Create global web applications with Azure Web Apps and SQL Databases

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MCT since 2006

MVP Microsoft® Most Valuable Professional

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"If having a coffee in the morning doesn't wake you up, try to delete a table in production instead"

unknome developer

Agenda

Microsoft Azure

Azure App Service

Azure Traffic Manager

Azure CDN

Azure SQL Database

Azure Web Application Architecture

Microsoft Azure

2nd largest Public Cloud Provider

42 Azure regions, more than any cloud provider.

Microsoft Bet on Azure is massive. Huge effort in migrate customers from on-prem to Azure.
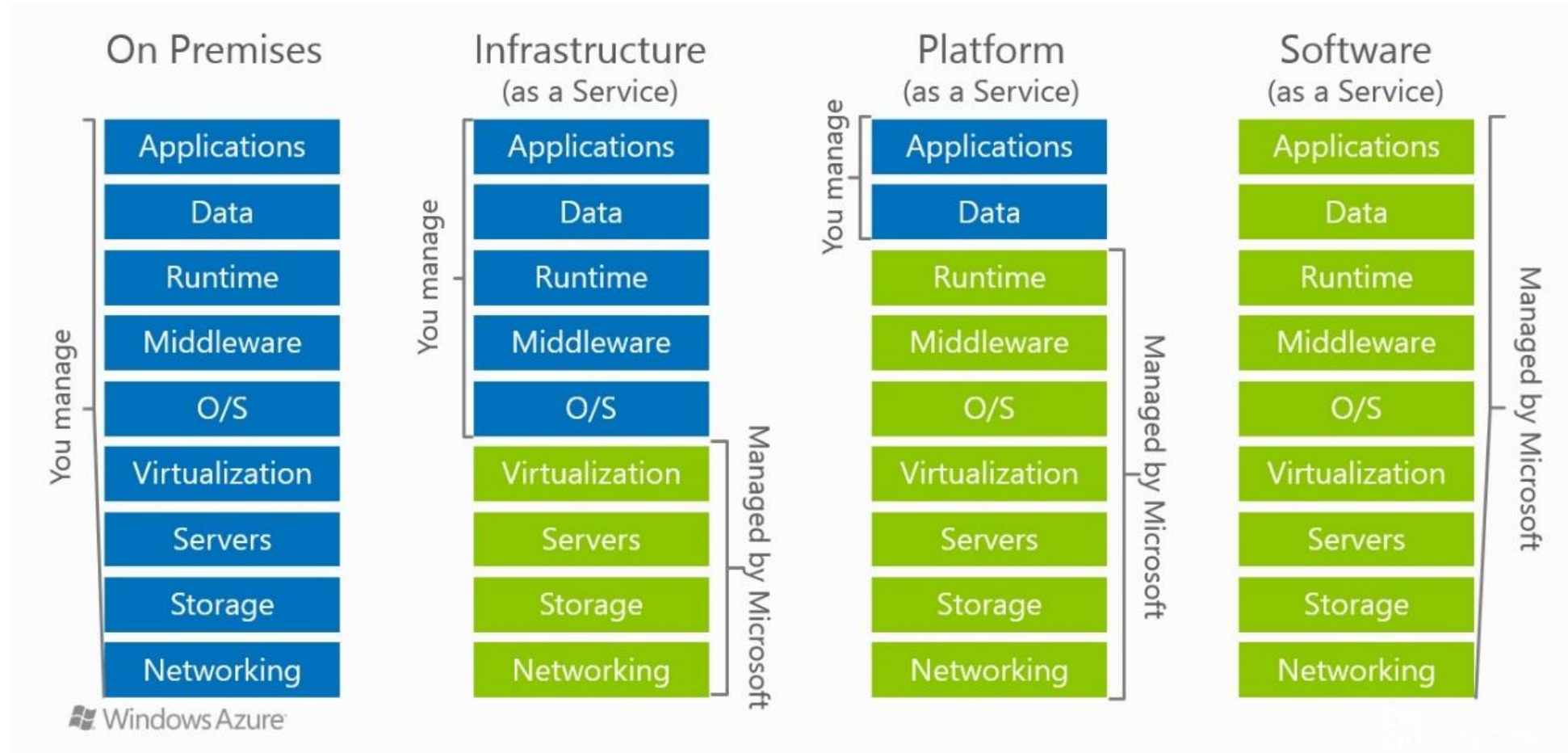
Why Azure?

Huge demand from customers (Starting now in some geography's like Portugal). Huge across Europe and USA.

