Microsoft

Azure

Azure Developer Series

Application Migration to Azure

Peter De Tender

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April 2019

About Me…

Peter De Tender – MCT, Azure MVP

- CEO and Lead Technical Trainer of 007FFFLearning.com, +20 years IT experience, mainly datacenters and Microsoft Infrastructure background
- Full-time in Azure since 2013 (Readiness & Architect)
- Azure Advisor, Azure Certified Architect
- Technical Writer, Book author, Courseware Creator
- Living in Belgium, but traveling worldwide 90% of my time, helping larger Microsoft Partners, customers and Microsoft FTEs in learning about and using Azure, by providing workshops with passion

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Setting the scene

Overview of the workshop

About the workshop content…

About:

In this workshop, you will learn how to build a proof of concept (POC) that will transform an existing ASP.NET-based Web application to a container-based application. This POC will deliver a multi-tiered web app solution from a Virtual Machine architecture into Azure, leveraging Azure WebApps and different Azure container solutions available today. You will also migrate the underlying database from a SQL 2014 Virtual Machine architecture to SQL Azure. Easter Bonus: Every now and then, we will showcase similar steps using a Node.JS and MongoDB, migrating to Azure Web Apps, Containers and CosmosDB.

At the end of this workshop, you will have a good understanding of container concepts, Docker architecture and operations, Azure Container Services, Azure Kubernetes Services and SQL Azure PaaS solutioning.

Target Audience:

The workshop is targeted to Cloud Architects, Cloud Solution designers, developers and IT sysadmins, CIO's, CTO's and anybody else who is interested in learning about Azure, containers, application cloud migration and digital transformation.

Focus of the workshop (40%) is getting hands-on experience, complemented with presentations and whiteboard sessions (if in-person delivery).

Time Estimate:

16 hours (+/- 10 hours presentations, 6 hours of optional hands-on labs for attendees)

Workshop Agenda - Presentations

What we will talk about…

- Module 1: Digital App Transformation with Azure
- Module 2: Infrastructure as Code using ARM templates
- Module 3: Azure Database Solutions – SQL Azure
- Module 4: Azure App Services – Azure Web Apps (.NET + Node.JS)
- Module 5: Introduction to Docker
- Module 6: Deploying Azure Container Registry / Azure Container Instance
- Module 7: Migrating Apps to Azure Container Services / Kubernetes Services
- Module 8: ACS / AKS Management and Monitoring

Workshop Agenda – Hands-On-Labs

Learn by doing…

- Module 2: Infrastructure as Code using ARM templates
  - **Lab 1:** Setup your Azure subscription and deploy the source Virtual Machine environment with Visual Studio 2017
- Module 3: Azure Database Solutions – SQL Azure
  - **Lab 2:** Migrating a SQL VM database to SQL Azure using SQL Management Studio
- Module 4: Azure App Services – Azure Web Apps
  - **Lab 3:** Migrating your legacy ASP.NET application to Azure Web Apps with Visual Studio 2017
  - Easter Egg Bonus: Deploying a Node.JS app with MongoDB / CosmosDB
- Module 5: Introduction to Docker
  - **Lab 4:** Containerizing your legacy ASP.NET application with Docker CE for Windows

Technical Requirements

What you need…

<Could vary based on the actual delivery-method>, but overall:

- Client workstation running recent Windows, Linux or Mac OS and latest internet browser
- Access to ports 80 (HTTP), 443 (HTTPS) and 3389 (Remote Desktop)
- Full Azure subscription (MSDN, AzurePass, Paid subscription, AE, CSP,…)
- Lab consumption estimate: $15-35 (when shutdown all resources)

Questions and HOL support

msdevseriessupport@007FFFLearning.com

Subject: Azure Developer Series – Containers

Response Time: within 4-8 hours

Check GitHub for FAQ and Updates:
http://www.github.com/007FFFLearning/MSDevSeriesSupport

(.NET) web sites to Azure Web Apps migration

Web Application Migration

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Key Objectives

What you will learn in this section

- Introduction to Azure Web Apps
- Deploying Azure Web Apps
- Azure Web Apps Enterprise features
- Web App Migration

Azure Web Apps: Introduction

Azure Application Services

A cloud app platform for delivering **modern enterprise apps** across cloud and mobile devices.

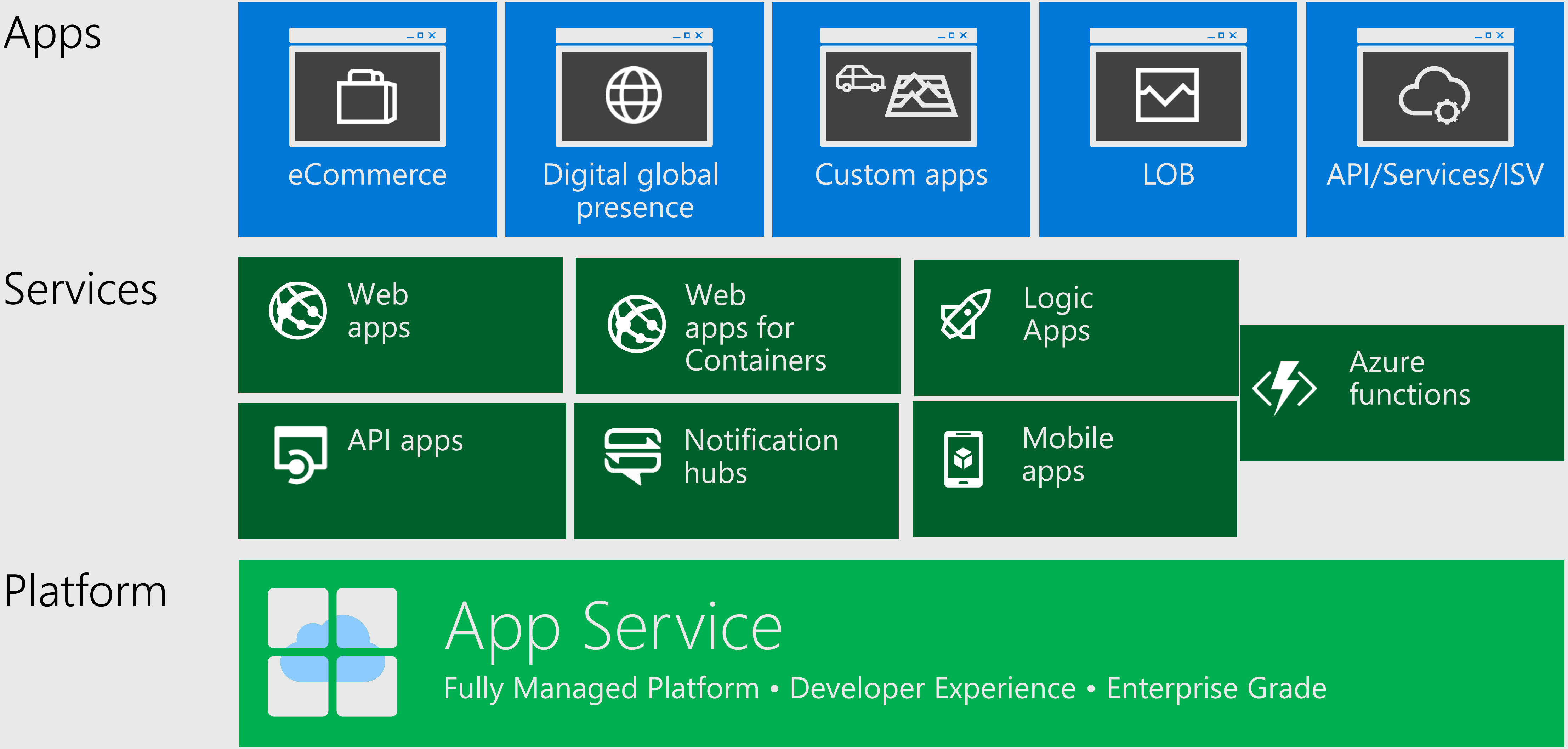
Delivered as an **integrated offering that delivers features and capabilities** from a number of existing Azure services

