Microsoft Azure Developer: Implement IaaS Solutions

PROVISIONING AND CONFIGURING AZURE VIRTUAL MACHINES

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Course Overview

Provisioning and Configuring Azure Virtual Machines

Creating and Running Containers in Azure

Course Coverage for Certification Objectives

Implement IaaS Solutions

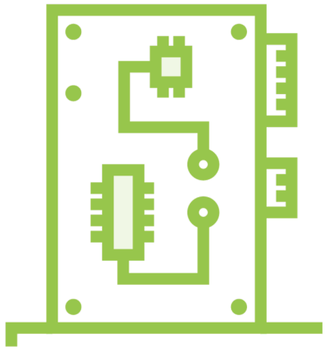
- **Provision Virtual Machines**
- **Configure, validate, and deploy ARM templates**
- **Create container images for solutions**
- **Publish an image to the Azure Container Registry**
- **Run containers by using Azure Container Instances**

https://docs.microsoft.com/en-us/learn/certifications/azure-developer

Virtual Machine Components

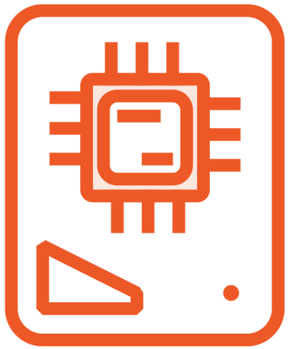
Resource Group

VM Size



Network

Images



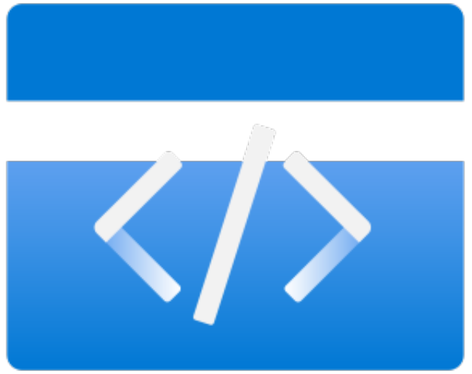
Virtual Disk

Methods to Create an Azure Virtual Machine

Azure Portal

Azure CLI

Azure PowerShell (Az Module)



Azure ARM Templates

Creating a Virtual Machine in the Azure Portal

Basics Disks Networking Management Advanced Tags Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. Learn more

Project details

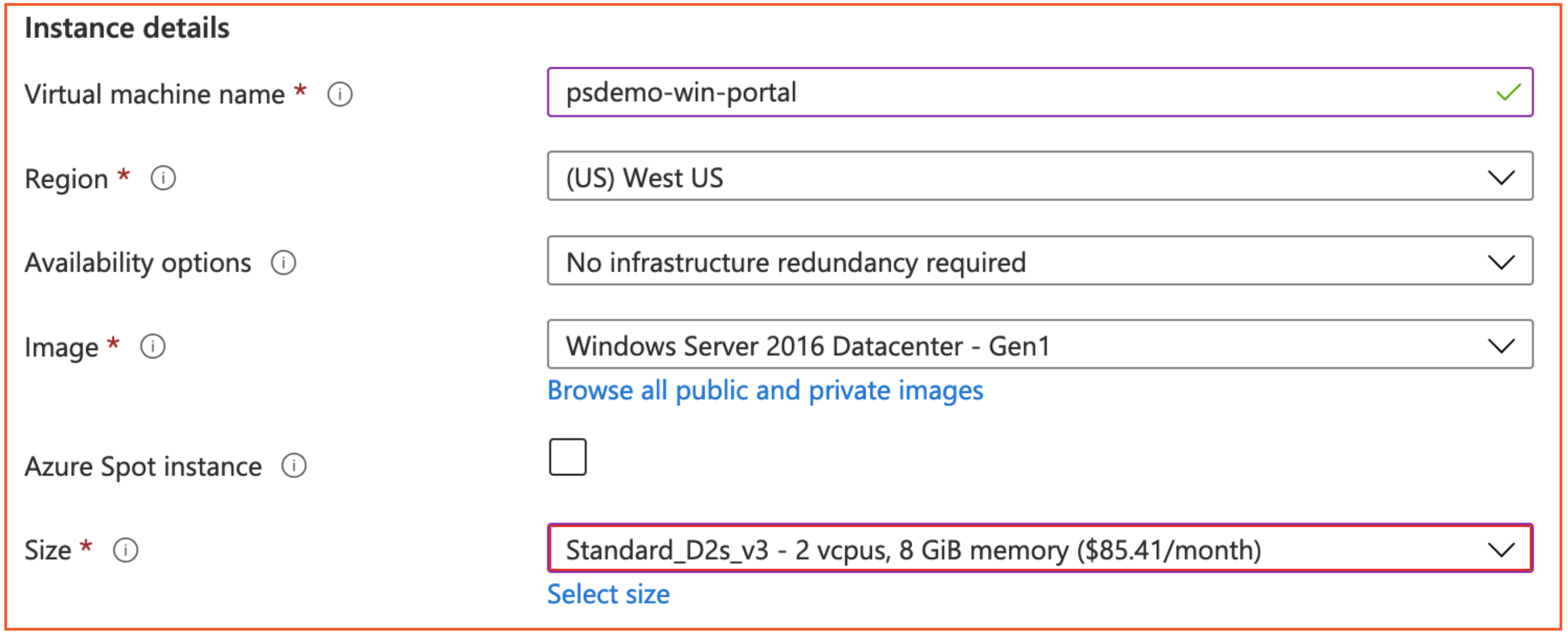
Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ — Demonstration Account