Fun to work with! Every project is a different project and we can use new services and/or new feature of already exiting services
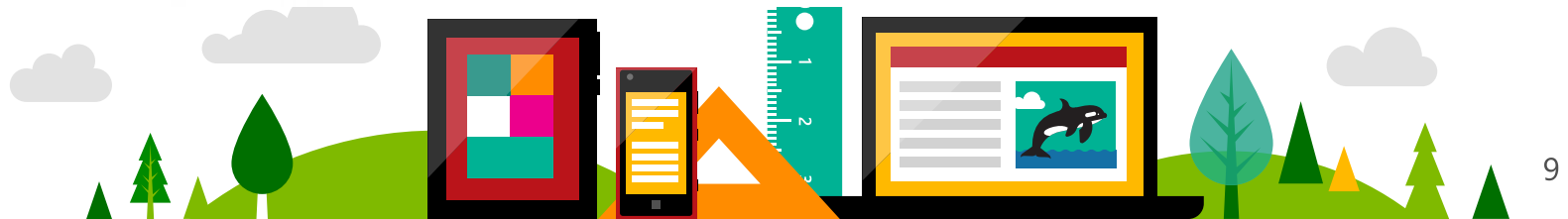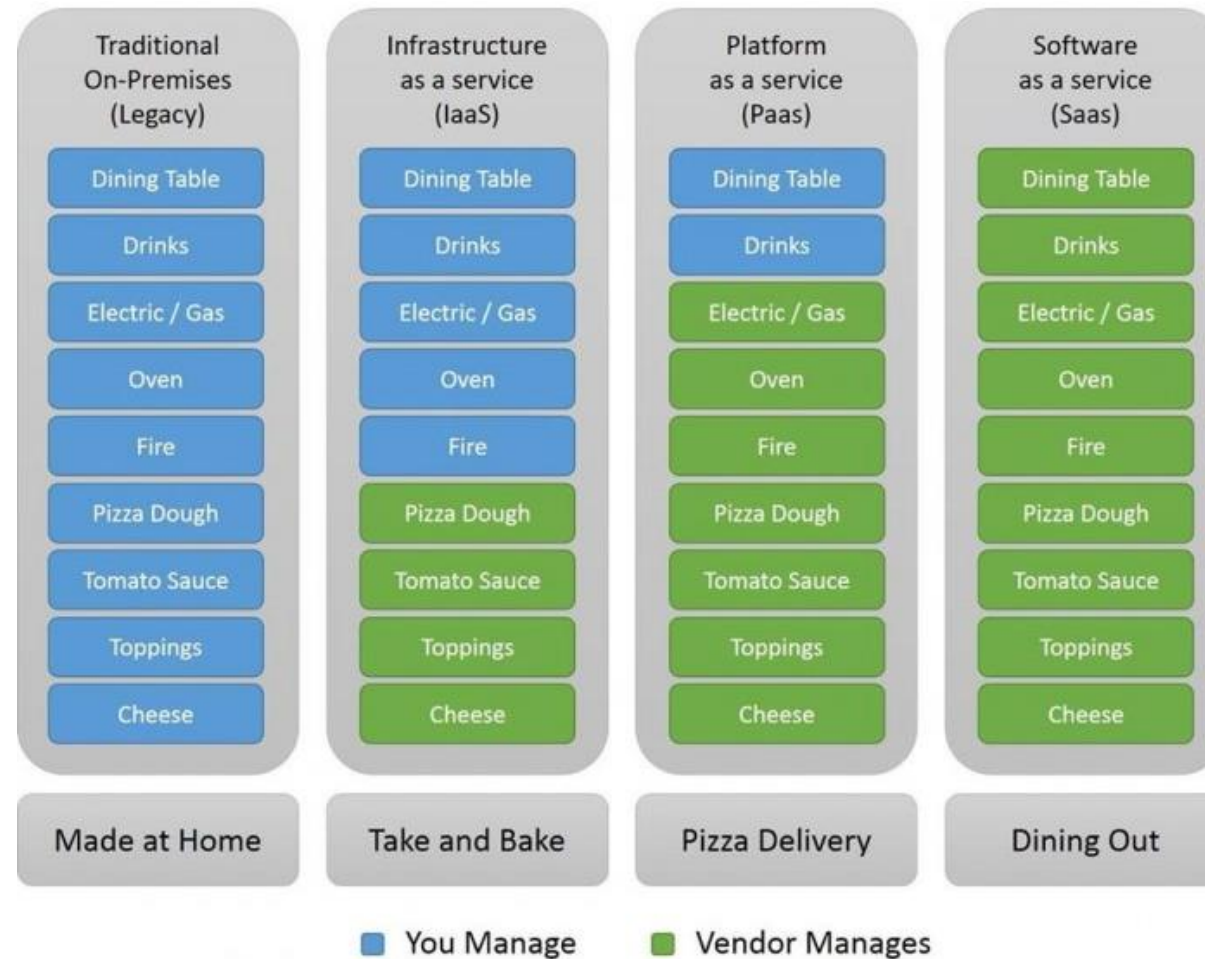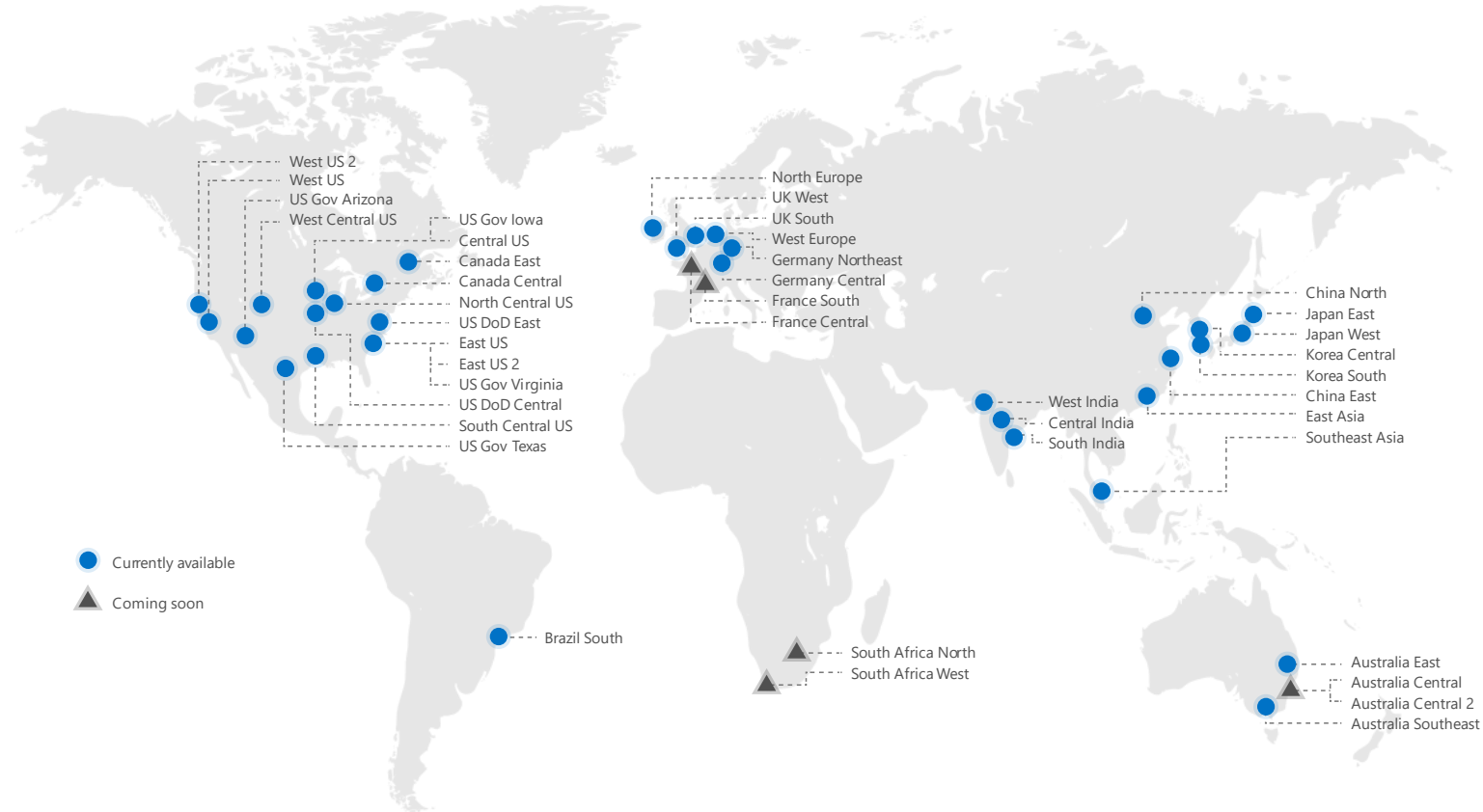
Pay for what you use

Cloud Models

Cloud Models – a funnier way!!!

Traditional On-Premises (Legacy)	Infrastructure as a service (IaaS)	Platform as a service (Paas)	Software as a service (Saas)
Dining Table	Dining Table	Dining Table	Dining Table
Drinks	Drinks	Drinks	Drinks
Electric / Gas	Electric / Gas	Electric / Gas	Electric / Gas
Oven	Oven	Oven	Oven
Fire	Fire	Fire	Fire
Pizza Dough	Pizza Dough	Pizza Dough	Pizza Dough
Tomato Sauce	Tomato Sauce	Tomato Sauce	Tomato Sauce
Toppings	Toppings	Toppings	Toppings
Cheese	Cheese	Cheese	Cheese
Made at Home	Take and Bake	Pizza Delivery	Dining Out

■ You Manage   ■ Vendor Manages

Azure Regions

42 Azure Regions, more than any other cloud provider

West US 2
West US
US Gov Arizona
West Central US

US Gov Iowa
Central US
Canada East
Canada Central
North Central US
US DoD East
East US
East US 2
US Gov Virginia
US DoD Central
South Central US
US Gov Texas

North Europe
UK West
UK South
West Europe
Germany Northeast
Germany Central
France South
France Central

China North
Japan East
Japan West
Korea Central
Korea South
China East
East Asia
Southeast Asia

West India
Central India
South India

Currently available

Coming soon

Brazil South

South Africa North
South Africa West

Australia East
Australia Central
Australia Central 2
Australia Southeast

Special Azure Regions

Germany Region

China Region

Pair Azure Regions

Azure Regions in a Pair have direct connections which bring additional benefits to use them together.

