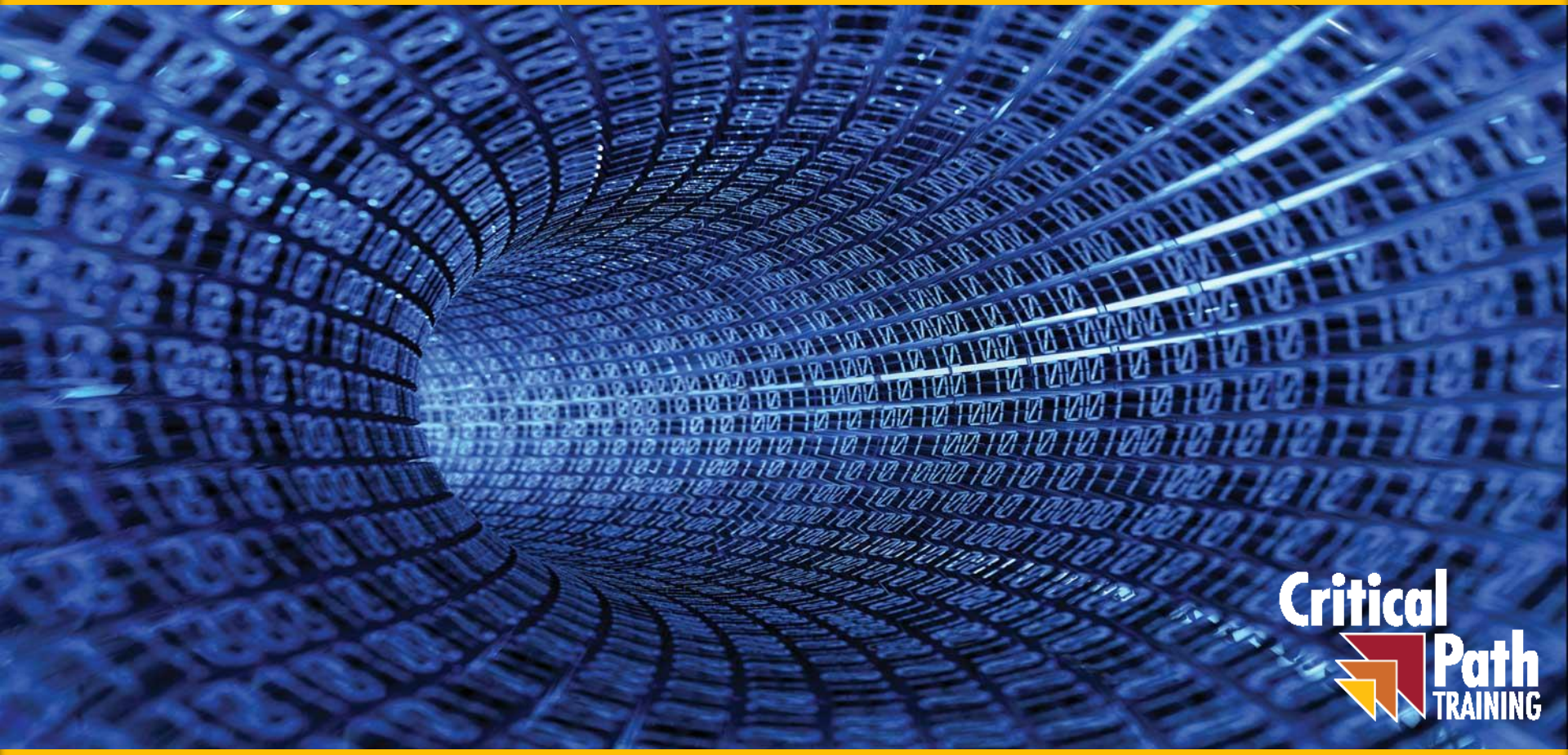
Working with Azure Web Apps and VMs



Agenda

- Web Apps and App Service Plans
- Deployment Slots
- Continuous Deployment
- Developing WebJobs
- Virtual Machines & Virtual Networks

Web Apps

- Web Apps used to deploy web-based applications
  - Originally went by the name of “Azure Websites”
  - Provides equivalent to IIS website using PaaS model
  - Abstracts away web server architecture & configuration
  - Supports ASP.NET, Node.js, PHP, Python, etc.
- Web App features
  - Scaling using app Service Plans
  - Staged deployment using Web Slots
  - Server-side command execution using WebJobs

Web App Features

- Web App Features
  - Support for ASP.NET, PHP, Node.js, and Python
  - Gallery applications
  - Auto scaling
  - Continuous integration
  - Deployment slots
  - Azure WebJobs

