Microsoft Azure Fundamentals

Lesson 03 - Virtual Machines in Microsoft Azure

What's in It for Me

- Creating and configuring VMs
- Configuring disks

Creating and configuring VMs

- What are Azure VMs?
- Create a VM by using the Azure Portal using an Azure Marketplace image
- Create a VM from an Azure Resource Manager template
- Configure VM availability
- Configure an operating system by using VM extensions
- Connect to a VM

What are Azure VMs?

- Use Azure VMs to:
  - Extend your datacenter to increase agility
  - Migrate your workloads from on-premises datacenters or from other cloud providers
  - Implement test or development
- Key differences when using Azure VMs:
  - Currently no support for Generation 2 Hyper-V VMs
  - Read-only VM console access
- You can create Azure VMs by using:
  - The Azure Portal
  - Azure PowerShell or Azure CLI
  - Azure Resource Manager templates

Azure VM Sizes

- A-series:
  - Basic: No load balancing or auto-scaling support
  - Standard:
    - A0-A7, general computing
    - A8-A11, compute intensive
- D-series:
  - Faster CPUs and local Hyper-V host SSD (temporary disk)
- Dv2 series:
  - 35% faster CPU than D-series
- G-series:
  - Largest VMs (up to 448 GB of RAM and 64 data disks)
- DS, DSv2, and GS series:
  - Support for Premium Storage (SSD for operating system and data disks)

Create a VM by Using the Azure Portal

- Image based or disk based:
  - Marketplace
  - VM Depot
  - Custom repository
- The Azure Portal based experience:
  - VM name
  - Admin credentials
  - Target resource group, Azure datacenter, subscription
  - VM size
  - Target storage location (Azure Storage account)
  - Target virtual network and subnet (private IP)
  - Optional public (Internet-accessible) IP and DNS name
  - Network security group
  - Extensions
  - Monitoring (preferably by using another Azure Storage account)

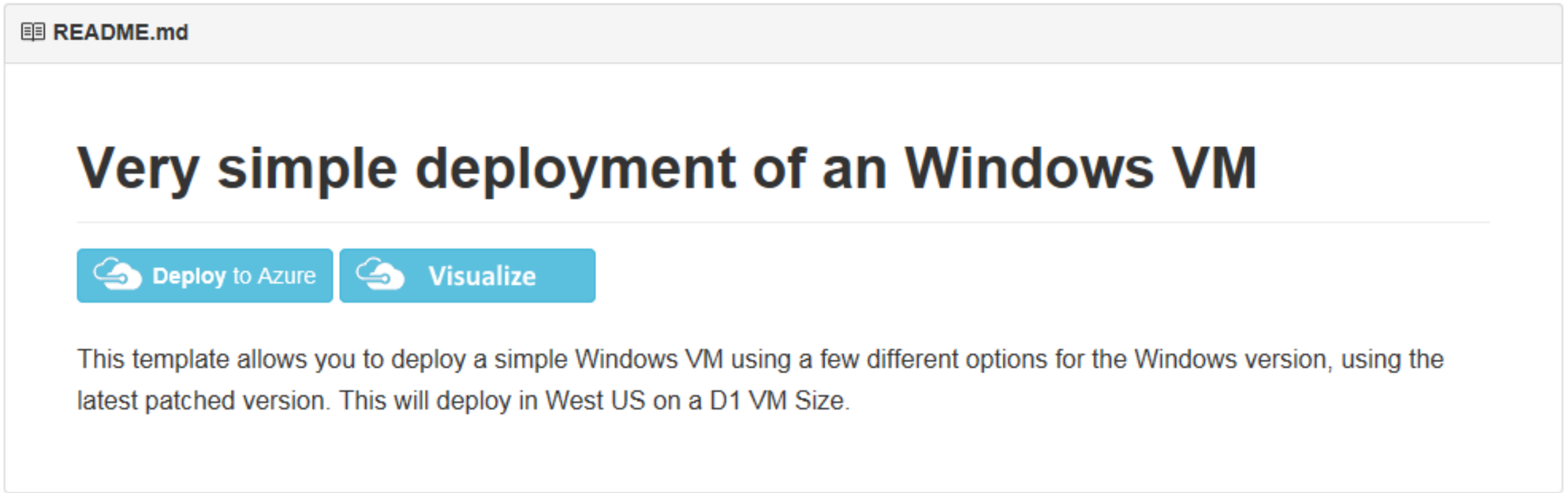
Demonstration: Create a VM from the Azure Portal by using an Azure Marketplace Image

In this demonstration, you will see how to create a VM from the Azure Portal by using a Marketplace image.

