: AiConnect2
3/15/2015, 5:33:09 PM	CUSTOM EVENT Custom Event Device Id: AiConnect2
3/14/2015, 12:33:07 PM	CUSTOM EVENT Custom Event Device Id: AiConnect2

- Continuous export:** Shows a list of continuous exports. One entry is selected, pointing to the "fabrikamexport" storage account, with the status "Just now".

STATUS	STORAGE ACCOUNT	LAST EXPORT
Green checkmark	fabrikamexport	Just now

- Edit continuous export:** A detailed view of the selected export configuration. It shows the export destination as "fabrikamexport" and the event types selected for export, including "All types".

EXPORT DESTINATION	fabrikamexport
EVENT TYPES TO EXPORT	All types

- Event types to export:** A list of event types with checkboxes indicating whether they are enabled or disabled. The "ON" state is highlighted in blue.

Event Types	
Custom Event	<input checked="" type="checkbox"/> ON
Dependency	<input checked="" type="checkbox"/> ON
Exception	<input checked="" type="checkbox"/> ON
Metric	<input checked="" type="checkbox"/> ON
Page Load	<input checked="" type="checkbox"/> ON
Page View	<input checked="" type="checkbox"/> ON
Performance Counter	<input checked="" type="checkbox"/> ON
Request	<input checked="" type="checkbox"/> ON
Trace	<input checked="" type="checkbox"/> ON