Agenda

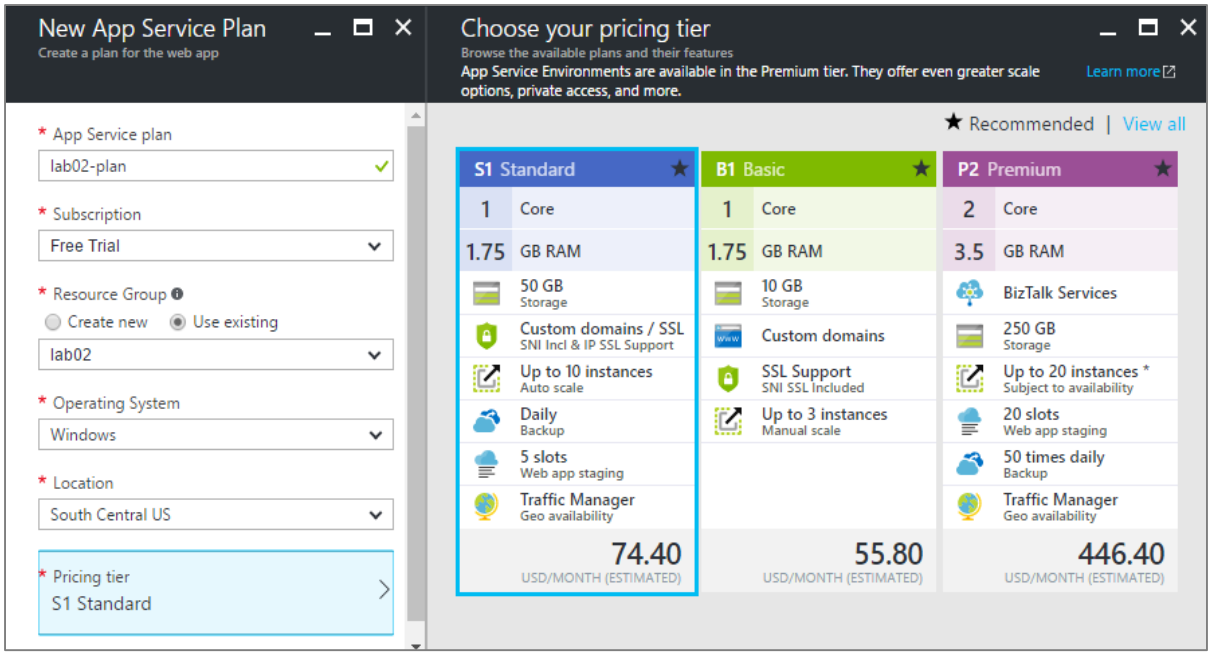
- ✓ Web Apps Overview
- ➢ App Service Plans
- Deployment Slots
- Continuous Deployment
- WebJobs

App Service Plans

- What is an App Service Plan?
  - VM template definition used to manage a VM set
  - plan defines features and capacity of VM template
  - VM set used to host one or more Web Apps
  - VM set initially contains a single VM instance
  - Azure can add additional VMs to VM set to scale up

What does an App Service Plan define?

- Pricing tier – (e.g. free, shared, basic, standard or premium)
- Geographic region (e.g. Western Europe, East US 2)
- Azure subscription
- Resource Group



Agenda

- ✓ Web Apps and App Service Plans
- ➢ Deployment Slots
- Continuous Deployment
- Developing WebJobs
- Virtual Machines & Virtual Networks

Deployment Slots

- What are deployment slots?
  - Feature to support rapid development/deployment
  - Requires standard plan as a minimum
  - By default, web app has one slot named production
  - You can add up to 4 additional named slots
  - Each slot has its own hostname and configuration
  - Common slot names are DEV, QA, STAGING, etc.
- How are deploy slots used?
  - Secondary slot swapped with production slot for upgrade
  - Running swamp a second time rolls back upgrade

Agenda

- ✓ Web Apps and App Service Plans
- ✓ Deployment Slots
- ➢ Continuous Deployment
- Developing WebJobs
- Virtual Machines & Virtual Networks

Web App Deployment Models

- Local or cloud-based source control
- FTP(S) to Azure
- Web Deploy
- Visual Studio
- WebMatrix
- Windows PowerShell or Azure CLI

Agenda

- ✓ Web Apps and App Service Plans
- ✓ Deployment Slots
- ✓ Continuous Deployment
- ➢ Developing WebJobs
- Virtual Machines & Virtual Networks