Each Azure Region in a pair are always located greater than 300 miles apart when possible.
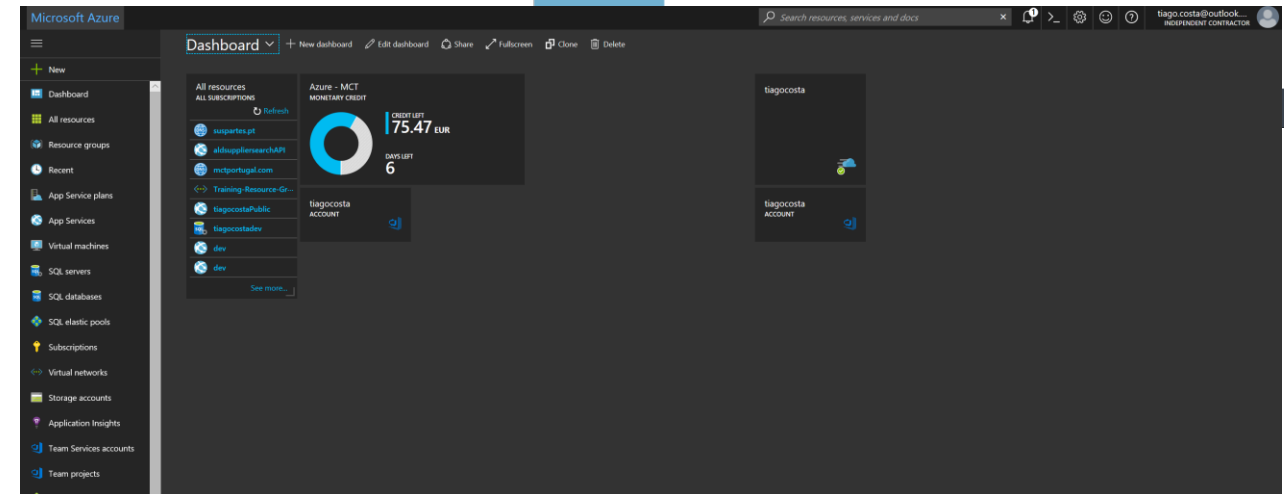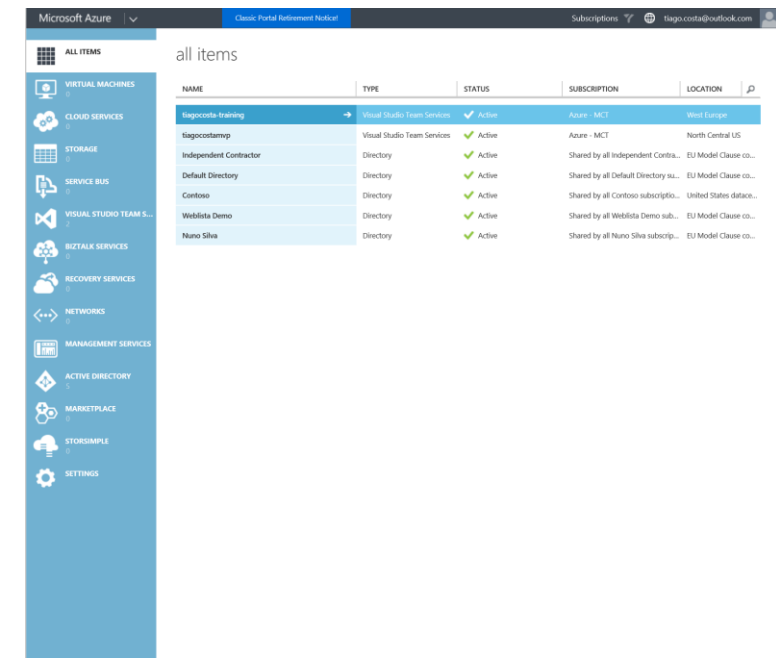
Not all services are available in all regions
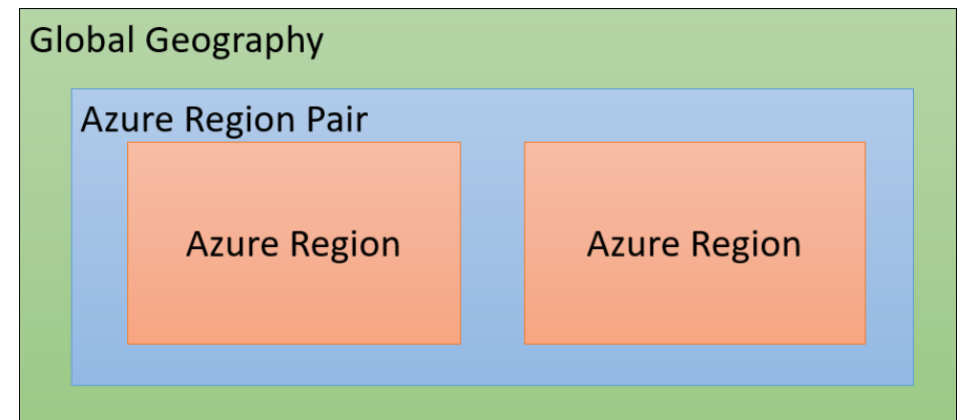
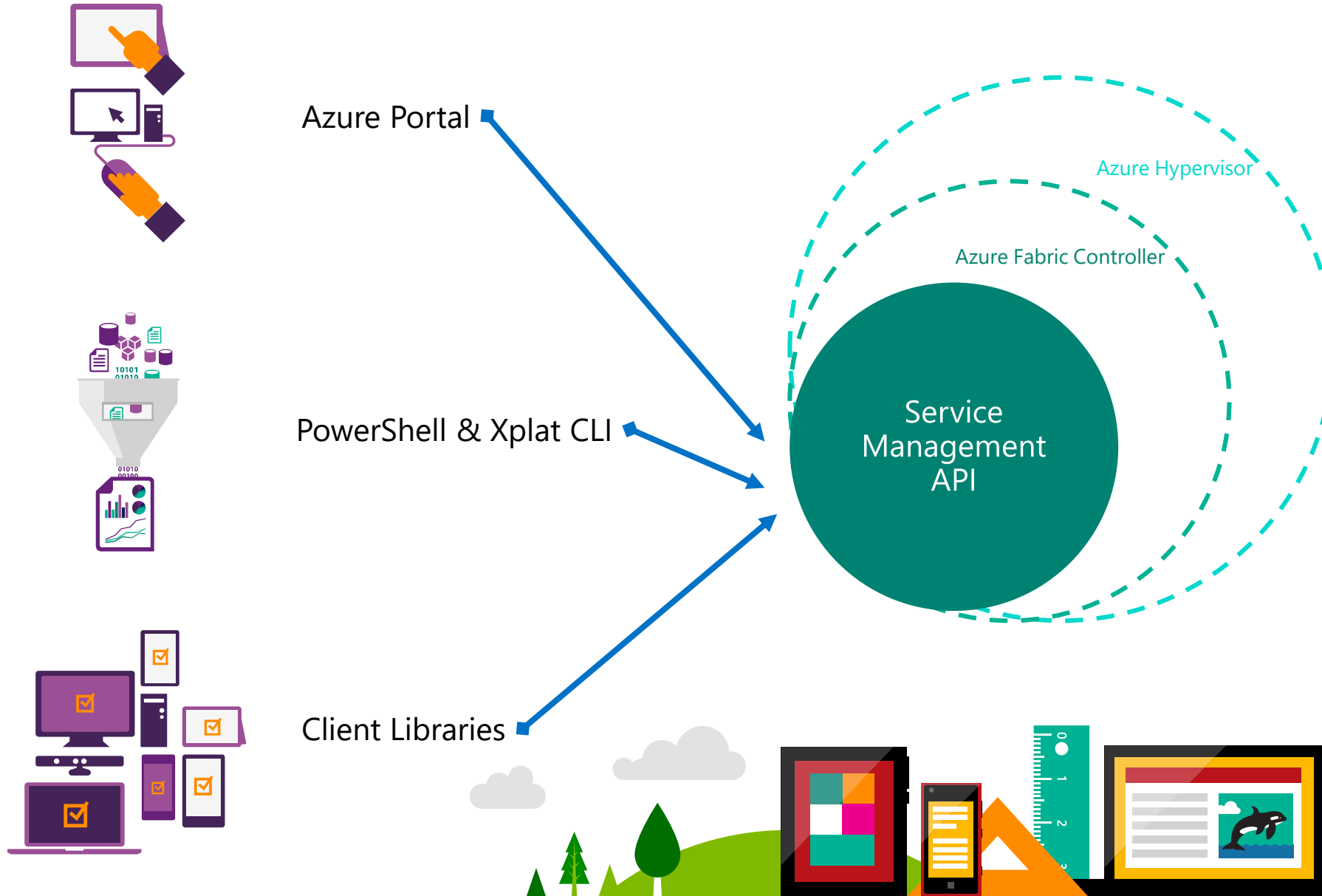# Azure Portals

OLD Portal – Retired on 8 Jan 2018!!!!