Creating a VM from an Azure Resource Manager Template

- Azure PowerShell:
  New-AzureRmResourceGroupDeployment
- Azure command-line interface:
  azure group deployment create
- Azure Portal:

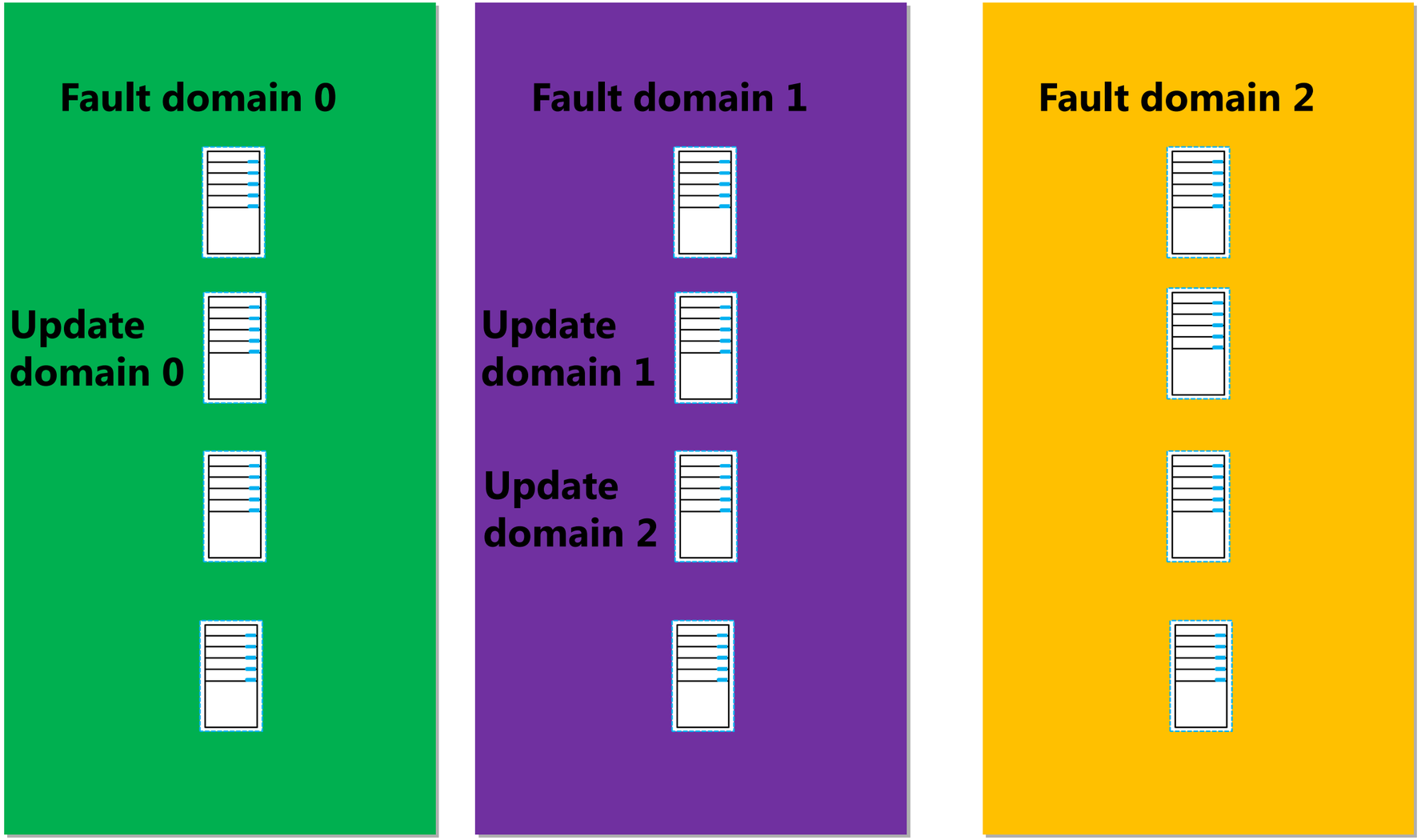
https://github.com/Azure/azure-quickstart-templates/