WebJobs

- WebJobs are a feature supported by Web Apps
  - Used to run background tasks from within cloud
  - Supports execution of .bat, .exe, .ps1, .js, php, py, etc.
  - Outbound calls originate from domain of host Web App
  - Outbound calls support HTTPS & mutual authentication
- WebJobs support three execution models
  - Continuous
  - On-demand
  - Scheduled

Agenda

- ✓ Web Apps and App Service Plans
- ✓ Deployment Slots
- ✓ Continuous Deployment
- ✓ Developing WebJobs
- ➢ Virtual Machines & Virtual Networks

Virtual Machines

VM provides Infrastructure-as-a-Service

- Allows you to deploy VM compute instances
- Based on Hyper-V virtualization
- Can be used to deploy either Windows or Linux workloads.

Features:

- Use images built by the product teams to deploy workloads such as SQL Server, SharePoint and Apache
- Attach, format and configure multiple disks for a VM
- Remotely connect to a Windows or Linux VM
- Select between VM sizes (A0-A9)
- Select a Basic or Standard tier VM

Creating Azure VMs

- Azure VMs can be created from VM templates
  - Azure VM gallery has Microsoft & 3rd party VM images
  - Can be used to create pre-configured VM images
- Types of VM images

Cloud Services

Cloud Services is a Platform-as-a-Service

allows you to focus on your application code while the Azure platform takes care of scaling up your application across multiple VM instances making it highly available

Features:

- Associate virtual machines with Cloud Services
- Scale up an instance and configuring load balancing
- Deploy an existing Cloud Service package

Virtual Networks

- Private network that is available for grouping of services and compute instances in the cloud or on premise.

- Features:
  - Create a Virtual Network (VNET) specifying a region or affinity group
  - Configure a VNET to use a DNS server
  - Configure VNET subnets
  - Implement a point to site connection to a VNET
  - Create a Virtual Machine in an existing VNET

Custom VM Templates

- Existing virtual machines can have an image captured to use as a template for other Virtual Machines

- Steps
  1. Use Remote Desktop to connect to running virtual machine
  2. Open an elevated instance of the command prompt application
  3. Run the System Preparation Tool (Sysprep)
  4. Use the Capture button in the Management Portal

VM Depot

- VM Depot is community-driven set of VM
  - VM instances can be created with script or Azure portal
  - Third parties can contribute new images to VM Depot
  - Comprehensive image search is available in VM Depot

Windows Workloads

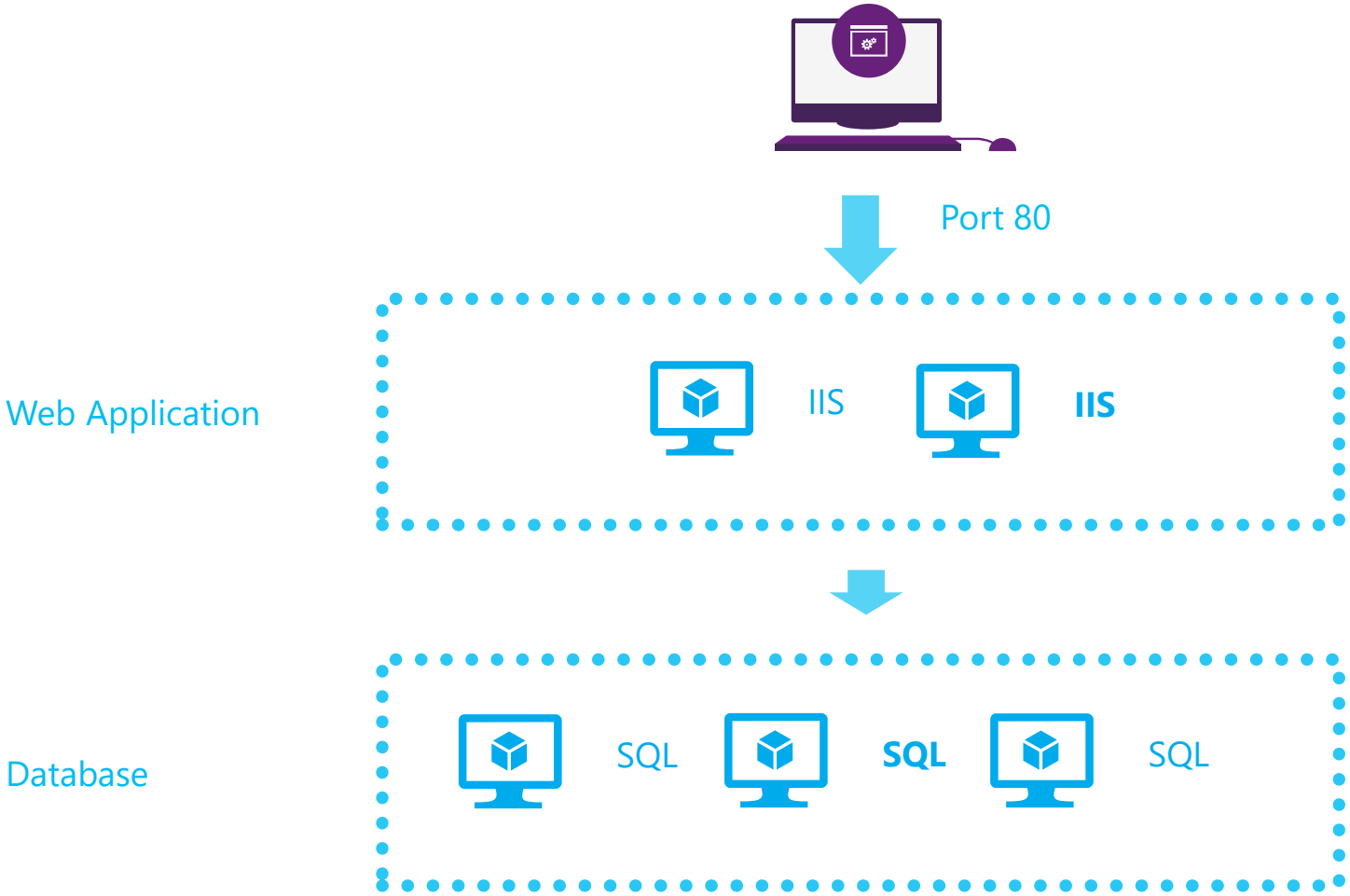
- You can use virtual machines and virtual networks for many workload scenarios that mimic the way you structure enterprise on-premises applications.