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

Hands On Lab

HOL 05 - Application Insights

- Application Insights

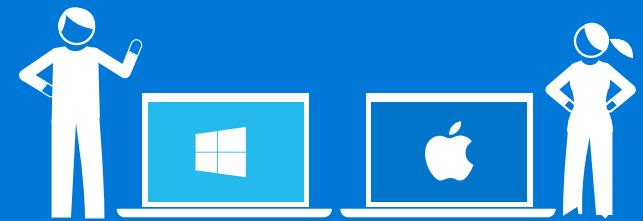
Azure API Management

Build & Host

Publish & Manage

App Services
Service Fabric
Containers
On-prem

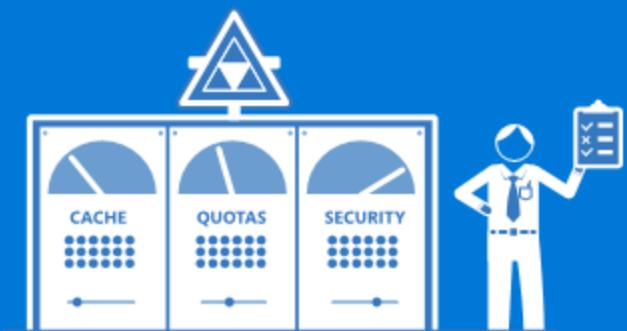
API Management



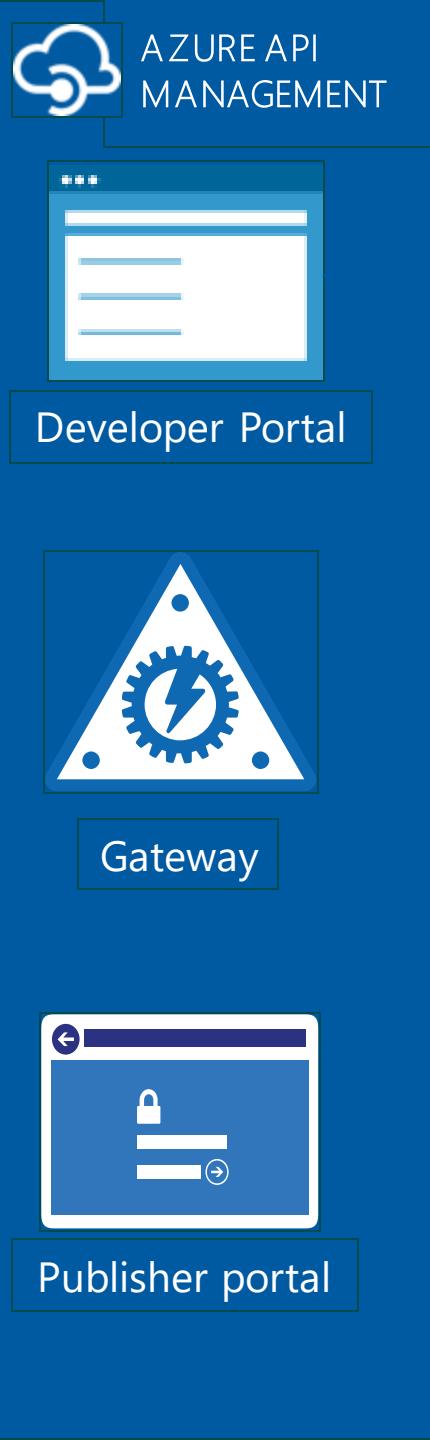