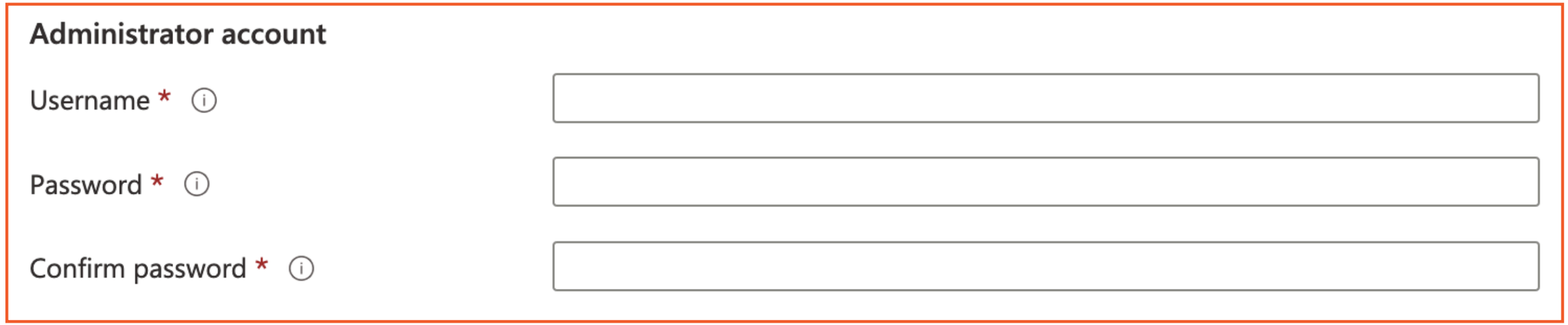
Resource group * ⓘ — (New) psdemo-rg

Create new

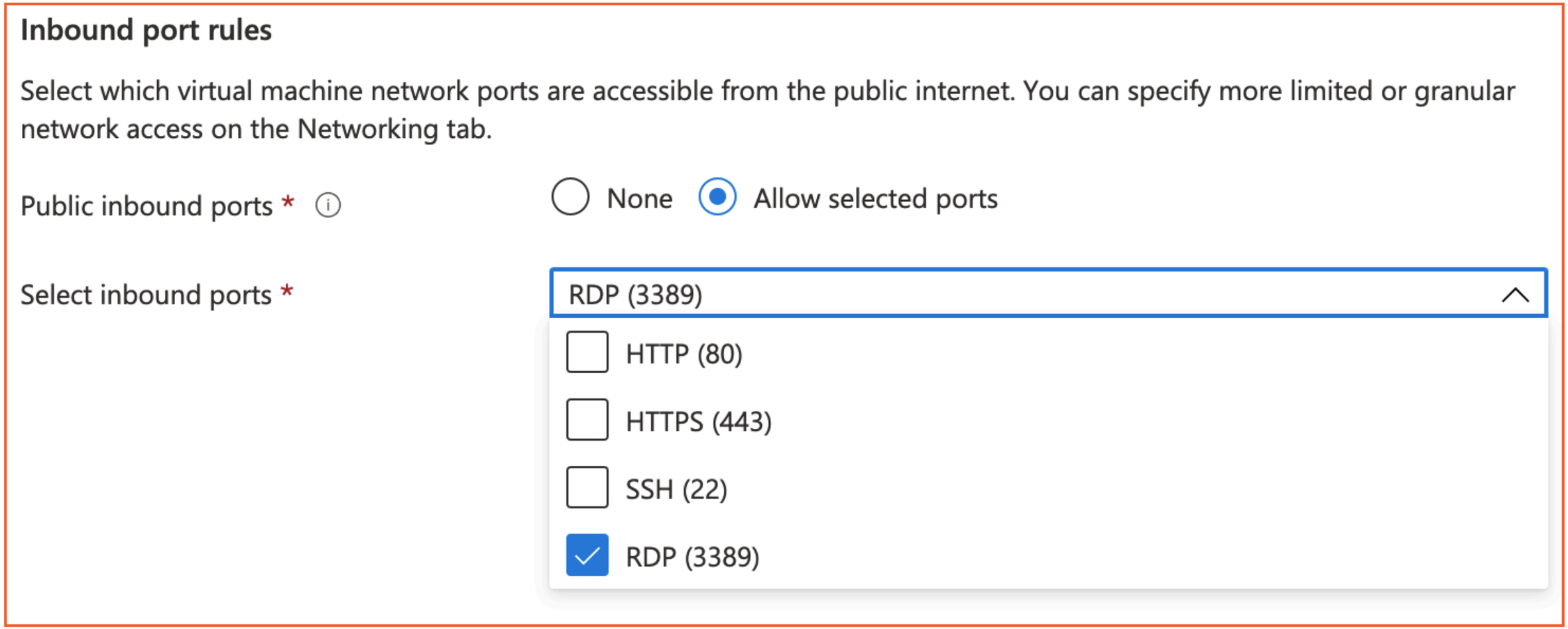
Creating a Virtual Machine in the Azure Portal



Creating a Virtual Machine in the Azure Portal



Creating a Virtual Machine in the Azure Portal



Lab Environment

Azure Account and Subscription

https://azure.microsoft.com/en-us/account/

Ability to create resources in Azure

- **Resource Groups**
- **Virtual Machines and Containers**
- **Storage Accounts**
- **Networking Elements**
- **Container Registries**

Lab Environment

Azure CLI

https://docs.microsoft.com/en-us/cli/azure/install-azure-cli

Azure PowerShell (Az Module)

https://docs.microsoft.com/en-us/powershell/azure/install-az-ps

Docker

https://docs.docker.com/engine/install/

Demo

Creating a Virtual Machine in the Azure Portal

Accessing a VM Remotely

Creating VMs Programmatically

Add consistency to your deployments and VM creation

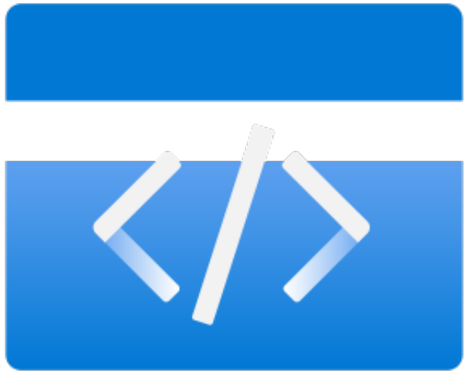
Any production system should be implemented using automation

Construct similar down-level environments, such as DEV/TEST

Tools for Creating a VM Programmatically

Azure CLI

Azure PowerShell (Az Module)