- Examples:

Web Application	SharePoint
• Web Server (IIS) • SQL Server • State Server	• Web Front-Ends • SQL Server[s] • Application Services

Windows Workloads (continued)

- Custom application workload on Azure Virtual Machines



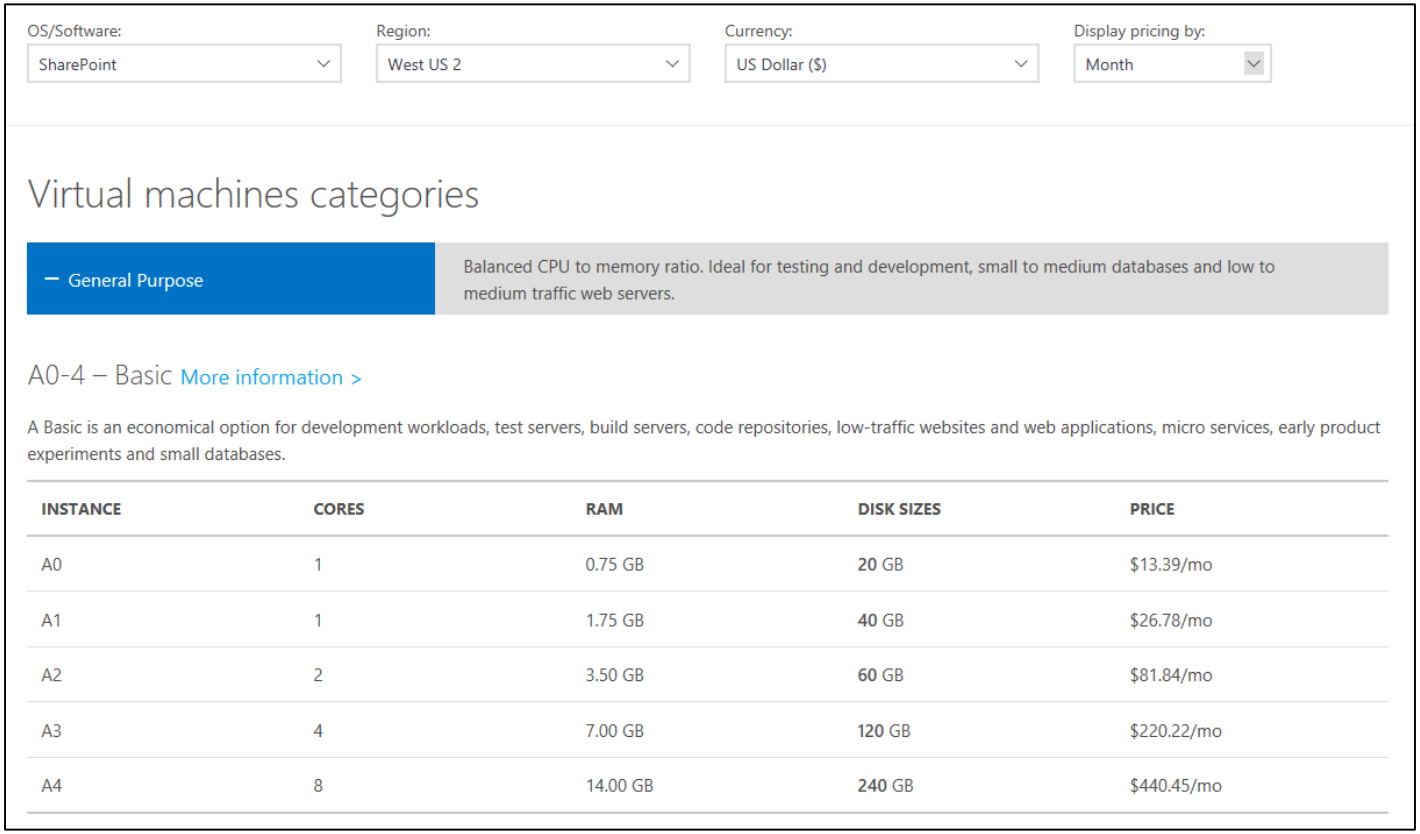
Linux Workloads

- You can use the Linux–based virtual machines

- Examples:
  - Apache Lucene
  - LAMP (Linux, Apache, MySQL, PHP)
  - Couchbase (distributed)
  - Drupal
  - Docker
  - Chef or Puppet
  - Docker

Virtual Machine Sizes and Pricing

- **Basic:** Intended for dev/test workloads
- **Standard:** Intended for production workloads
  - More info - http://azure.microsoft.com/pricing/details/virtual-machines/



OS/Software: SharePoint | Region: West US 2 | Currency: US Dollar ($) | Display pricing by: Month

Virtual machines categories

– General Purpose — Balanced CPU to memory ratio. Ideal for testing and development, small to medium databases and low to medium traffic web servers.

A0-4 – Basic More information >

A Basic is an economical option for development workloads, test servers, build servers, code repositories, low-traffic websites and web applications, micro services, early product experiments and small databases.

INSTANCE	CORES	RAM	DISK SIZES	PRICE
A0	1	0.75 GB	**20** GB	$13.39/mo
A1	1	1.75 GB	**40** GB	$26.78/mo
A2	2	3.50 GB	**60** GB	$81.84/mo
A3	4	7.00 GB	**120** GB	$220.22/mo
A4	8	14.00 GB	**240** GB	$440.45/mo

Creating a VM with PowerShell

1. New-AzureRmStorageAccount - create storage account for VHDX