Enterprise Grade Apps

Fully Managed Platform

High Productivity Development

An end to end Application Platform



Apps

eCommerce

Digital global presence

Custom apps

LOB

API/Services/ISV

Services

Web apps

Web apps for Containers

Logic Apps

Azure functions

API apps

Notification hubs

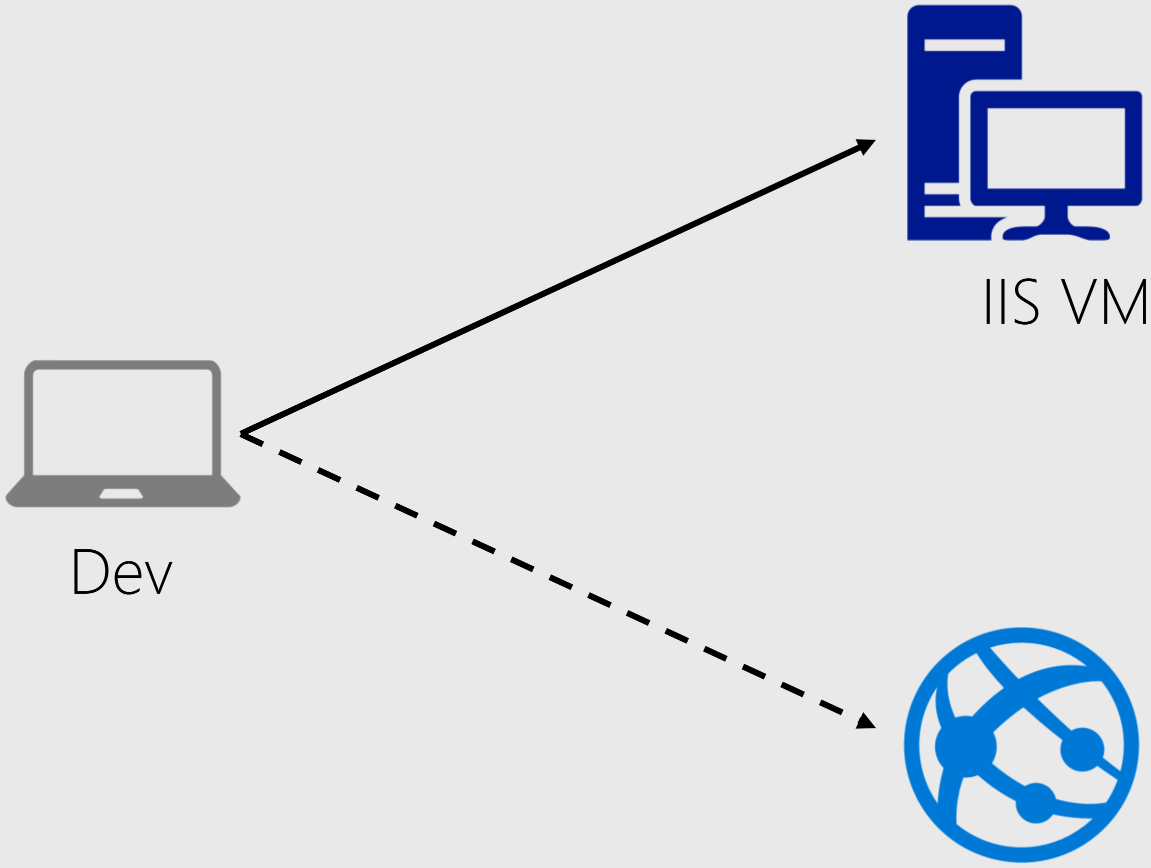
Mobile apps

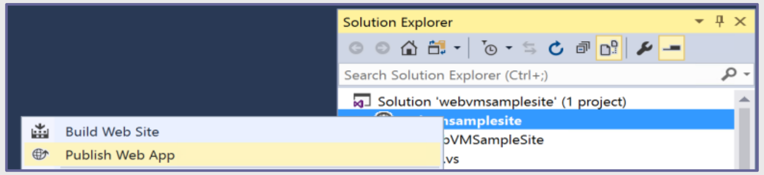
Platform

App Service

Fully Managed Platform • Developer Experience • Enterprise Grade