APP DEVELOPERS



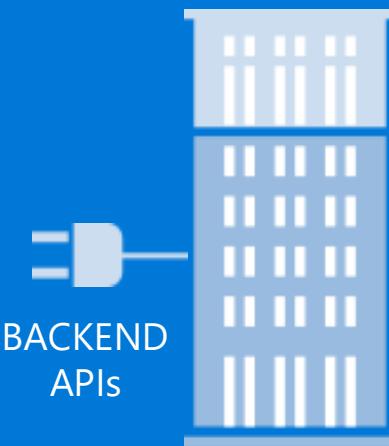
APPS



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



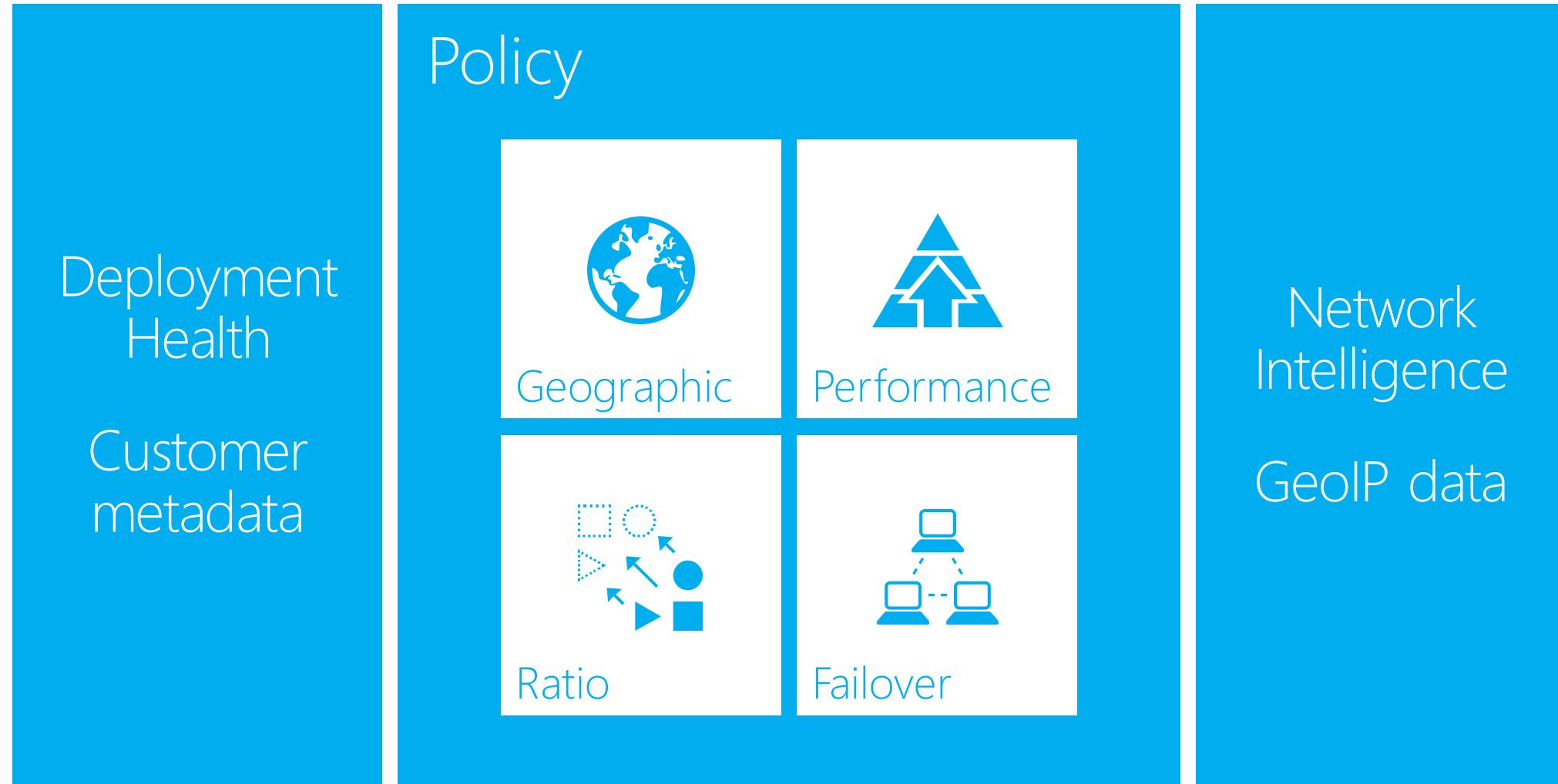
Ratio

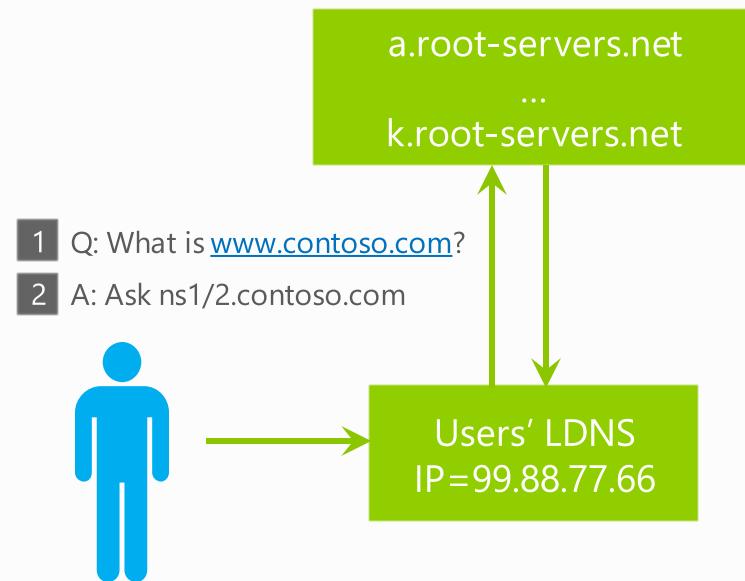
Sends traffic to different deployments based on fixed ratio (N/M)

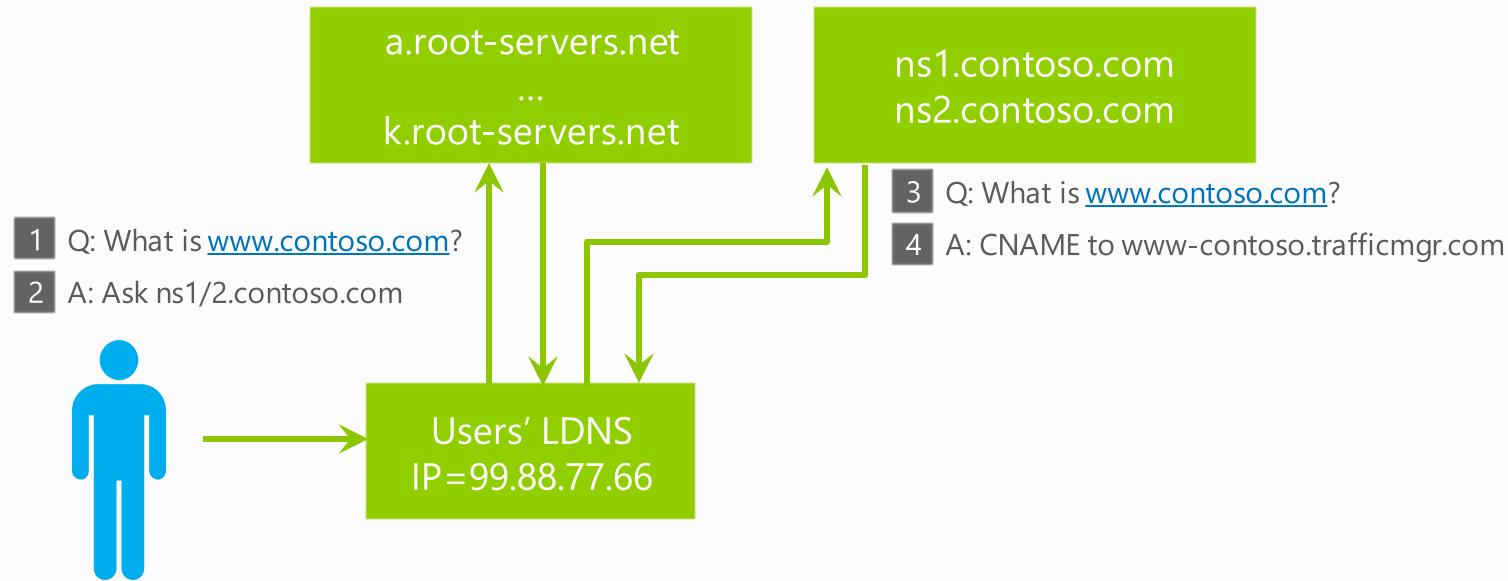
Example:

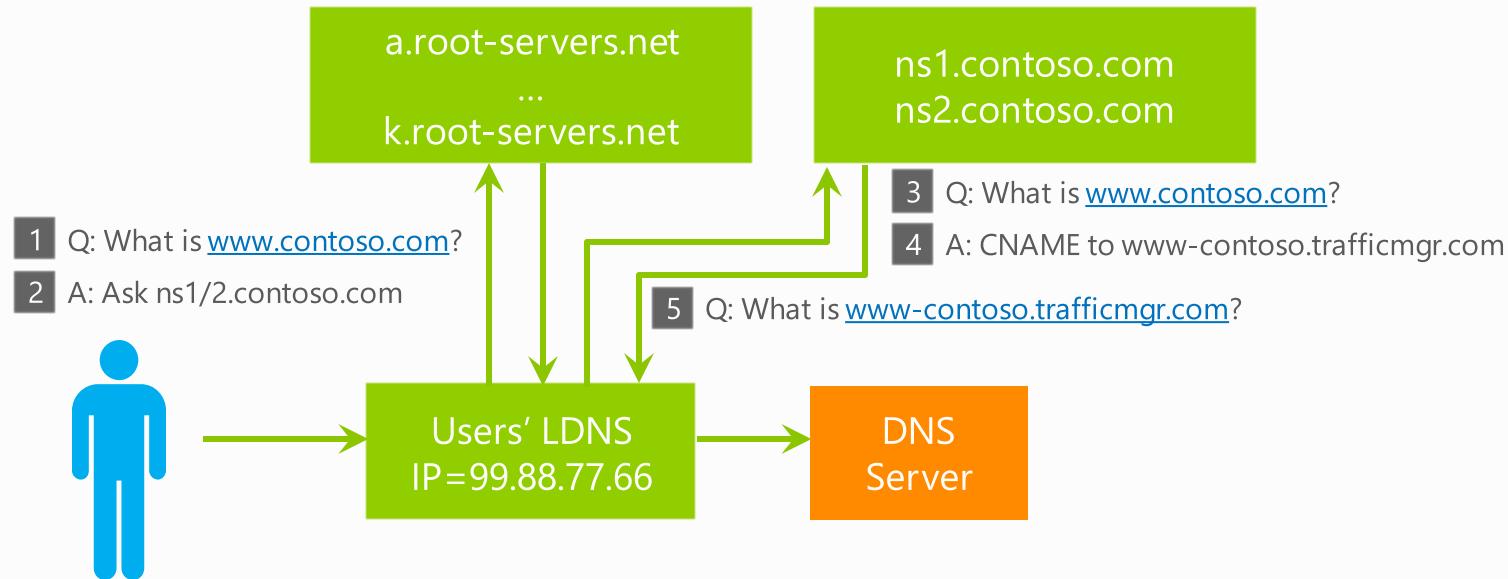
Direct 20% of user traffic to US South and 80% to US North.