https://manage.windowsazure.com

Current Portal

https://portal.azure.com

Azure Portals

Azure Portal

PowerShell & Xplat CLI

Client Libraries

Service Management API

Azure Hypervisor

Azure Fabric Controller
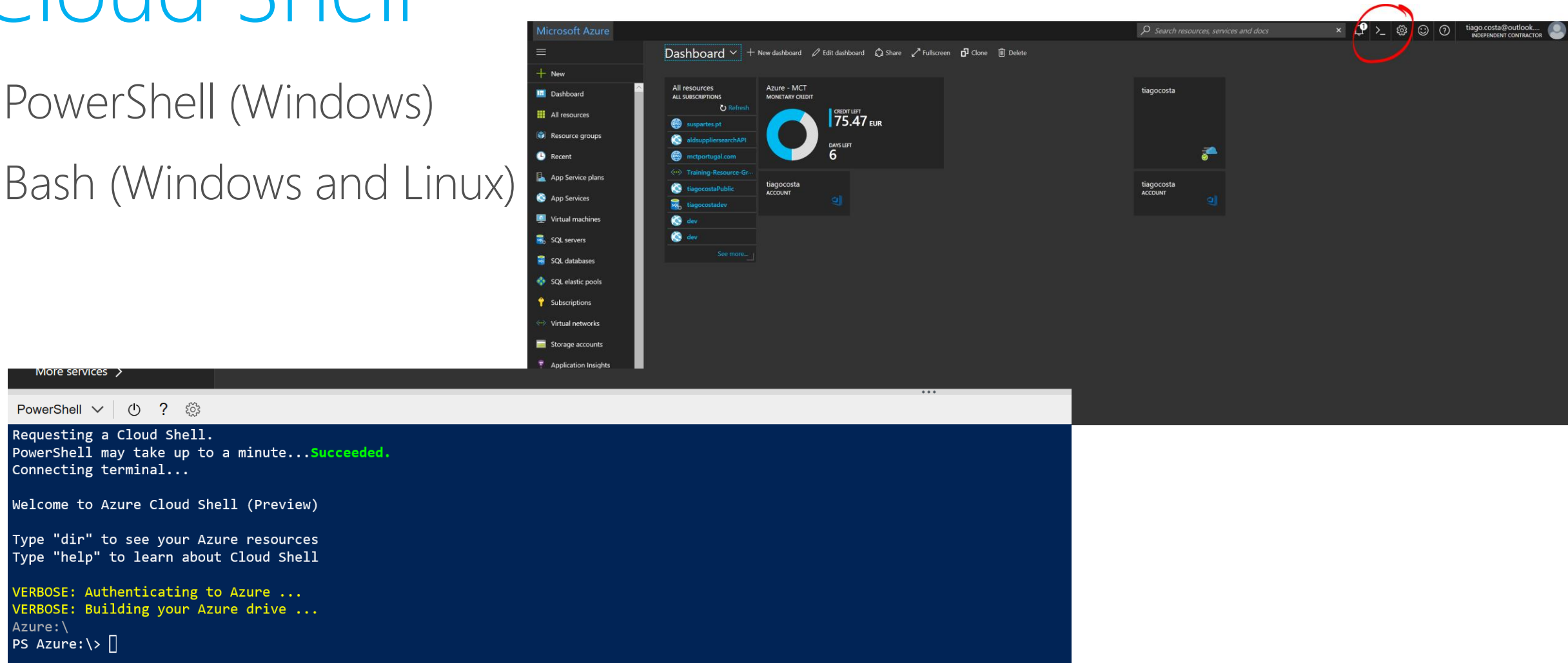
Cloud Shell

PowerShell (Windows)

Bash (Windows and Linux)

Azure Portal

Demonstration

https://portal.azure.com
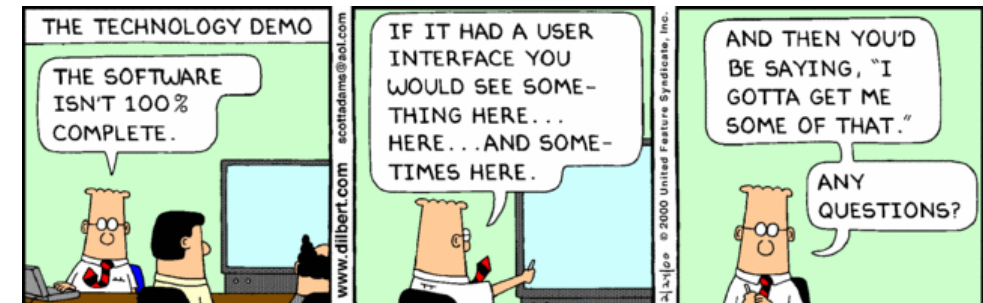
ARM Templates

Resource

Resource Group

Declarative JSON template

```json
"resources": [
  {
    "apiVersion": "2016-01-01",
    "type": "Microsoft.Storage/storageAccounts",
    "name": "mystorageaccount",
    "location": "westus",
    "sku": {
      "name": "Standard_LRS"
    },
    "kind": "Storage",
    "properties": {
    }
  }
]
```
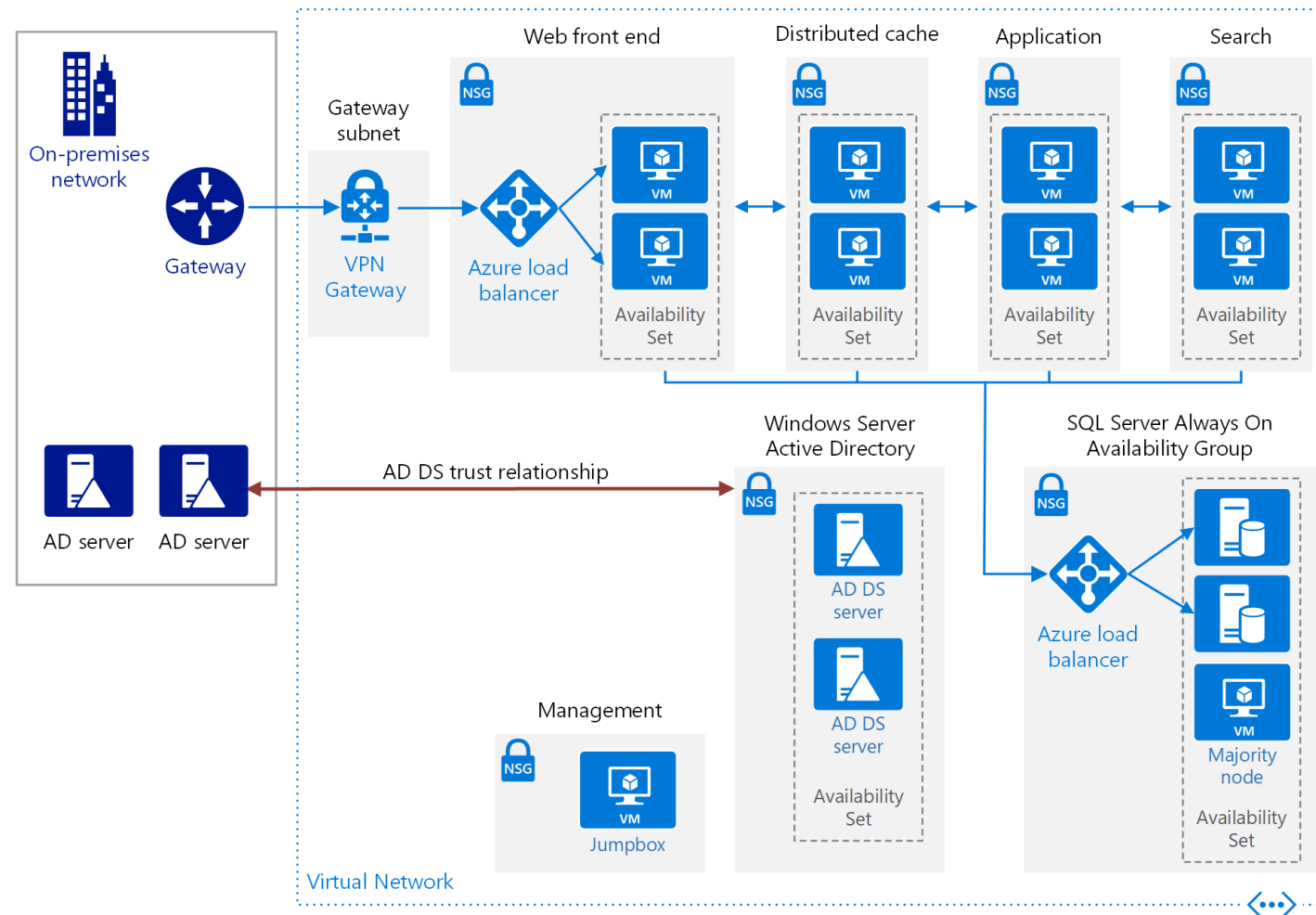
IaaS Architecture: SharePoint Farm

On-premises network

Gateway

Gateway subnet

VPN Gateway

Azure load balancer

Web front end

NSG

VM

VM

Availability Set

Distributed cache

NSG

VM

VM

Availability Set

Application

NSG

VM

VM

Availability Set

Search

NSG

VM

VM

Availability Set

AD server

AD server

AD DS trust relationship

Windows Server Active Directory

NSG

AD DS server

AD DS server

Availability Set

SQL Server Always On Availability Group

NSG

Azure load balancer

Majority node

Availability Set

Management

NSG

VM

Jumpbox

Virtual Network

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Resources

Microsoft Docs - https://docs.microsoft.com/

Azure Reference Architecture - https://docs.microsoft.com/en-us/azure/architecture/reference-architectures/

GitHub

Template Building Blocks - https://github.com/mspnp/template-building-blocks

Azure Visio Stencils - https://www.microsoft.com/en-gb/download/details.aspx?id=41937

Azure App Service

Azure App Service

Scalable platform to host Web Application

Windows or Linux support

Integration with Development tools like Visual Studio, Eclipse, Visual Studio Team Services, GitHub, …

Open platform for many different development languages

Standard domain name: [http/s]://APPNAME.azurewebsites.net

Features

WebJobs

AlwaysOn

Custom domain names

Autoscaling

Deployment Slots

Easy setup for CI/CD

Easy integration with other Azure Services like: CDN, Traffic Manager

App Service plans

Free (Shared compute)

Shared (Custom domains)

Basic (Dedicated compute, Up to 3 Instances)

Standard (Auto Scaling, Up to 10 Instances, Slots, Traffic Manager, Dailly backups)

Premium (Up to 20 Instances)

PremiumV2 (SSD and faster CPUs)