Deploying Code Directly to an Azure Web App





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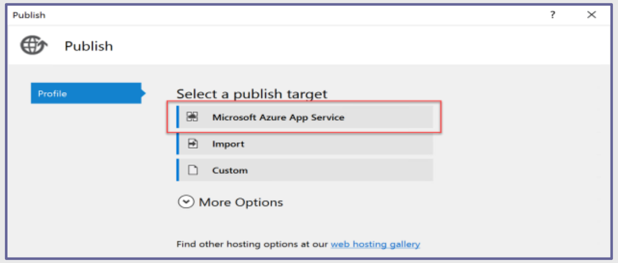
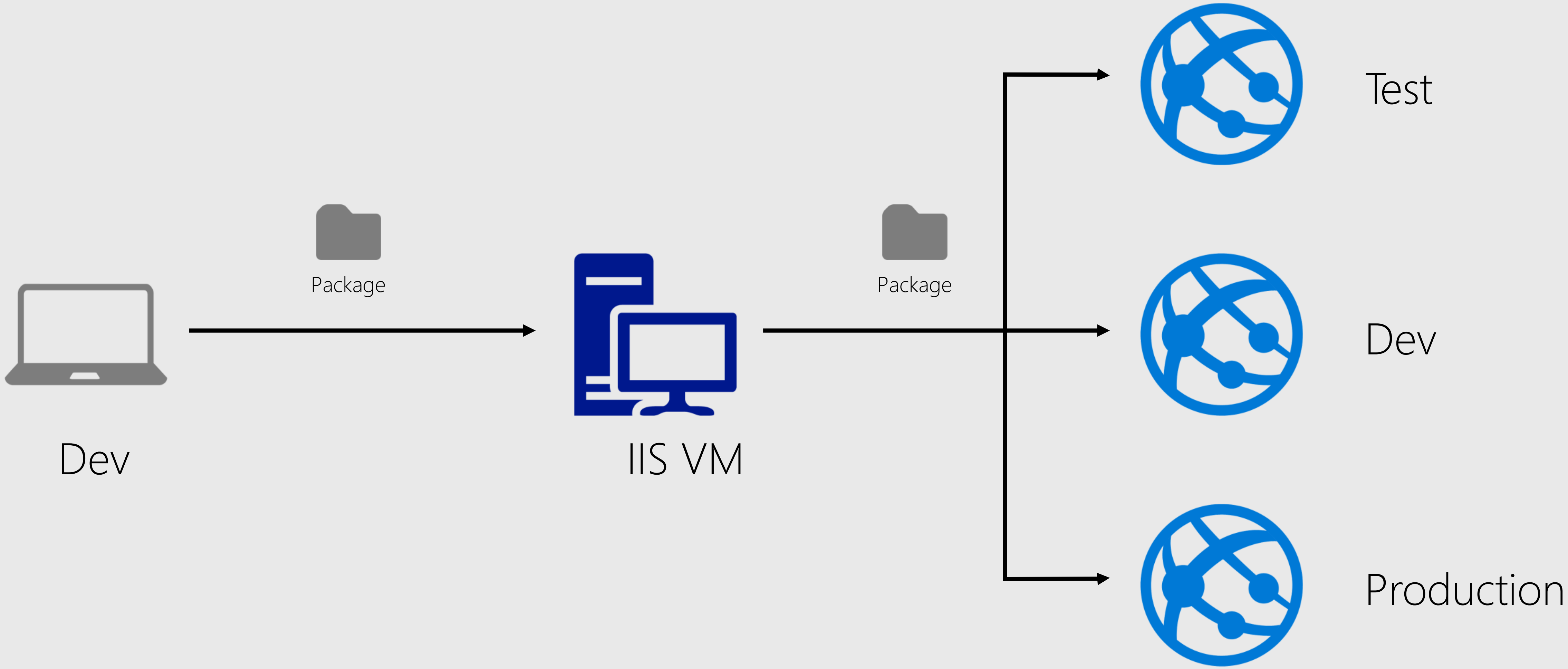


Find other hosting options at our web hosting gallery

Deploying a Package to an Azure Web App

Similarly, push source code to multiple instances



Deploying a Package to an Azure Web App

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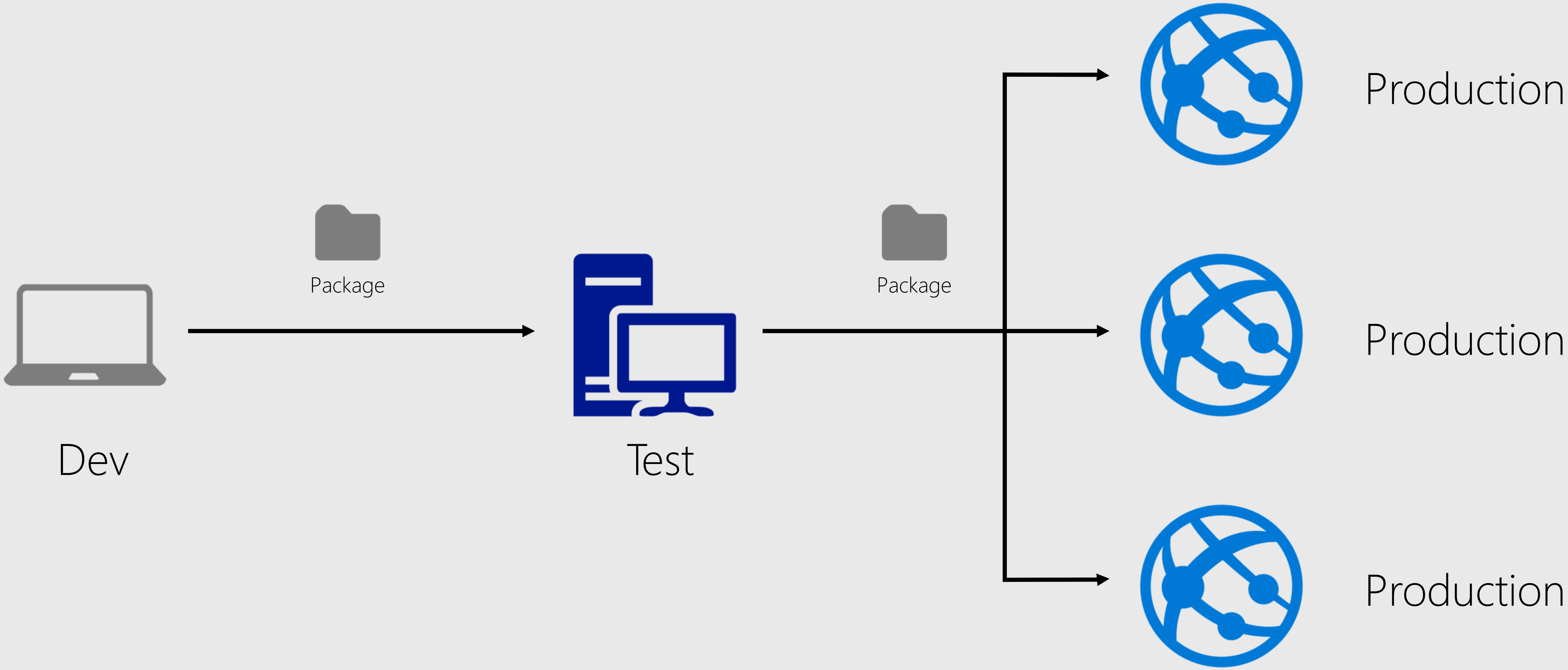
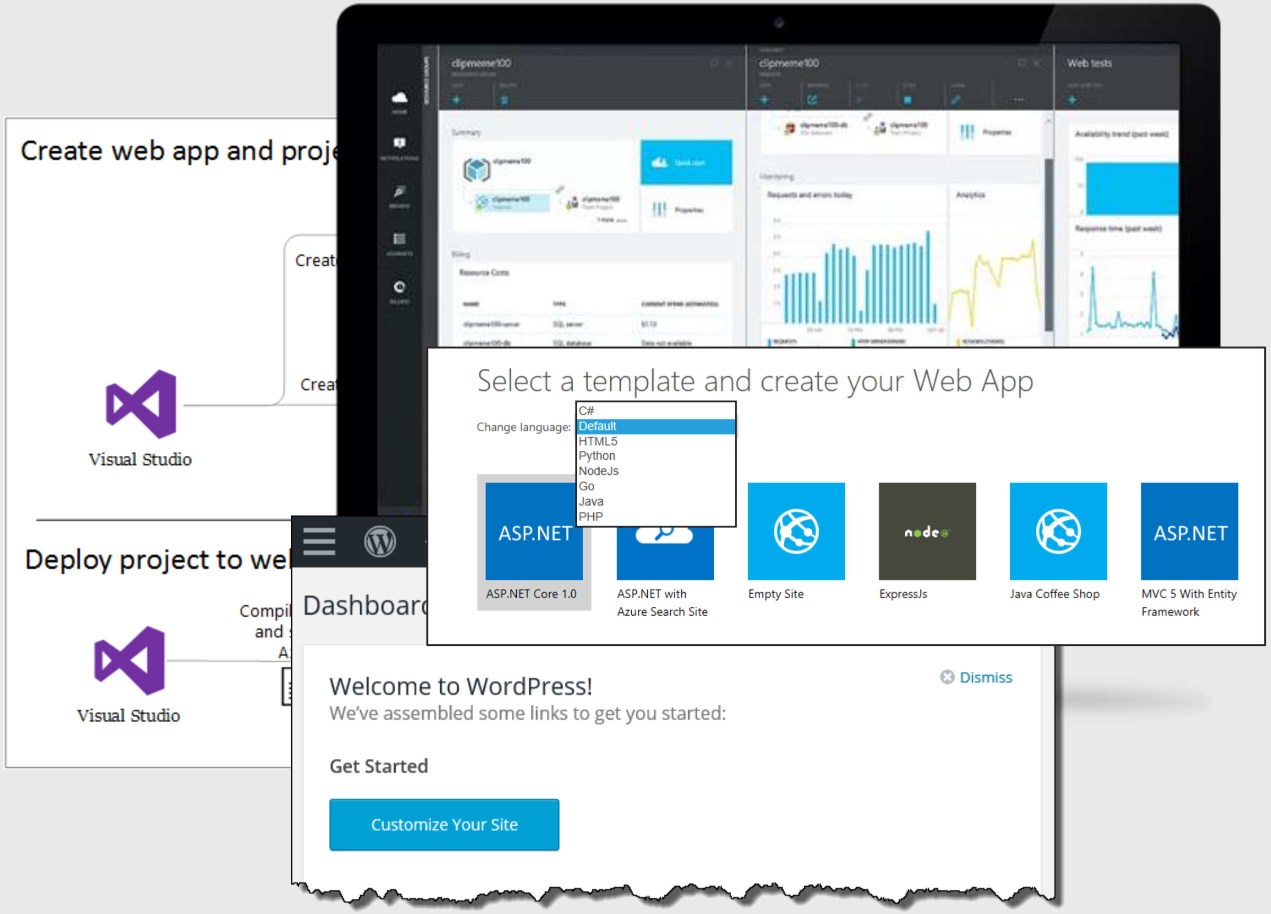