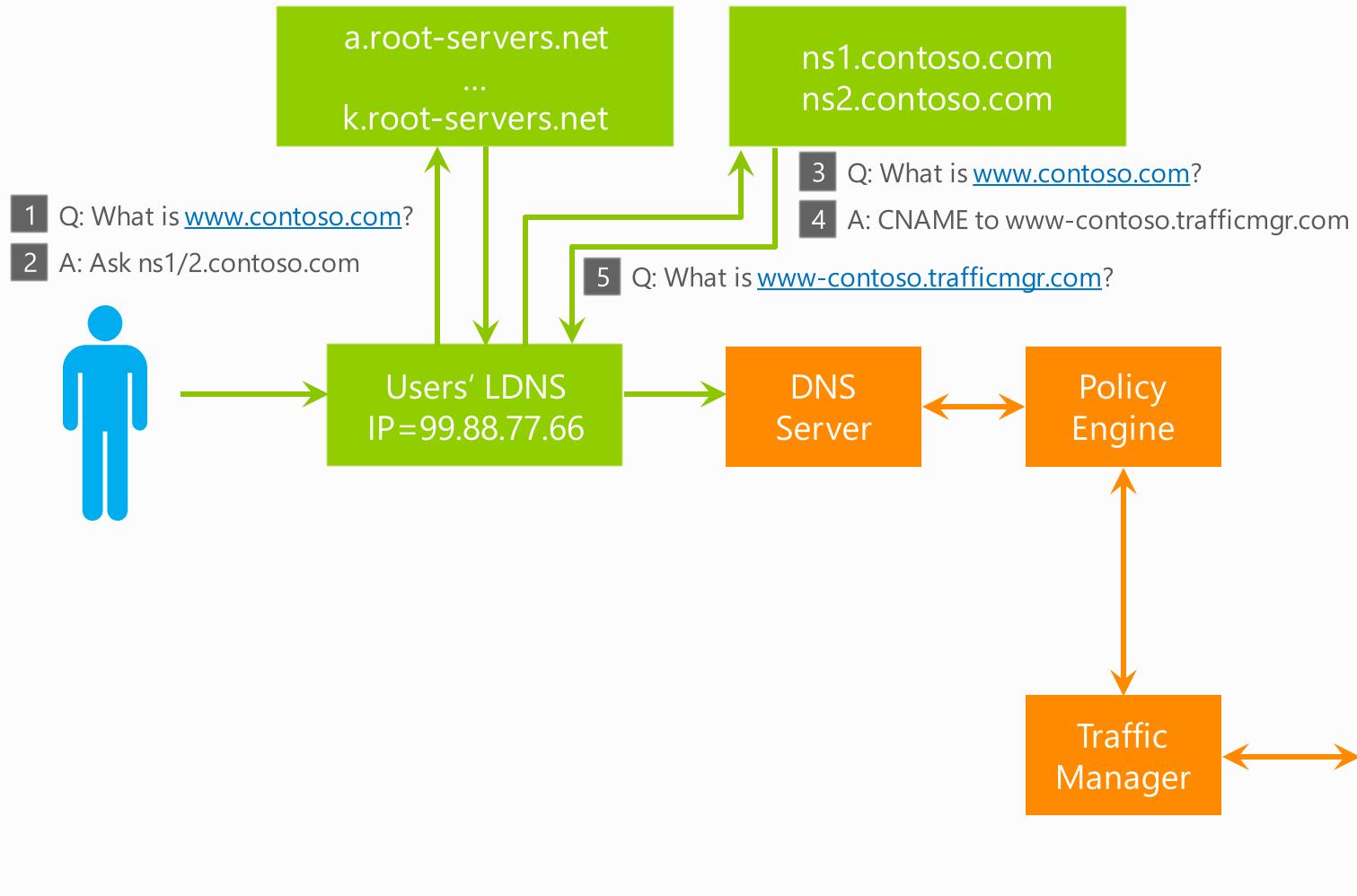
Policy Building Blocks



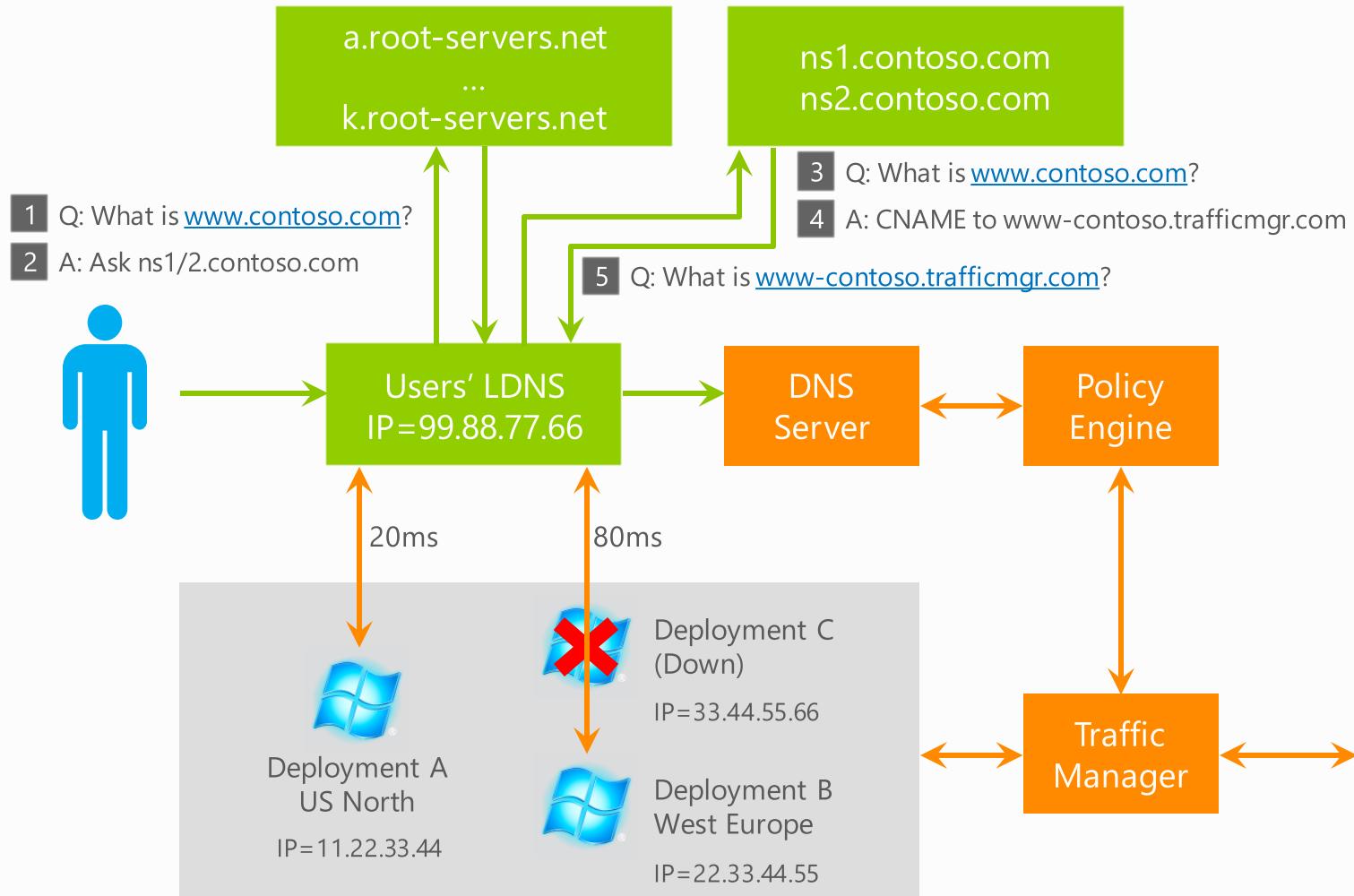


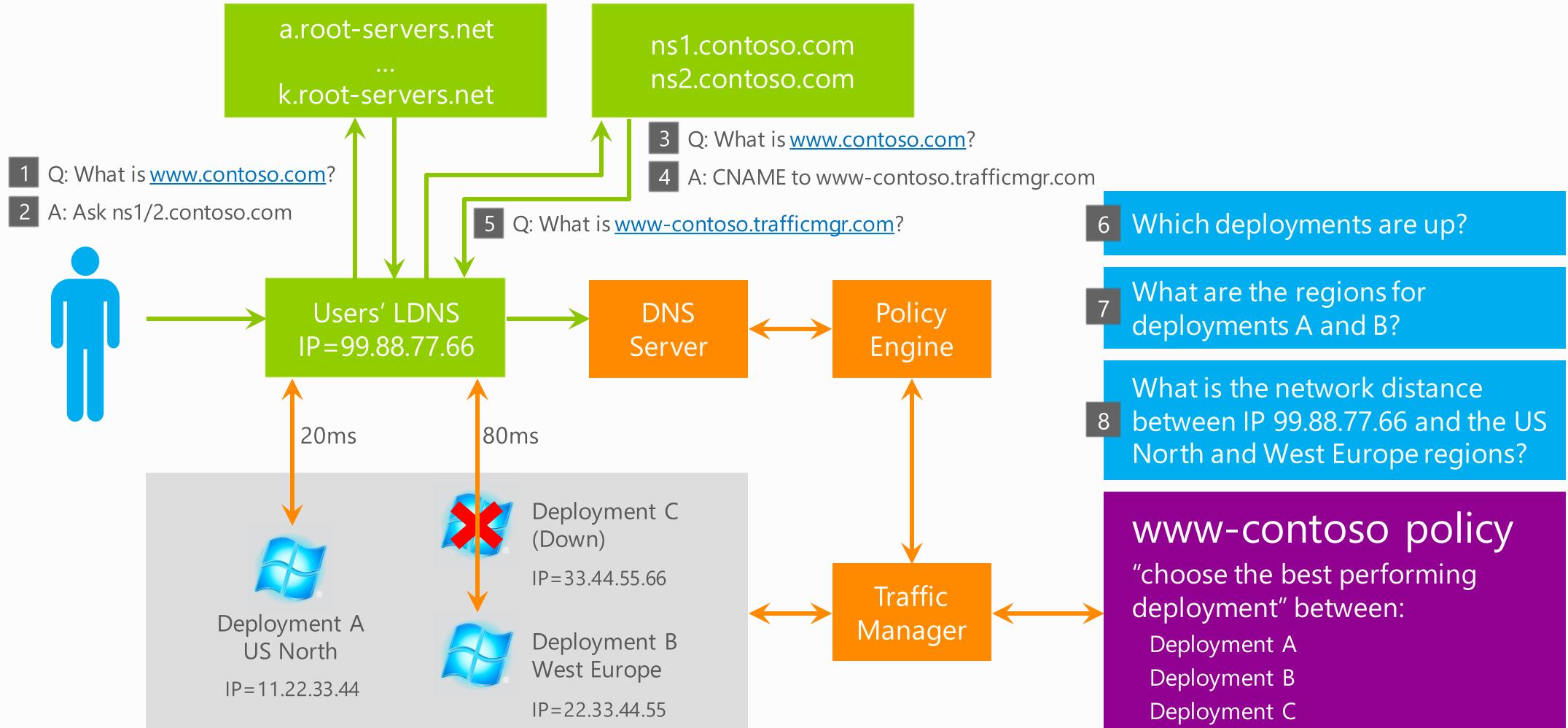