ARM Templates

Creating a VM Programmatically

Create a Resource Group

Create the Virtual Machine

Ensure Remote Access Port is Open

Retrieve the Public IP address

Creating a VM with Azure CLI

```
az group create \
    --name "psdemo-rg" \
    --location "centralus"
```

```
az vm create \
    --resource-group "psdemo-rg" \
    --name "psdemo-win-cli" \
    --image "win2019datacenter" \
    --admin-username "demoadmin" \
    --admin-password "password123$%^&*"
```

```
az vm create \
    --resource-group "psdemo-rg" \
    --name "psdemo-linux-cli" \
    --image "UbuntuLTS" \
    --admin-username "demoadmin" \
    --authentication-type "ssh" \
    --ssh-key-value ~/.ssh/id_rsa.pub
```

https://docs.microsoft.com/en-us/cli/azure/vm#az_vm_create

Enabling Remote Access with Azure CLI

```
az vm open-port \
    --resource-group "psdemo-rg" \
    --name "psdemo-win-cli" \
    --port "3389"
```

```
az vm open-port \
    --resource-group "psdemo-rg" \
    --name "psdemo-linux-cli" \
    --port "22"
```

```
az vm list-ip-addresses \
    --resource-group "psdemo-rg" \
    --name "psdemo-linux-cli"
```

Demo

Creating a VM with Azure CLI

Enable remote access using Azure CLI

Creating a VM with Azure PowerShell

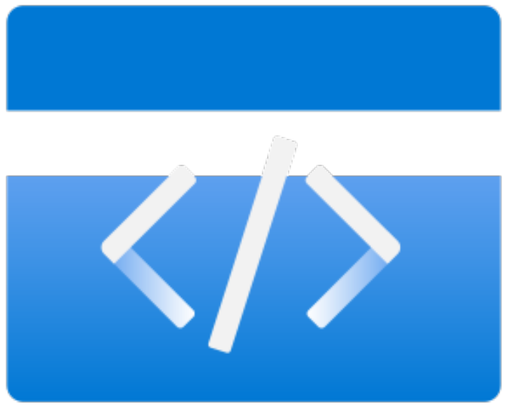
```
$username = 'demoadmin'
$password = ConvertTo-SecureString 'password123$%^&*' -AsPlainText -Force
$WindowsCred = New-Object System.Management.Automation.PSCredential ($username, $password)

New-AzVM `
    -ResourceGroupName 'psdemo-rg' `
    -Name 'psdemo-win-az' `
    -Image 'Win2019Datacenter' `
    -Credential $WindowsCred `
    -OpenPorts 3389

Get-AzPublicIpAddress `
    -ResourceGroupName 'psdemo-rg' `
    -Name 'psdemo-win-az' | Select-Object IpAddress
```

https://docs.microsoft.com/en-us/azure/virtual-machines/linux/quick-create-powershell

Demo

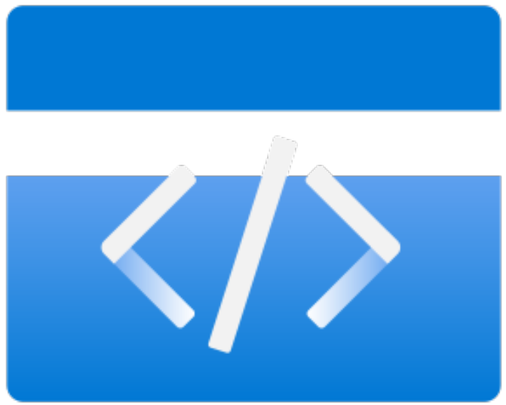
Creating a VM with Azure PowerShell

ARM Templates



- JSON file that defines your resources
- Building block for automation
- Templates are submitted to ARM for provisioning
- Export a ARM Template in Azure Portal
- Write your own
- Deploy from the Quickstart template library

Deploying ARM Templates



Azure Portal

Azure CLI

PowerShell (Az Module)

REST API

Azure Cloud Shell

ARM Template Format

```
{
  "$schema": "https://schema.management.azure.com/schemas/2019-04-01/.
  deploymentTemplate.json#",
  "contentVersion": "",
  "apiProfile": "",
  "parameters": {  },
  "variables": {  },
  "functions": [  ],
  "resources": [  ],
  "outputs": {  }
}
```

https://docs.microsoft.com/en-us/azure/azure-resource-manager/templates/template-functions

Demo

Configure, validate, and deploy ARM template

Up Next:
Creating and Running Containers in Azure