Web Deploy protocol

WebDeploy simplifies deployment of Web applications and Web Sites to IIS servers by providing a standard package format

- Packages can be installed manually using IIS Manager, command line tools or PowerShell
- Packages can be remotely installed by using the IIS instance remote deployment service

Visual Studio can deploy a web application to a Web Deploy endpoint

App Settings

Applications settings and connections strings can be configured in the Azure Portal

Connection strings

| ApplicationContextDB | dows.net,1433;Initial Catal × | SQL Database ▾ |
| Name | Value | SQL Database ▾ |

App settings

WEBSITE_NODE_DEFAULT_VERSION	0.10.32
ITEM_COUNT	13
API_KEY	waasowu1229847pedju
Key	Value

Azure App Service

Demonstration

Create a Web Application in Azure App Services

Autoscaling

Scaling rules: Schedule or Based on performance metrics

Performance Metrics

- CPU

- Memory

- Queue

Can setup a Min and Max instance threshold

Azure App Service

Demonstration

Autoscaling a Web Application

Azure Traffic Manager

Azure Traffic Manager
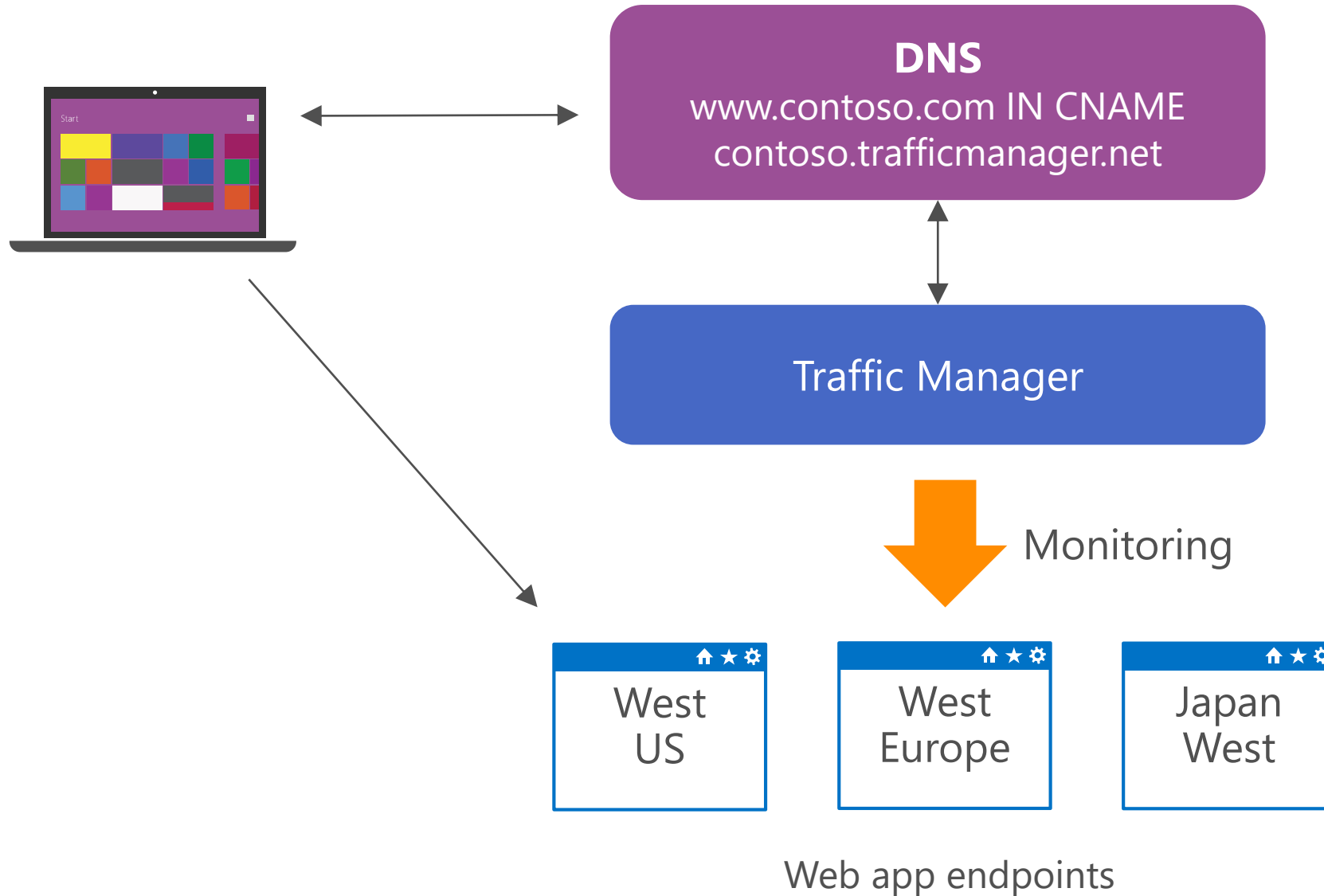
Allows you to control the distribution of user traffic

Service endpoints include: Azure VMs, Cloud Services and Web Apps

Benefits:

- Improve availability of critical applications

- Improve responsiveness for high-performance applications

- Perform service maintenance without downtime

- Combine on-premises and Cloud-based applications

- Distribute traffic for large, complex deployments

Azure Traffic Manager

DNS
www.contoso.com IN CNAME
contoso.trafficmanager.net

Traffic Manager

Monitoring

West
US

West
Europe

Japan
West

Web app endpoints

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Configure Azure Traffic Manager

Add a DNS CNAME record

Create a Traffic Manager profile

Configure a DNS prefix

Choose a load-balancing method:

   Geography

   Priority

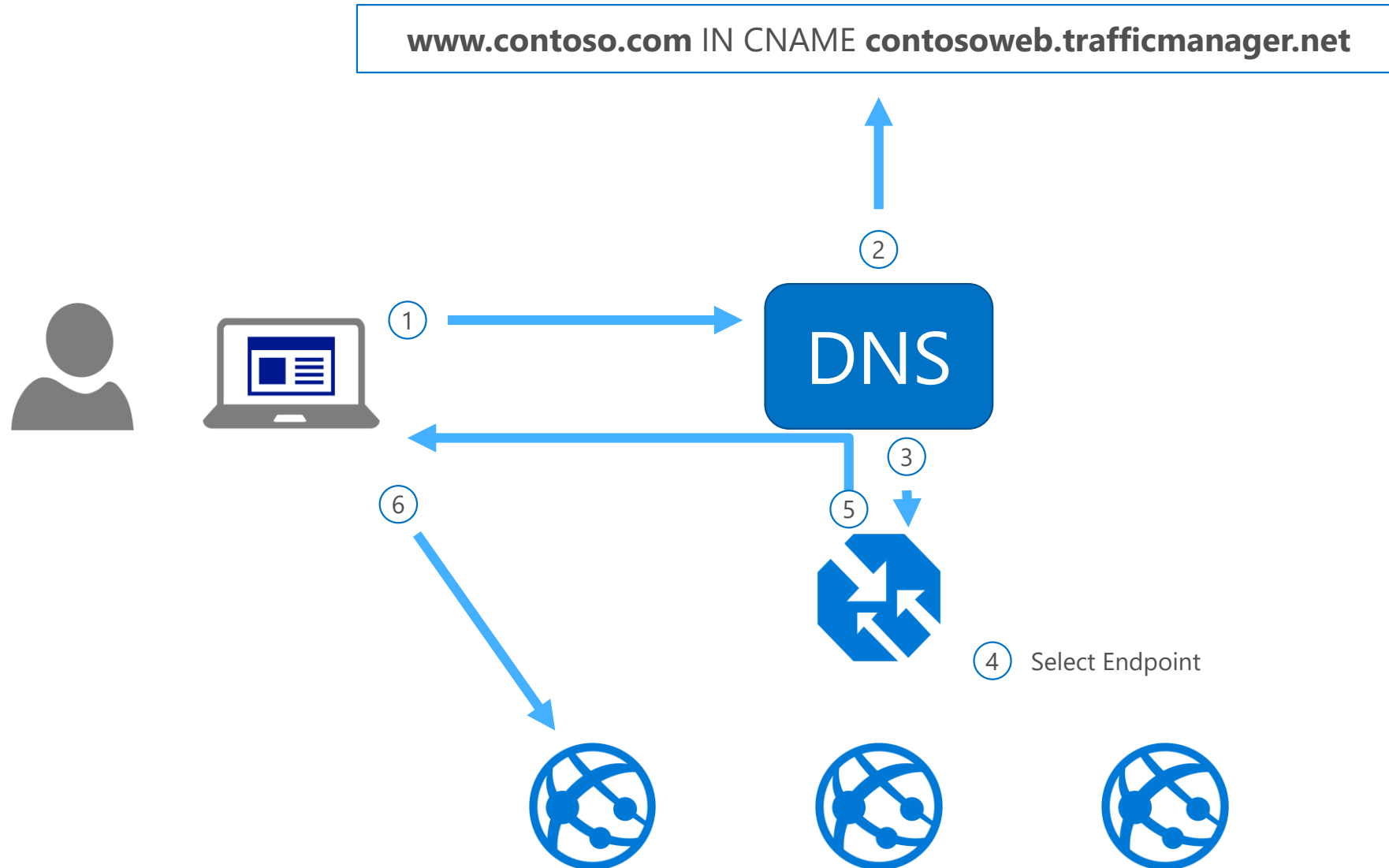   Weighted

   Performance

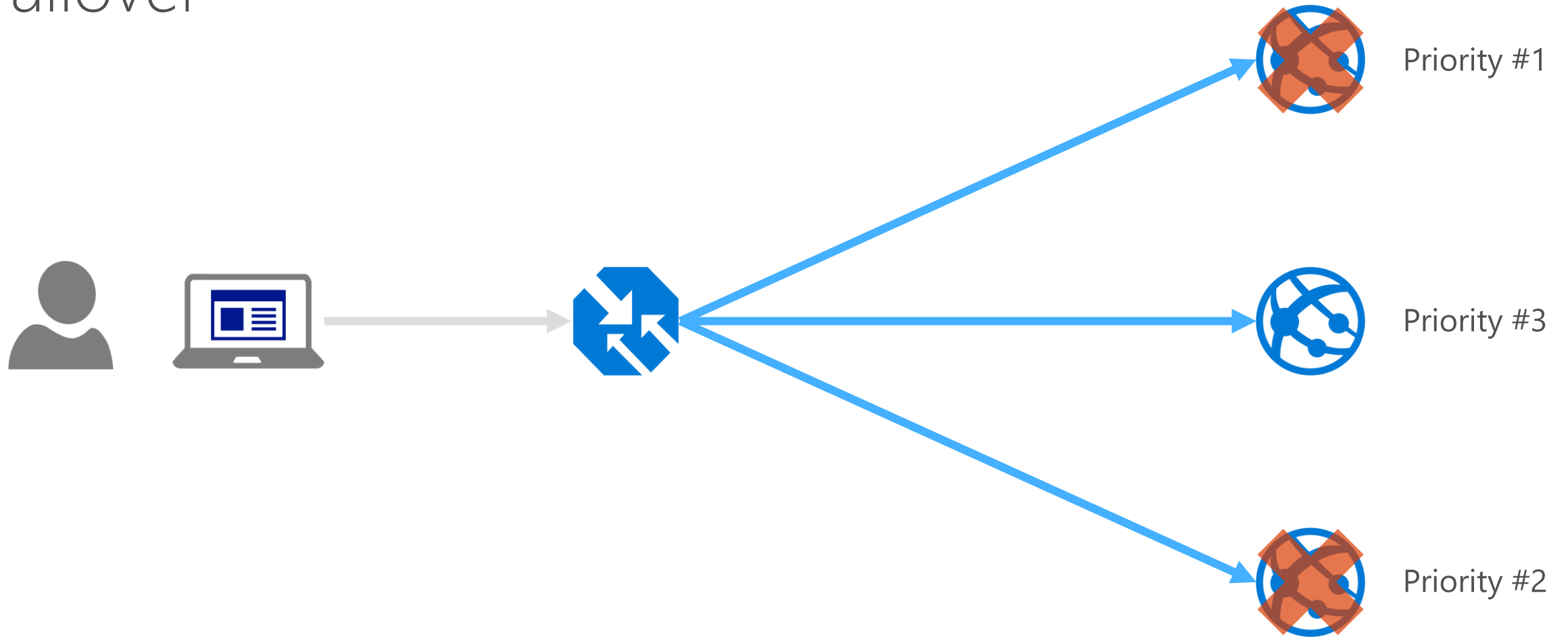Add endpoints to the Traffic Manager profile

Configure monitoring

Azure Traffic Manager Routing
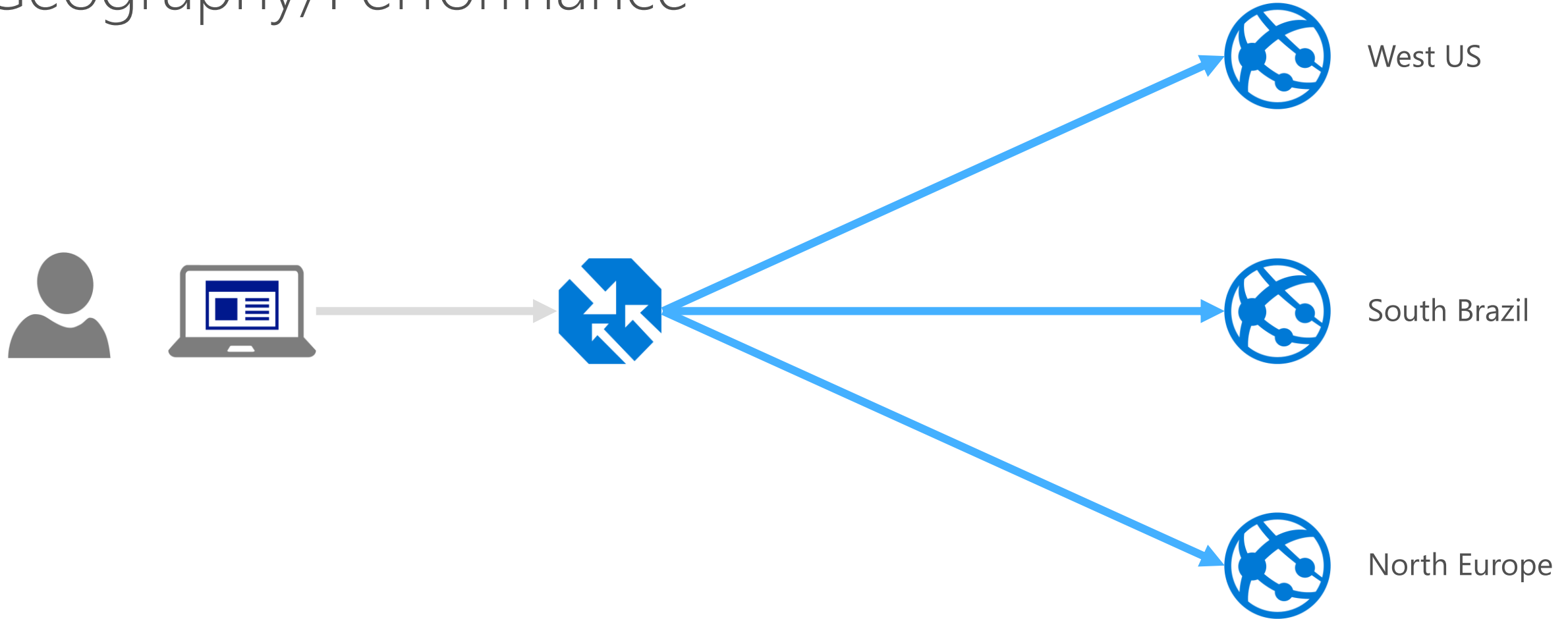
www.contoso.com IN CNAME contosoweb.trafficmanager.net

DNS

4 Select Endpoint

Azure Traffic Manager Algorithms

- Failover

Priority #1

Priority #3

Priority #2

Azure Traffic Manager Algorithms

- Geography/Performance

West US

South Brazil

North Europe

Azure Traffic Manager

Demonstration

Azure Traffic Manager

Azure CDN

Azure CDN

CDN endpoints are globally distributed

Data from Azure Storage is cached at each CDN endpoint

Users access data from their closest CDN endpoint

If data is not available at a CDN endpoint, Azure retrieves it from the origin and caches it at the CDN endpoint

Azure CDN – Caching Azure blobs

Azure can only cache publicly available blobs in CDN endpoints

After a CDN is implemented, all publically available blobs in the storage account will be cached

Cached content remains in the cache for the duration of TTL, which is 7 days by default