Supported Languages & Tools

Web Apps can be developed in virtually any development language and any toolset, including **.NET, PHP, Node.js, Python, Java, Marketplace extensions.** Web App development is built into Visual Studio 2015 and up for supported languages.



Create web app and proj

Deploy project to we

Select a template and create your Web App

Change language: Default

Dashboard

Welcome to WordPress!

We've assembled some links to get you started:

Get Started

Deploying an Azure Web App from Visual Studio 2017

Azure Web Apps Killing Features

Why migrating workloads to Azure PaaS?

- Azure Web Jobs
- Deployment Slots
- Auto Scaling
- SSL
- Custom Domains
- Scale out
- Different Pricing Tiers
- Integrated Backup
- App Insights
- …

Azure Web Jobs

Host and schedule lightweights job on an existing website

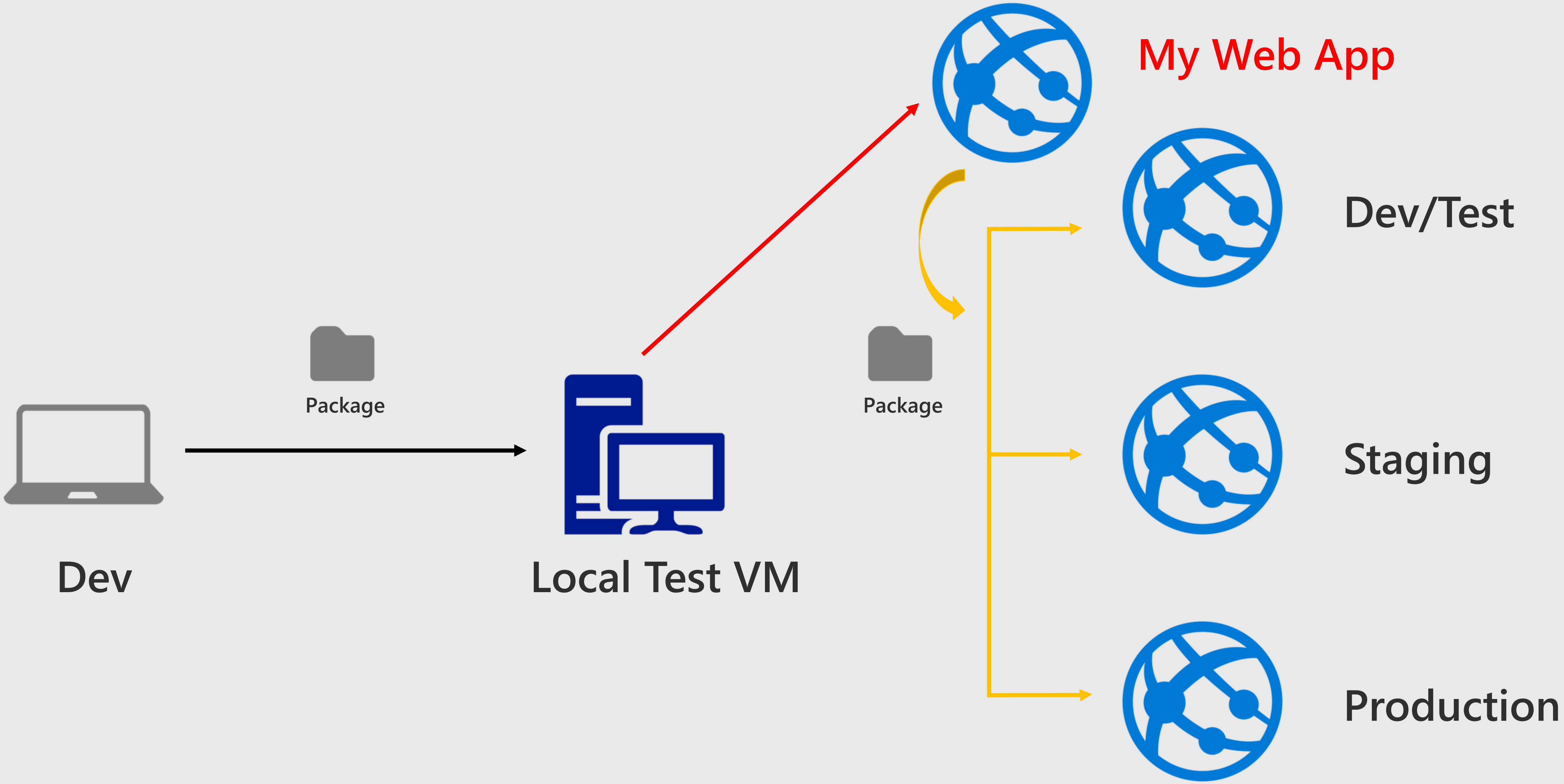
Triggered once, by schedule or run continuously

Support:

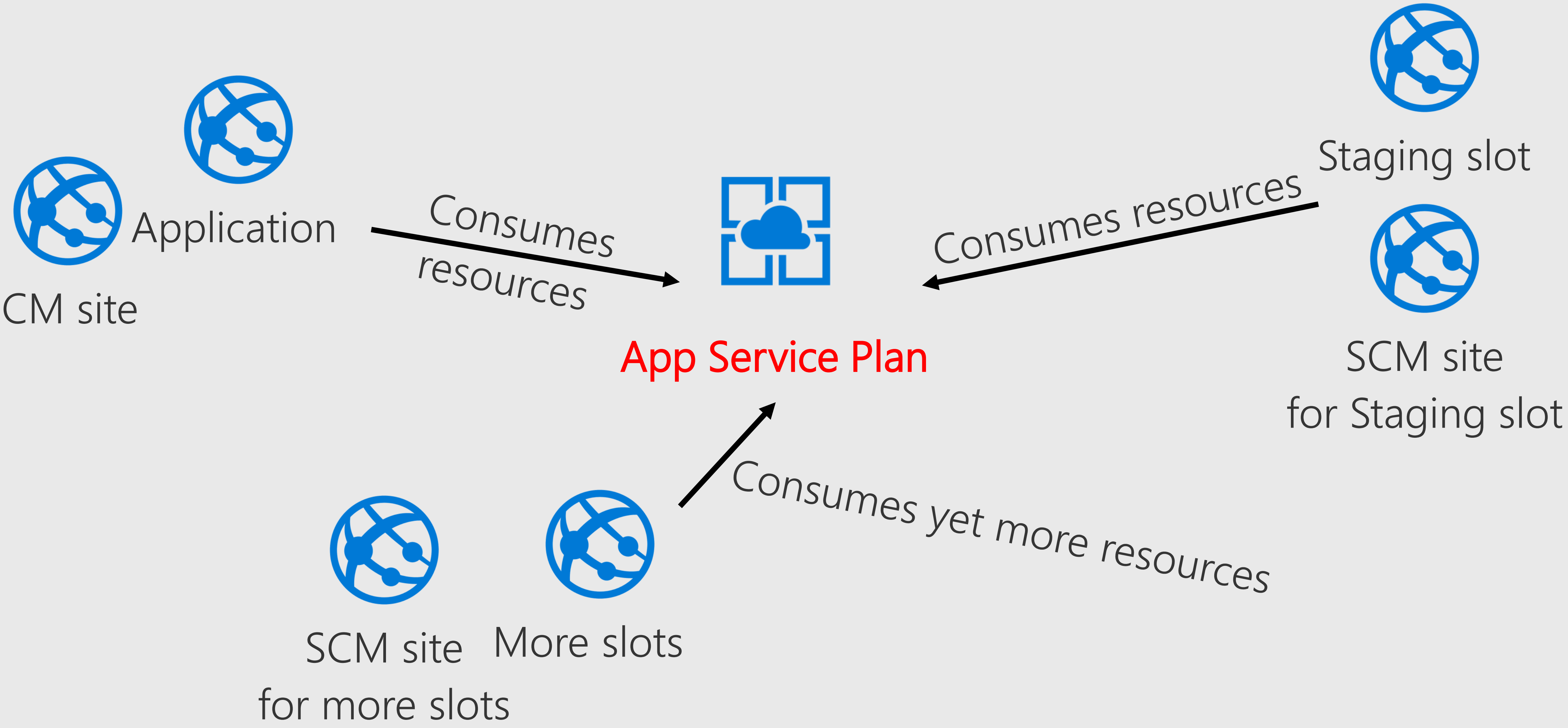
- batch (.exe/.cmd/.bat)
- bash (.sh)
- javascript (.js as node.js)
- php (.php)
- python (.py)