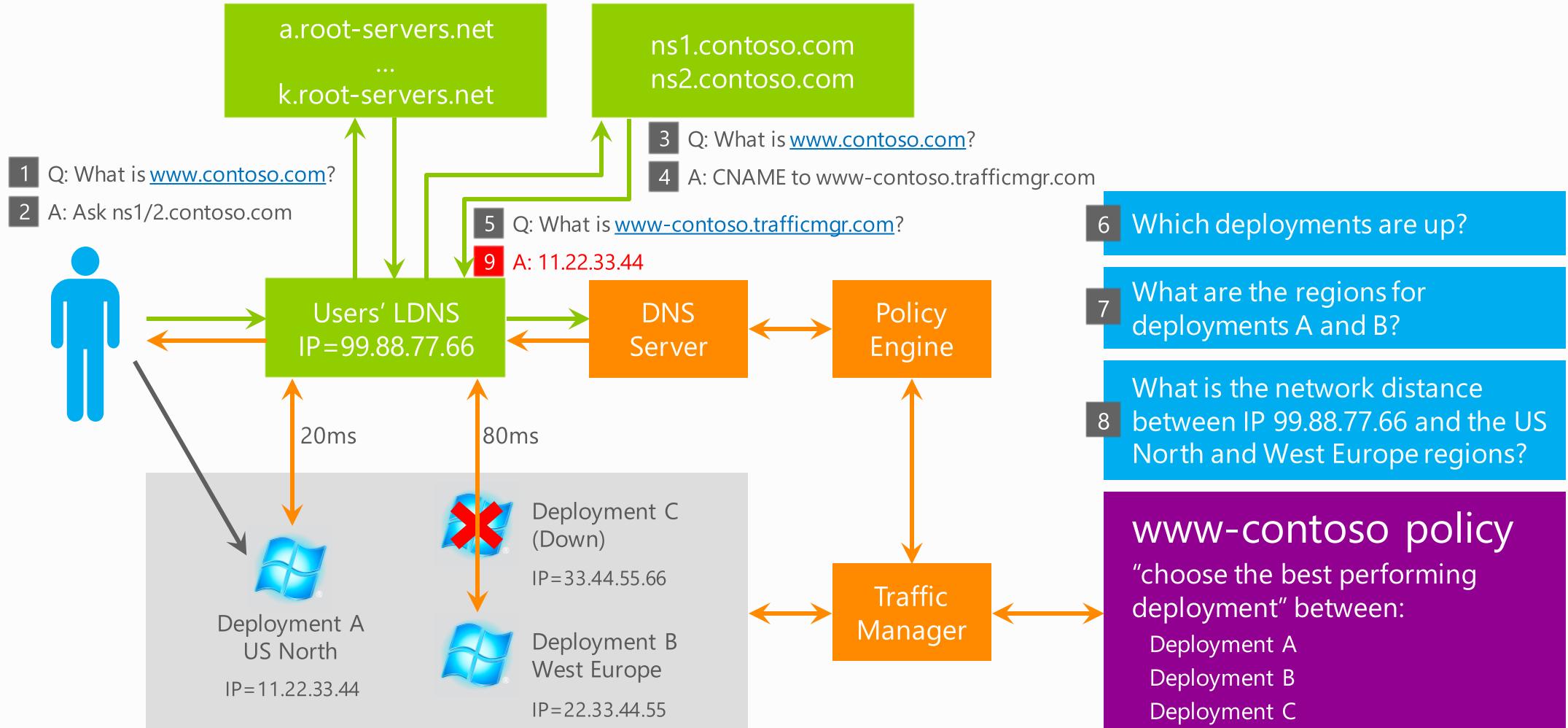




www-contoso policy
"choose the best performing deployment" between:
Deployment A
Deployment B
Deployment C