Caching Cloud Services and Web Apps

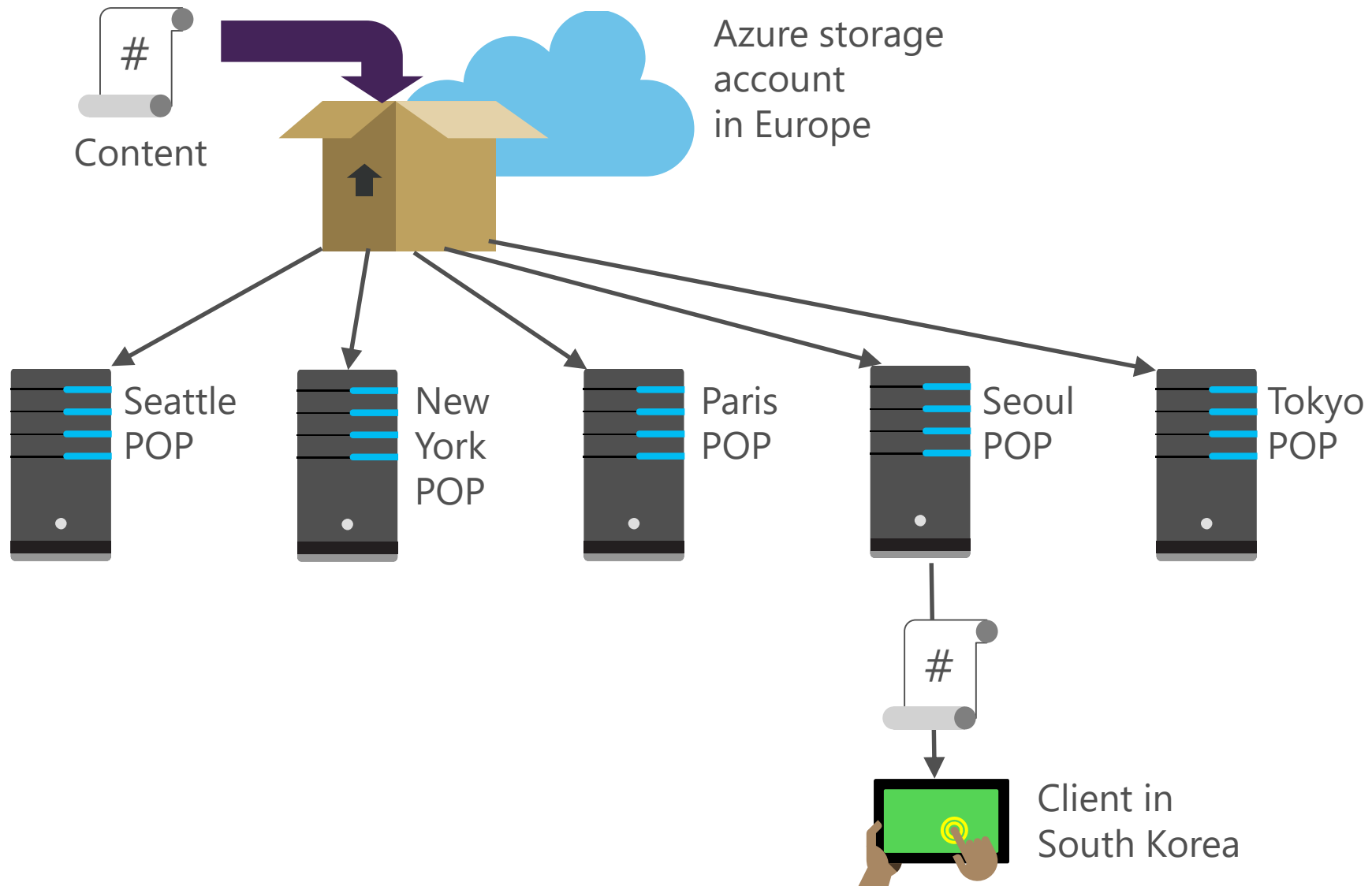You can cache PaaS cloud service or Azure Web App content in a CDN

The content to cache should be static and must be accessible via HTTP on port 80

The cloud service must be in the production deployment slot

The content to cache must be in the /cdn folder of the cloud service

Azure CDN

Content

Azure storage account in Europe

Seattle POP

New York POP

Paris POP

Seoul POP

Tokyo POP

Client in South Korea

Azure CDN

Demonstration

Azure CDN

Azure SQL Database

Overview

Fully managed database solution

Highly compatible with existing management tools

Built-in high availability and predictable performance as you scale out

Service Tiers

Basic (Development and Testing)

Standard (Development and Production)

Premium (Production environments)

PremiumRS (Workload that can tolerate data loss up to 5-minutes due to service failures)

Service Tiers

Basic (5 DTUs)

Standard (10 to 3000 DTUs)

Premium (125 to 4000 DTUs)

PremiumRS (125 to 1000 DTUs)

Geo-Replication

Active geo-replication is available for Premium SQL Database instances

- This feature is asynchronous by default and guarantees that replicas will be eventually consistent

- You can replicate transactions to as many as four copies of the database

- Replicas can exist in different regions for geo-redundancy

You can use the replica of the database as a read-only data source in load-balancing scenarios

- Example: An application uses the primary database for line-of-business functionality and the replica for reports
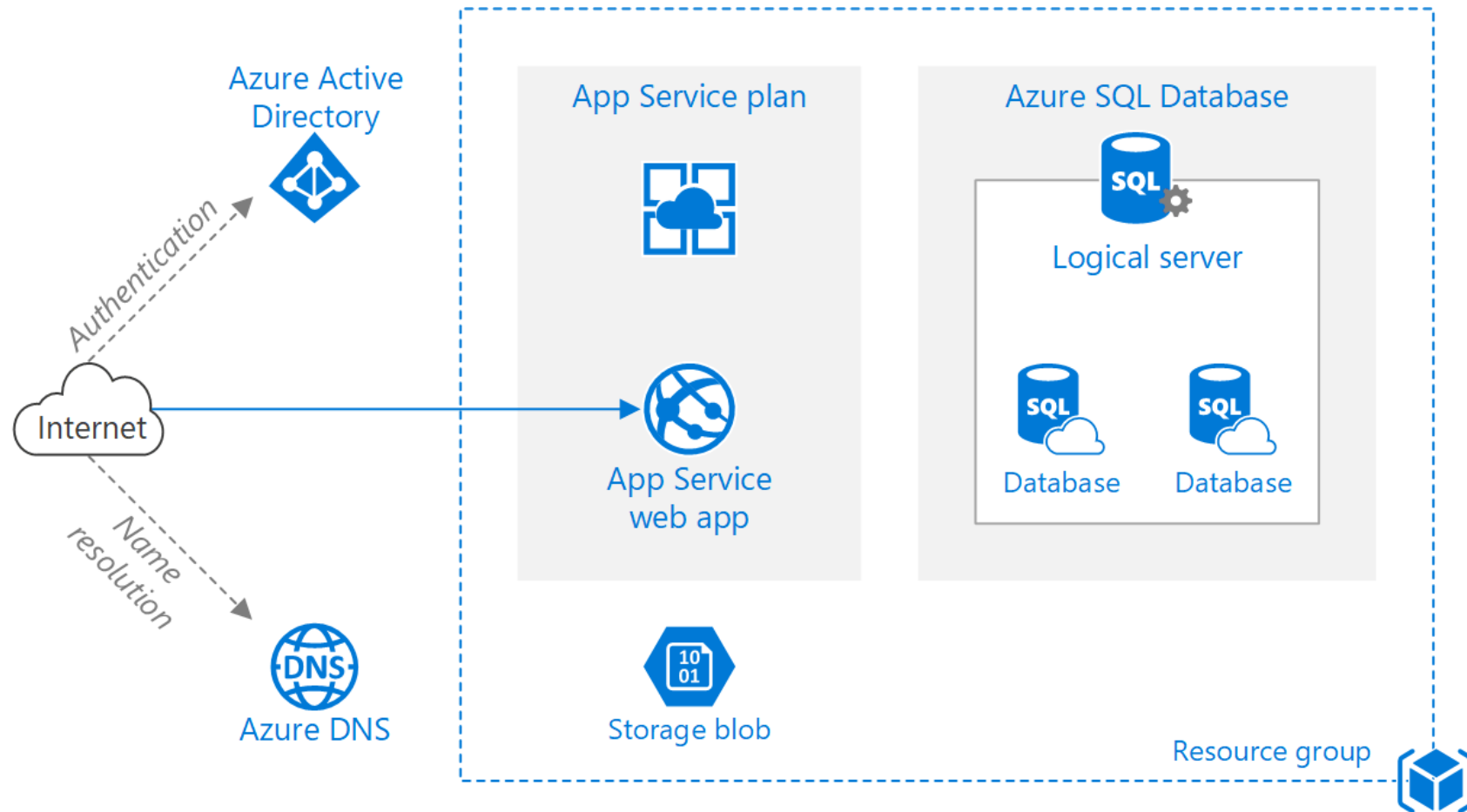
Azure SQL Database
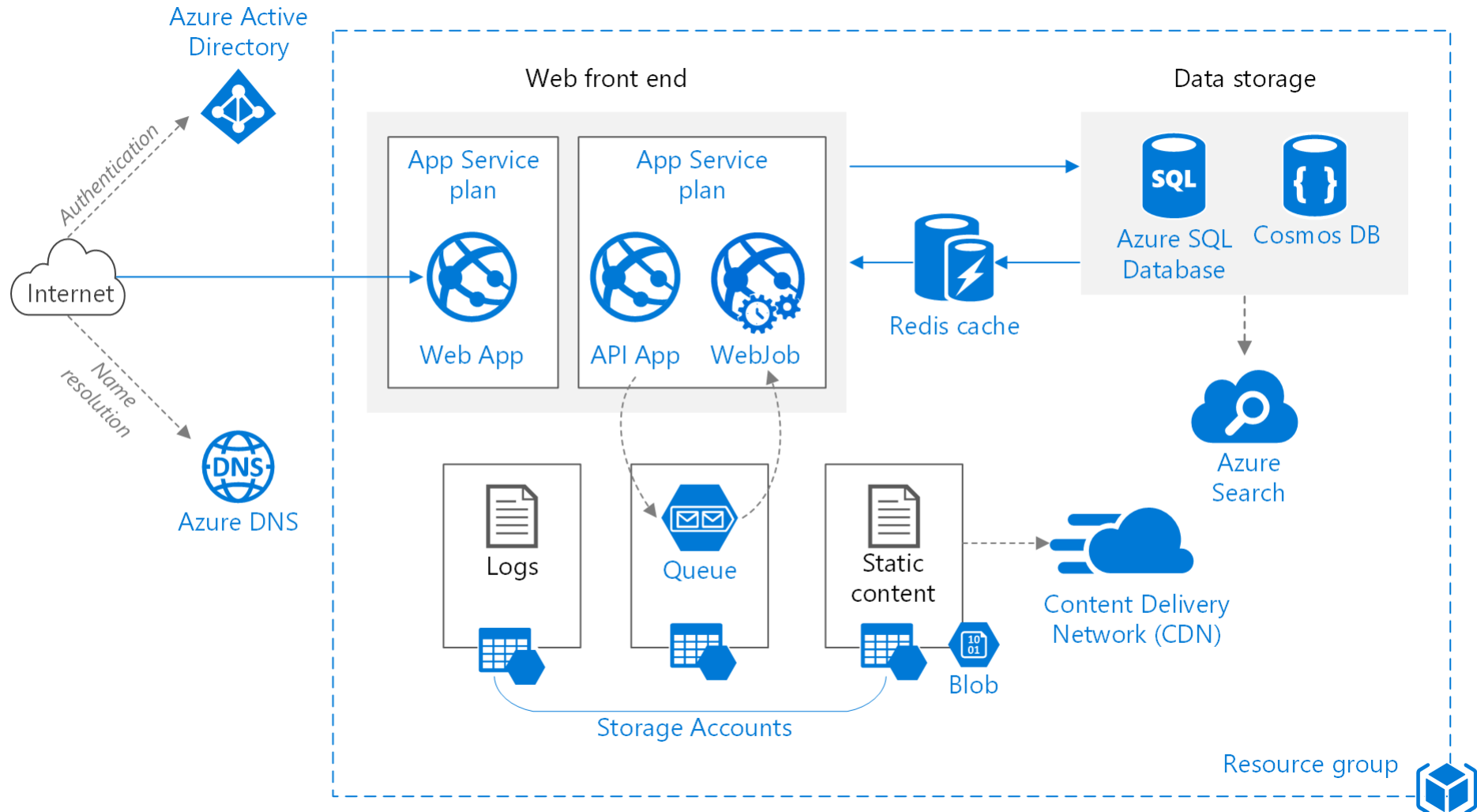
Demonstration