Demonstration: Creating a VM from an Azure Resource Manager Template

In this demonstration, you will see how to create an Azure VM from an Azure Resource Manager template.

Configuring VM Availability



VM Scaling

- Vertical scaling:
  - Change individual VM size
- Horizontal scaling:
  - Change number of VMs in the same availability set
  - On demand or scheduled
  - Azure Resource Manager model:
    - Automatically provisioned VMs
  - Classic model:
    - Preprovisioned VMs

Demonstration: Deploying VMs into an availability set by using Azure Portal

In this demonstration, you will see how to configure Azure VMs in an availability set.

Configuring an Operating System by Using VM Extensions

- VM Agent:
  - Included automatically in Marketplace images
  - You can add it to your custom VM images
- VM extensions:
  - BGInfo
  - VMAccessAgent
  - VMAccessforLinux
  - ChefClient and PuppetEnterpriseAgent
  - CustomScriptExtension
  - PowerShell DSC
  - AzureDSCForLinux
  - IaaSAntimalware
  - IaaSDiagnostics

Connecting to a VM

- Windows VMs:
  - RDP:
    - User based authentication
    - Generate .rdp file from the portal or via Windows PowerShell
    - Incoming connections:
      - Allowed by default (when using the Azure Portal)
      - Windows Firewall rule
      - Network Security Group rule
- Linux VMs:
  - SSH:
    - User based or certificate based authentication
    - Use a terminal emulator (e.g. PuTTY)
    - Incoming connections:
      - Allowed by default (when using the Azure Portal)
      - Network security group rule