Performance

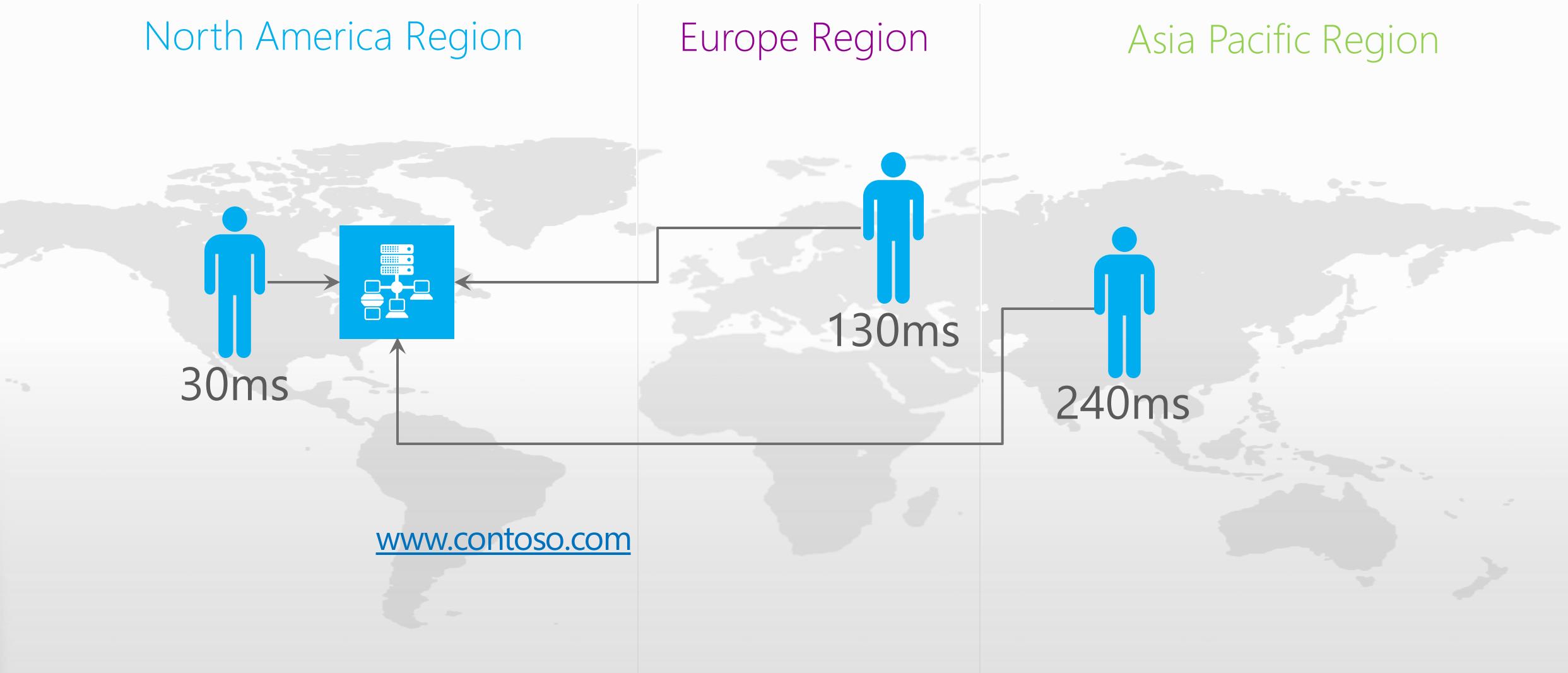


Performance Load Balancing

North America Region

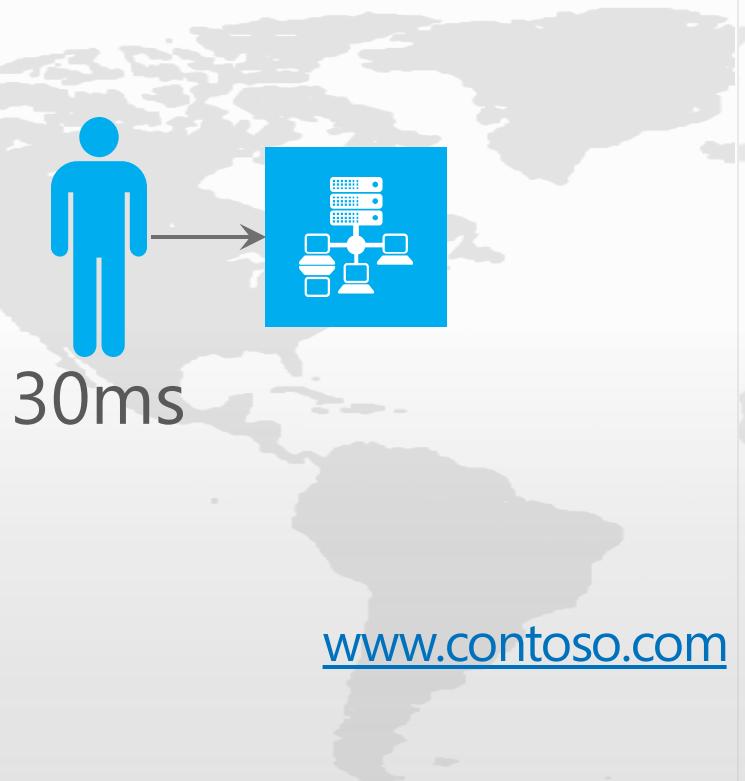
Europe Region

Asia Pacific Region

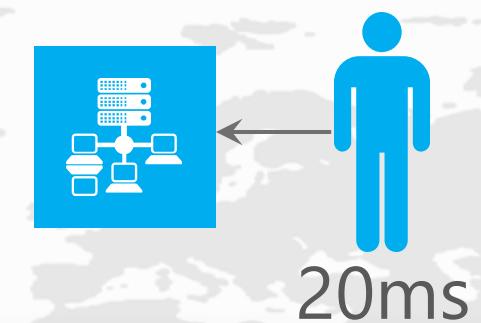


Performance Load Balancing

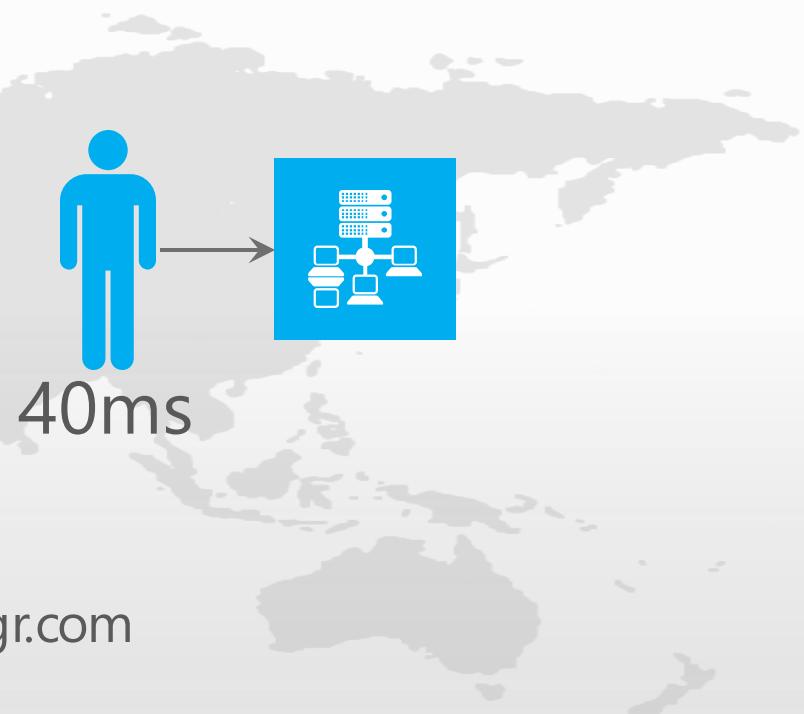
North America Region



Europe Region



Asia Pacific Region



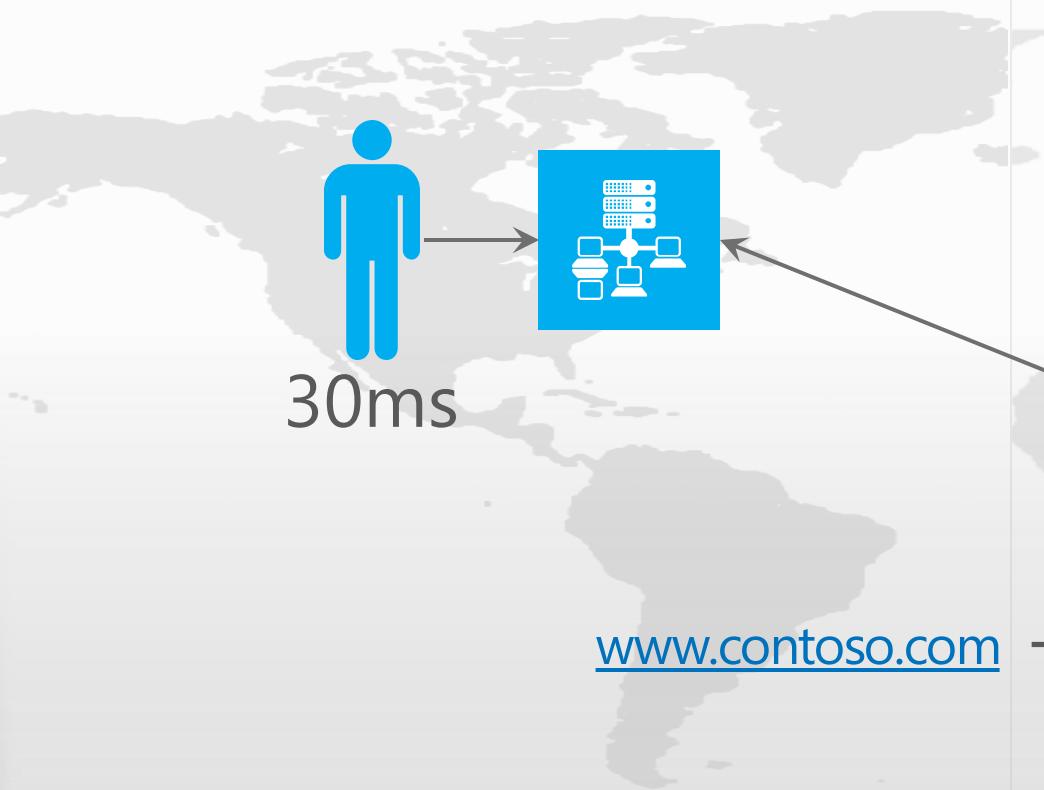
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Disaster Recovery