Geo-Replication
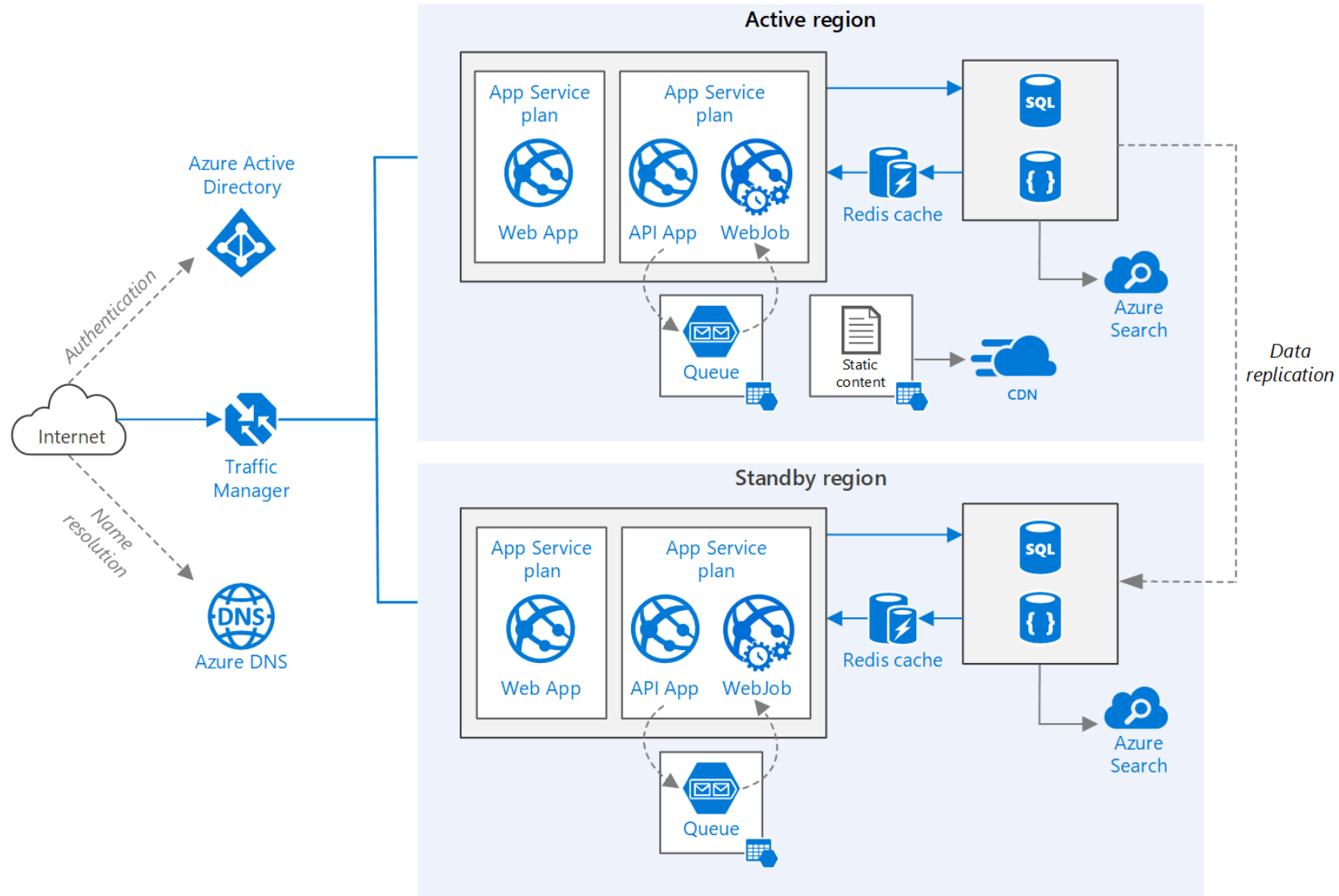
Azure Web Application Architectures

Azure Web App

Azure Web App - Scalability

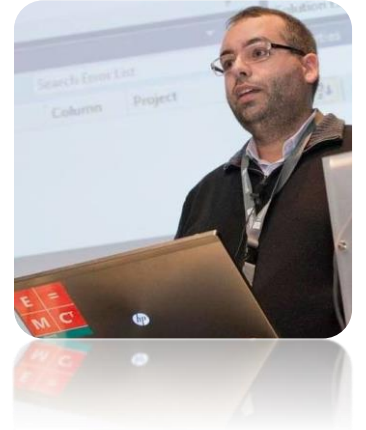# Azure Web App - Multiple Regions

Closing

Thanks for allowing me to boring you all

My name is Tiago Costa

And this is how you create global web applications with Azure Web Apps and SQL Databases

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www.tiago.costa.eu

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* Para quem não puder preencher durante a reunião,
iremos enviar um email com o link à tarde

Próximas reuniões presenciais

27/01/2018 – Lisboa

03/02/2018 – Porto

24/02/2018 – Leiria

07/04/2018 – Lisboa

Reserva estes dias na agenda! :)