2. New-AzureRmVirtualNetworkSubnetConfig - create subnet
3. New-AzureRmVirtualNetwork - create virtual network
4. New-AzureRmPublicIpAddress - create IP address with domain label
5. New-AzureRmNetworkInterface - create network interface (NIC)
6. New-AzureRmVMConfig - create VM configuration with name & size
7. Set-AzureRmVMOperatingSystem - set OS disk for VM
8. Set-AzureRmVMSourceImage - configure VM template from image
9. Add-AzureRmVMNetworkInterface - configure VM with NIC
10. Set-AzureRmVMOSDisk - configure VM with OS disk with image
11. New-AzureRmVM - create and start VM

Migrating Virtual Machines to Azure

- You can migrate local VM to Azure with these steps:
  - Ensure that VM uses the (Generation 1) .vhd format and not the extended (Generation 2) .vhdx format
  - Ensure that the virtual machines are of fixed size
  - Use Windows PowerShell or third-party tools to upload the .vhd files to a storage account
- From the uploaded virtual hard disks, you can create virtual machines in Azure.

Migrating Virtual Machines to Azure

- Linux VMs can also be migrated:
  - System Center Virtual Machine Manager
    - Convert the virtual hard disks to the Hyper-V VHD format.
  - Migration Accelerator (InMage)
    - Migrate physical machines, VMWare VMs or Amazon Web Services VMs.
- Similar steps can be followed for Windows workloads on other virtualization platforms.

Summary

- ✓ Web Apps and App Service Plans
- ✓ Deployment Slots
- ✓ Continuous Deployment
- ✓ Developing WebJobs
- ✓ Virtual Machines & Virtual Networks