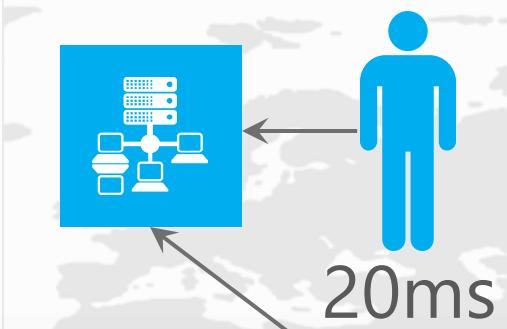


Disaster Recovery

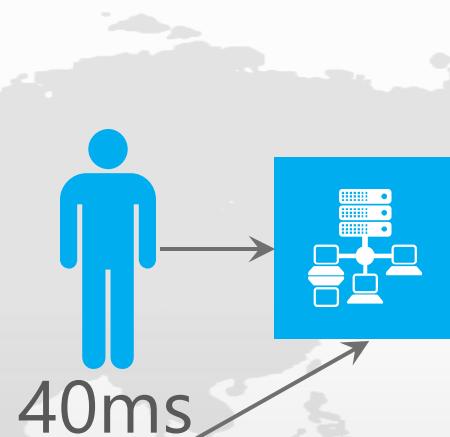
North America Region



Europe Region

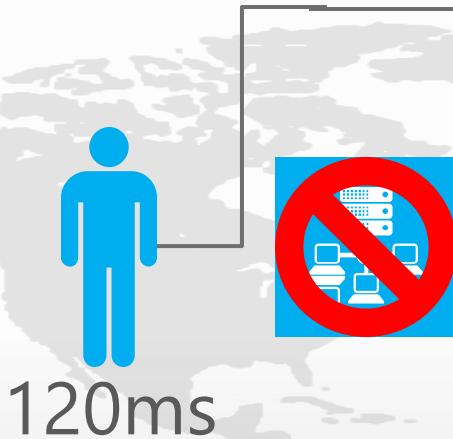


Asia Pacific Region

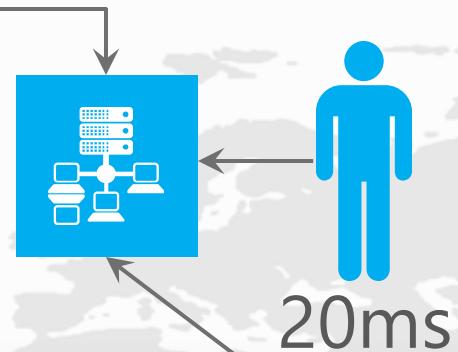


Disaster Recovery – 8 Minute MTR

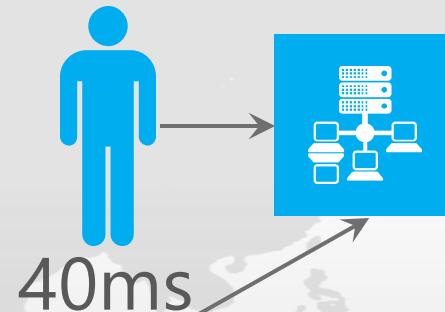
North America Region



Europe Region

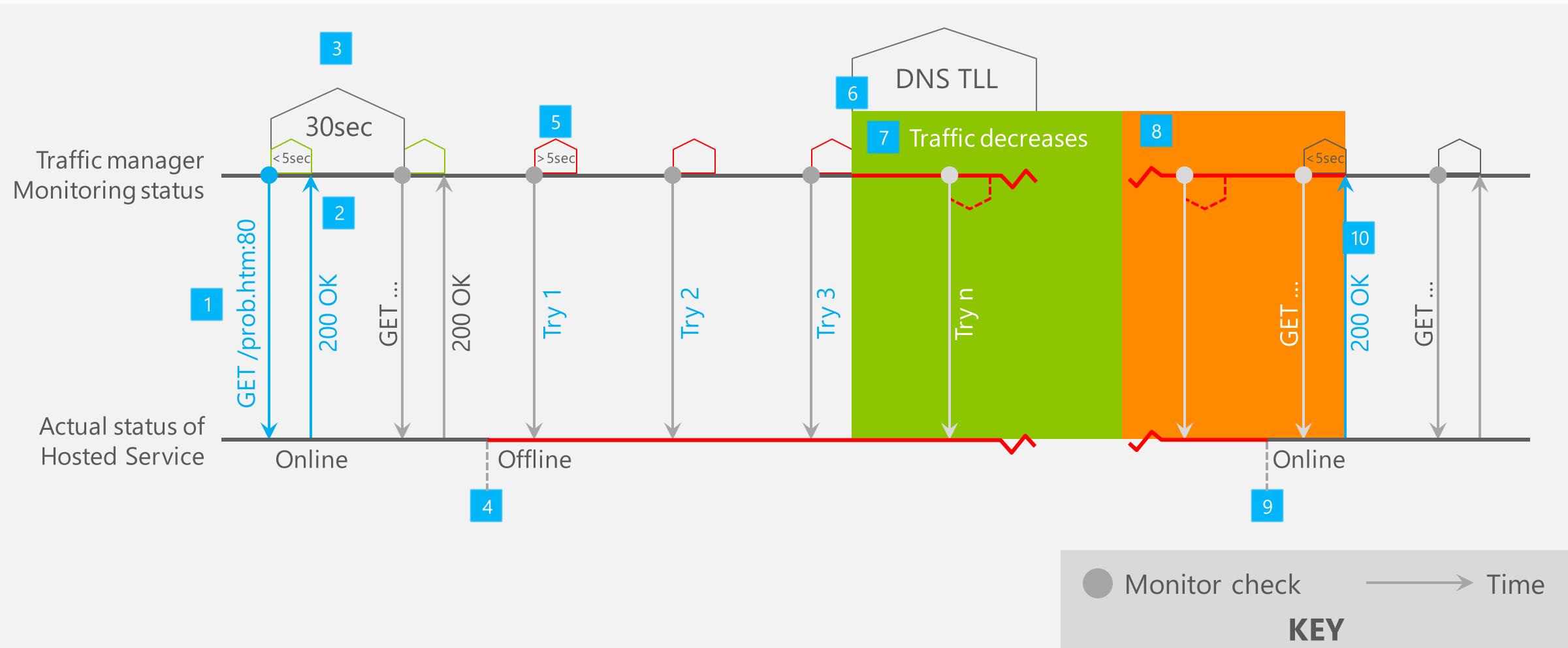


Asia Pacific Region



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Health Polling Updates DNS



Hands On Lab

HOL 7 - Traffic Manager

- Traffic Manager

Teşekkürler.