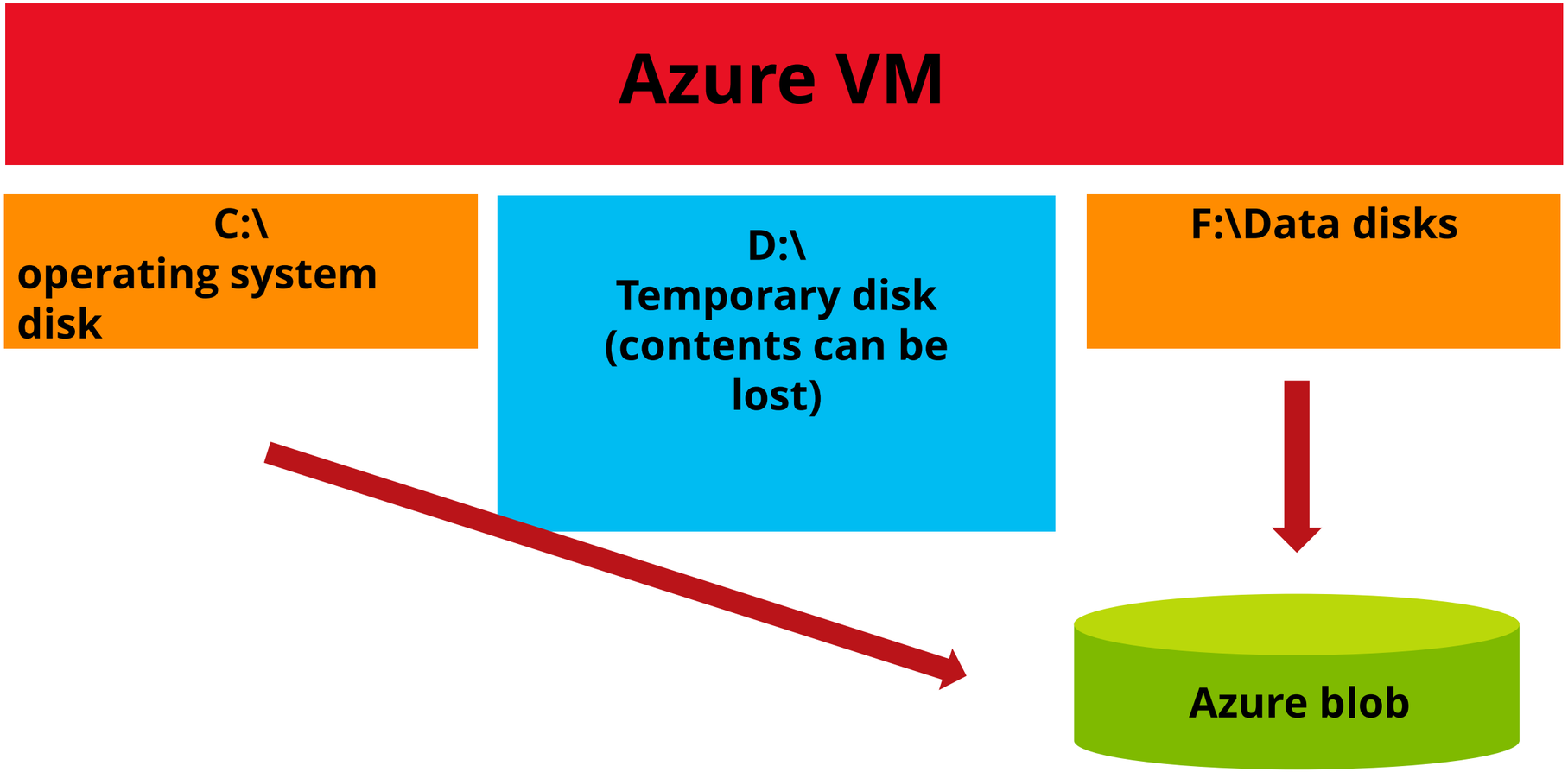
Demonstration: Connecting to a VM

In this demonstration, you will see how to connect to an Azure VM.

Configuring Disks

- Overview of virtual hard disks
- Azure VMs disk mobility
- Configuring storage in Windows VMs
- Demonstration: Configuring disks

Overview of Virtual Hard Disks



Azure VMs Disk Mobility

- Azure virtual disks:
  - .vhd format (.vhdx not supported)
  - Fixed type (dynamic not supported)
  - 1-TB maximum size (use multidisk volumes if needed)
- Azure virtual disk mobility:
  - Upload and download
    - **Add-AzureRmVHD and Save-AzureRmVHD**
  - Attach and detach
    - **Add-AzureDataDisk and Remove-AzureDataDisk**
    - Azure Portal
  - Import/Export service (for larger disk sizes)

Configuring Storage in Windows VMs

- The same disk management tools as on-premises:
  - Server Manager (Storage Spaces)
  - Windows PowerShell (Storage Spaces)
  - Disk Management snap-in
- Use Storage Spaces in Windows Azure VMs:
  - Aggregate I/O throughput
  - Create volumes larger than 1-TB disk size limit
  - Maximum number of data disks depends on VM size

Demonstration: Configuring Disks

In this demonstration, you will see how to attach a new data disk to an Azure VM.

Key Takeaways

- Azure VMs are similar to VMs that run on Microsoft Hyper-V hosts in on-premises datacenters.
- VM sizes are of five series: A,D,Dv2,G and (DS,Dv2S,Gs) series.
- You can create a new VM by using the Azure Portal by: Marketplace, VM Depot or Custom repository.
- The ability to configure the operating system and applications running in the VM, depends on a software component called the Azure Virtual Machine Agent (VM agent).

This concludes “Virtual machines in Microsoft Azure.”

Next Lesson is “Web Apps and Cloud Services”

THANK YOU