Dashboard Experience

Azure Web App Deployment Slots

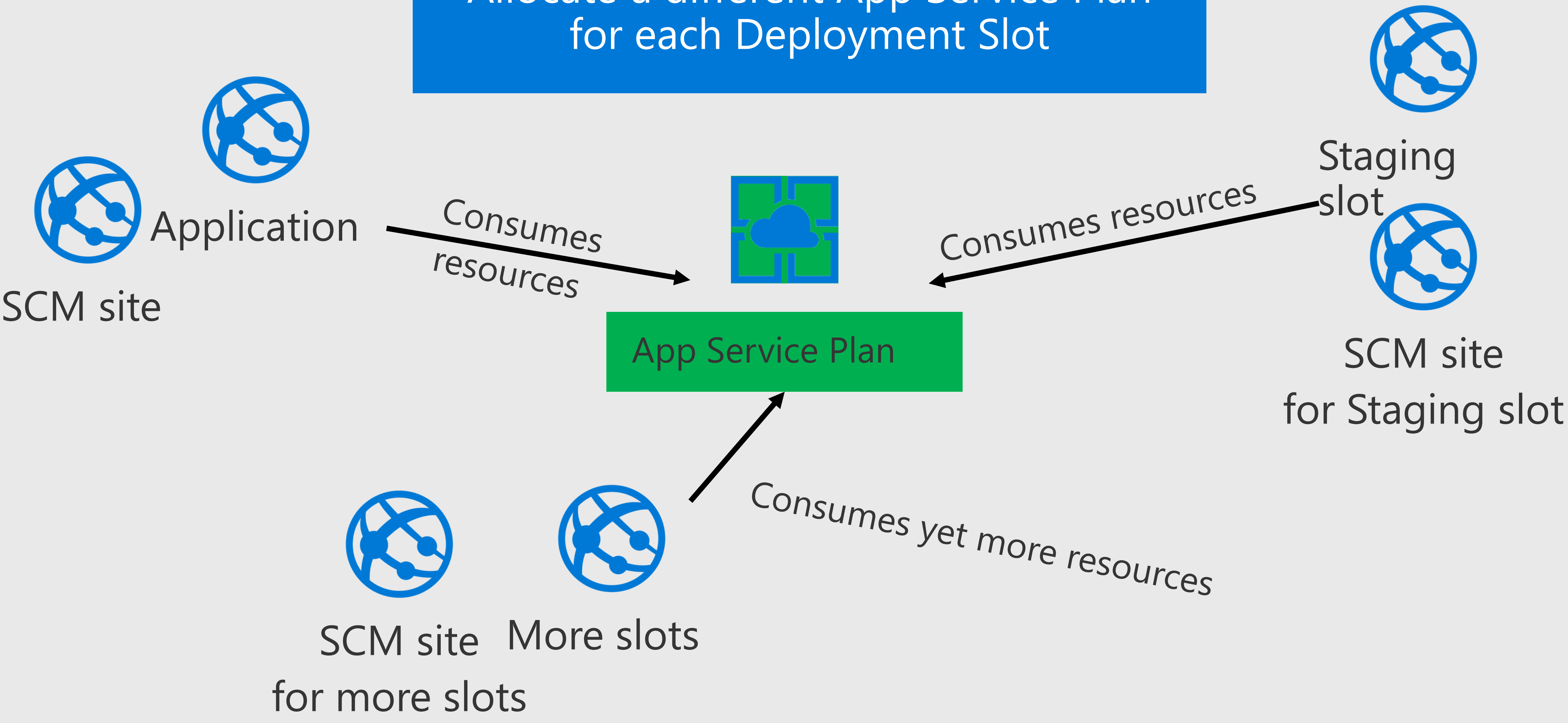


Deployment Slot Resource Usage



Deployment Slot Resource Usage

Allocate a different App Service Plan for each Deployment Slot



Application

SCM site

Consumes resources

App Service Plan

Staging slot

Consumes resources

SCM site for Staging slot

SCM site for more slots

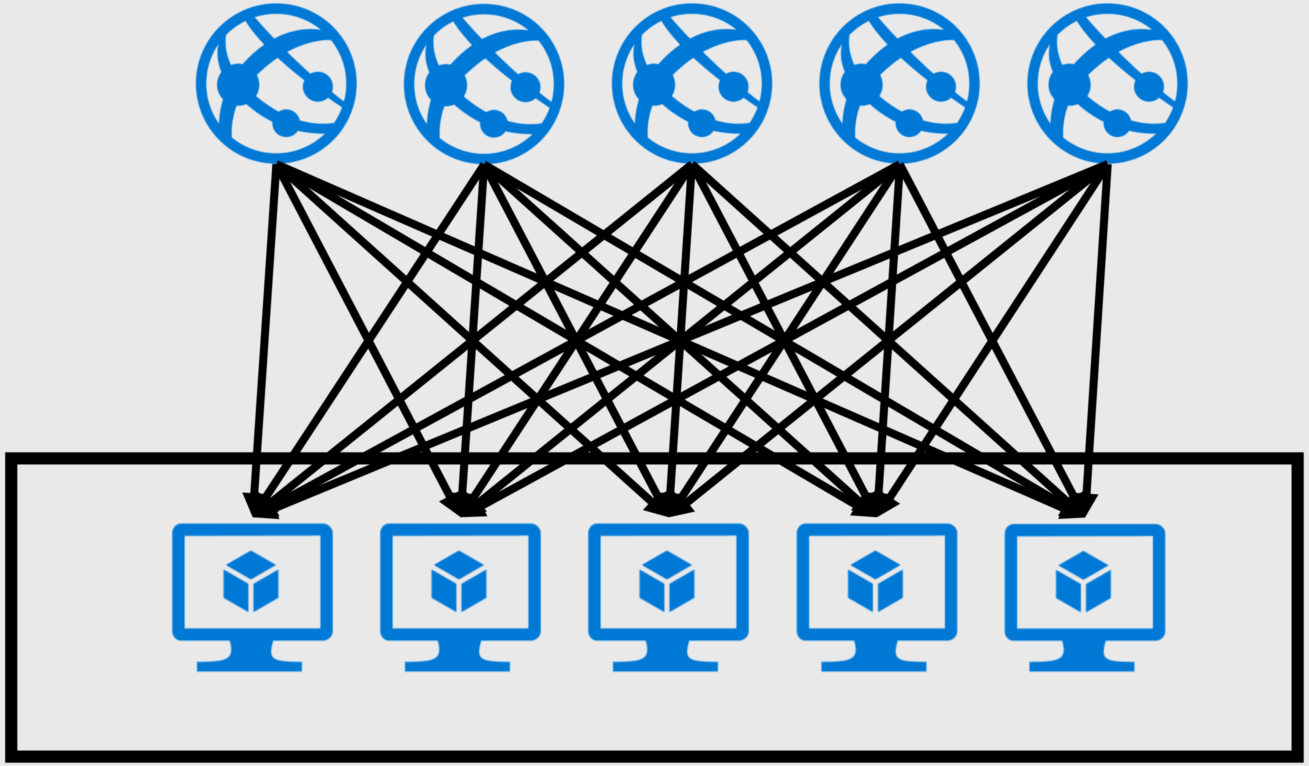
More slots

Consumes yet more resources

Web App Deployment Slots

Per Site Scaling

By default: every app runs on every worker in an application service plan.



Apps

Application Service Plan

Per Site Scaling

New setting from Resources.azure.com

Example Per Site Scaling

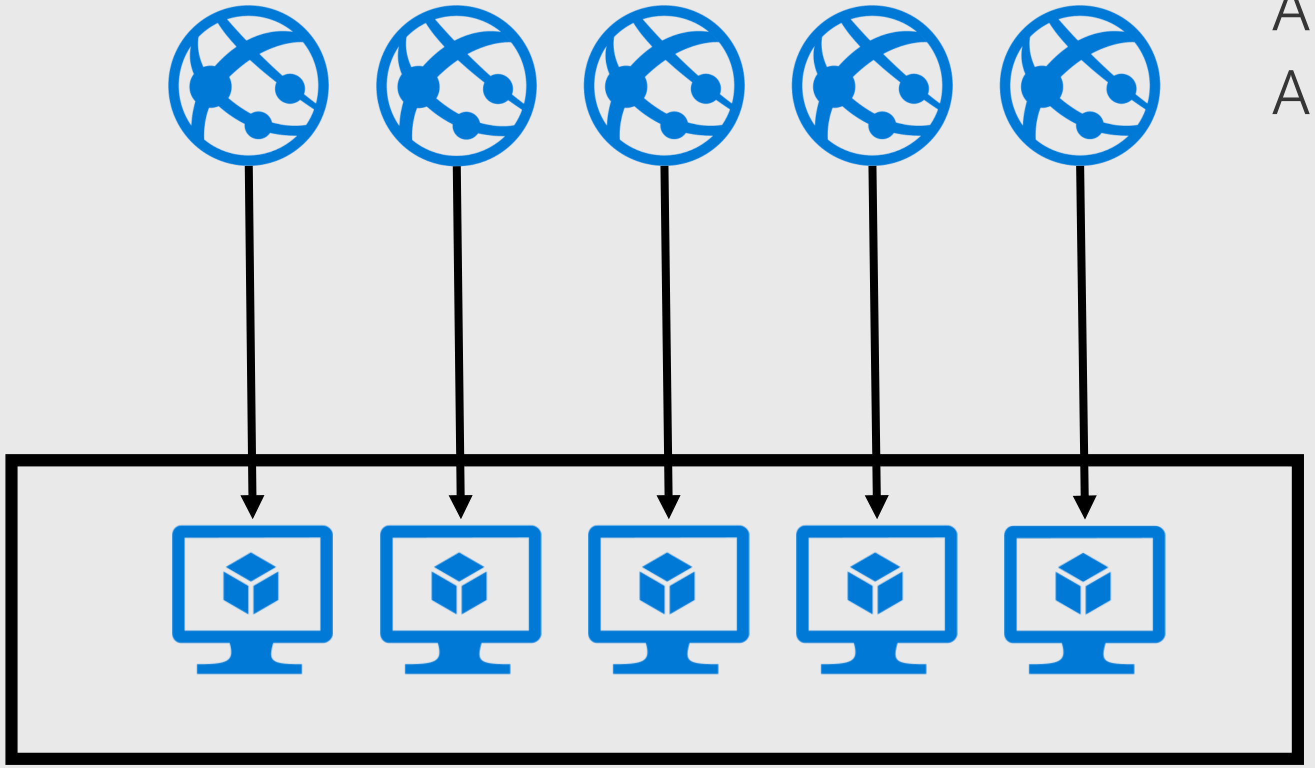
App #1: max of 1 instances

App #2: max of 2 instances

App #3: max of 5 instances

App #4: max of 10 instances

App #5: max of 25 instances



Application Service Plan

Azure App Service Plan: The new Pv2 Plan

Guaranteeing you can scale into Pv2:

- Create a new Resource Group (RG)
- Create a new app + app service plan in the new RG
- using your desired region
- Select a Pv2 plan when creating app service plan
- Then scale down to a lower pricing tier

You will always be able to scale back up in the future to Pv2

azure cli syntax:

```
az group create --location northeurope --name MyRG
az appservice plan create --resource-group MyRG --name MyAppServicePlan --sku P1V2
```

Web App Scaling / Autoscaling

Azure Web Apps: ASE

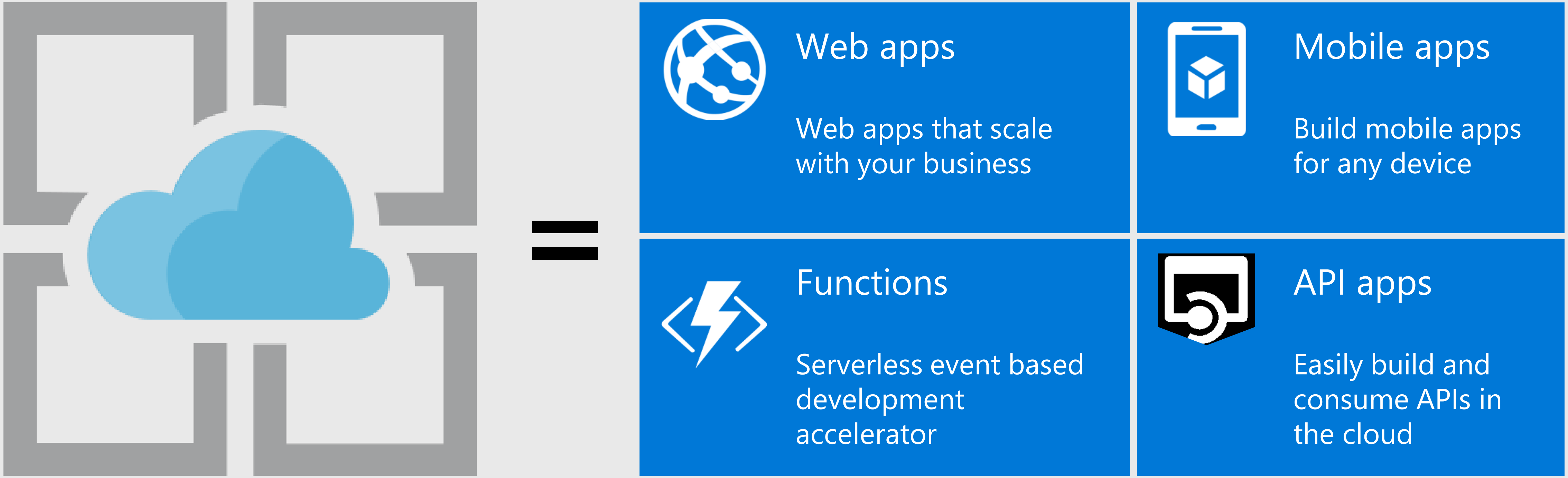
App Service Environment (ASE)

The ASE is a deployment of the Azure App Service into a subnet of a customer’s Azure Virtual Network

The ASE provides:

- Network isolation for apps
- Larger scale than multi-tenant
- More powerful hosts
- Ability to work with all VPN types

Azure App Service Environment services



Web apps

Web apps that scale with your business

Mobile apps

Build mobile apps for any device

Functions

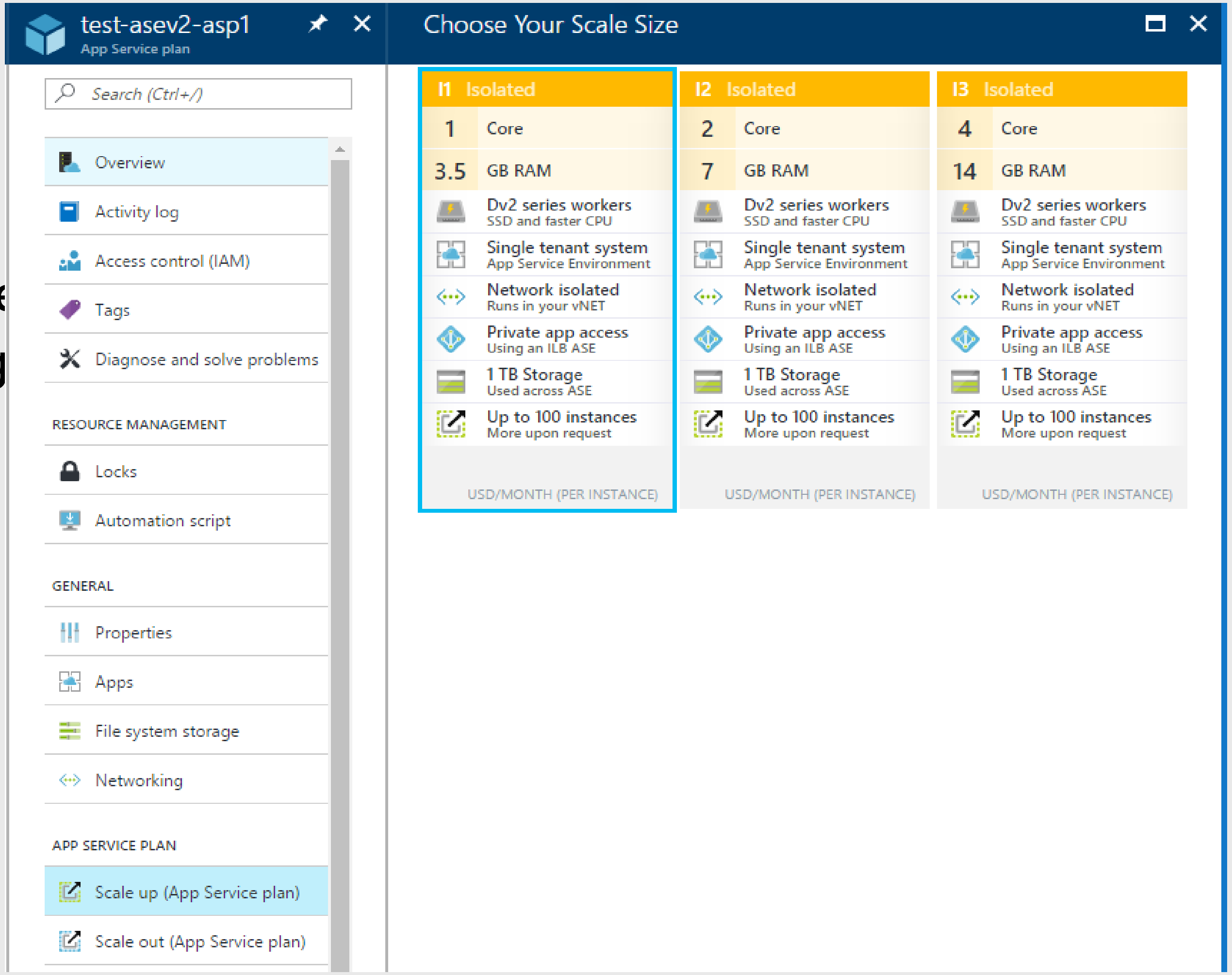
Serverless event based development accelerator

API apps

Easily build and consume APIs in the cloud

Isolated – Pricing plan just for ASE apps

- One fee for the ASE plus Isolated App Service plan fees
- ASE ownership fee does not change with the size of the ASE and covers all infrastructure including automatically scaled components
- ASP fees let you pay for what you use
- Prices vary between regions



test-asev2-asp1
App Service plan

Search (Ctrl+/)

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

RESOURCE MANAGEMENT

- Locks
- Automation script

GENERAL

- Properties
- Apps
- File system storage
- Networking

APP SERVICE PLAN

- Scale up (App Service plan)
- Scale out (App Service plan)

Choose Your Scale Size

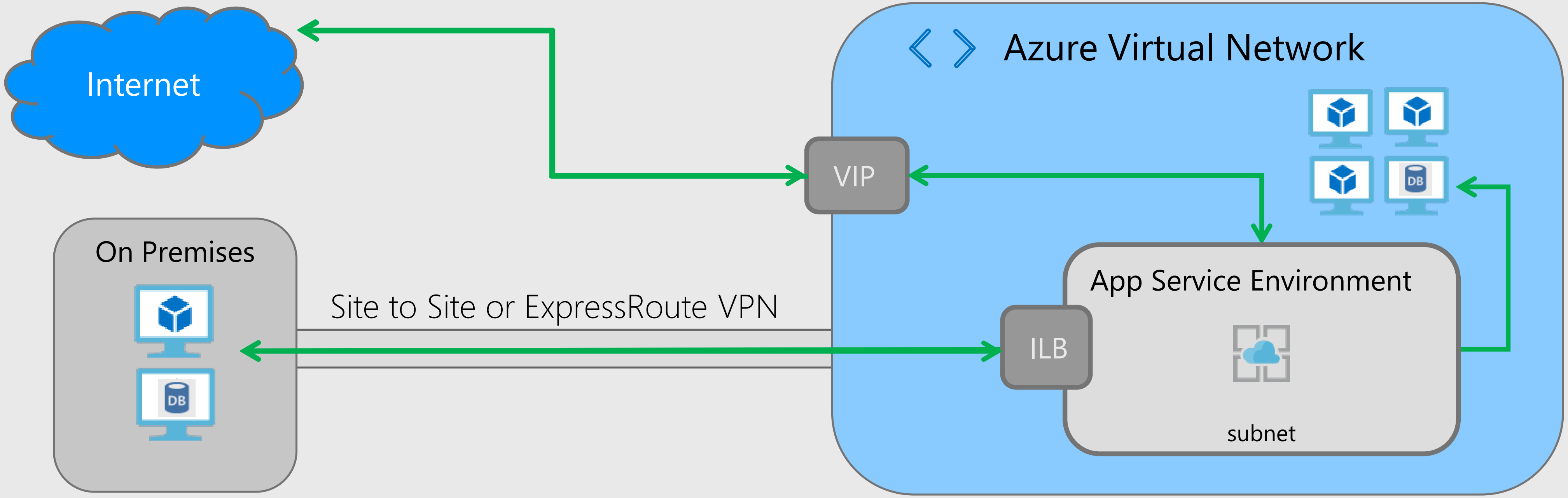
I1 Isolated	I2 Isolated	I3 Isolated
1 Core	2 Core	4 Core
3.5 GB RAM	7 GB RAM	14 GB RAM
Dv2 series workers SSD and faster CPU	Dv2 series workers SSD and faster CPU	Dv2 series workers SSD and faster CPU
Single tenant system App Service Environment	Single tenant system App Service Environment	Single tenant system App Service Environment
Network isolated Runs in your vNET	Network isolated Runs in your vNET	Network isolated Runs in your vNET
Private app access Using an ILB ASE	Private app access Using an ILB ASE	Private app access Using an ILB ASE
1 TB Storage Used across ASE	1 TB Storage Used across ASE	1 TB Storage Used across ASE
Up to 100 instances More upon request	Up to 100 instances More upon request	Up to 100 instances More upon request
USD/MONTH (PER INSTANCE)	USD/MONTH (PER INSTANCE)	USD/MONTH (PER INSTANCE)

ASE – High Level Network Overview

If you want private site access then create an ASE that uses an Internal Load Balancer instead of one with an external VIP

[illegible] access resources on premises

An ASE is a deployment of the Azure App Service into a subnet in a customer's Azure Virtual Network



Azure Web Apps for Containers

Web App now supports running Containers

Bring your code

.NET Core

Bring your container

Web App for Containers

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

Containers as Web Apps - Benefit

Why running Containers as Azure Web Apps

- Treat the container as a web app
- All Azure Web App features are valid for Containers as well:
- Backup
- Monitoring

Web app for containers

High productivity development

Deployment with ease

CI/CD build and deploy

Testing in production

Staged deployment with slots

Fully managed platform

Built-in auto scale and load balancing

High availability with auto-patching

Monitoring and diagnosis

Backup and recovery

Enterprise-grade apps

Global data center footprint

Private registry support

AAD integrated

Secure + compliant

Running Azure Web Apps for Containers

Easter Bonus: Node.JS apps

Deploying Node.JS WebApps with Cosmos DB

Node.JS app

- **Azure Web Apps support Node.JS**
- **Azure supports Mongo DB API in Cosmos DB cloud model**
- **Node.JS just runs like any other Web App**
- **Cosmos DB runs just like Mongo DB**

- **=> No excuse for not moving your Node.JS apps to Azure ;)**

DEMO

Deploying Node.JS app with Cosmos DB using Visual Studio Code

Lab

Deploying Azure Web Apps

https://github.com/007FFFLearning/MSDevSeriesSupport

Lab 3 – Quick Instructions

1. (Assumption is you finished Lab 1 and Lab 2)
2. Download the “Lab 3” Guide from GitHub (PDF)
3. Task 1: Deploy an Azure Web App
4. Task 2: Migrate the CloudShop Web Site to Azure Web App with VS2017
5. Run the Easter Lab on Node.JS and Cosmos DB as well ;)
6. When having questions: msdevseriessupport@007FFFLearning.com

Section Take-Aways

1. Huge benefits in using Azure App Services (Web Apps and other)
2. Source code can easily be migrated, full DevOps integration
3. Azure WebApps for Containers

Microsoft

Azure

Questions?

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Next Module…

Introduction to Docker

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