**Lab Overview**

**Lab Details**

1. In this lab we will walk through the steps to deploy an Azure Windows Virtual machine using an ARM template.
2. Duration: **30 minutes**.

**Introduction**

**What is an Azure Windows VM?**

* Azure Windows Virtual Machine (VM) is a type of virtual machine hosted on Microsoft's Azure cloud computing platform
* Allows you to run a Windows operating system on Azure, enabling you to run Windows-based applications and services on the cloud.
* When creating a Windows VM on Azure, you can choose from pre-configured Windows images or bring your own image.
* You can configure the VM's size, determining the number of CPU cores and amount of memory.
* Once created, you can connect to the VM using Remote Desktop Protocol (RDP) and start using it as you would with a traditional on-premises Windows machine.

**What is an ARM template?**

* An ARM template is a JSON file that defines one or more resources to be deployed to Azure.
* ARM templates use a declarative syntax, meaning you define the desired end state of your resources rather than the specific steps required to create them.
* ARM templates can be used to deploy a wide variety of Azure resources, including virtual machines, storage accounts, virtual networks, and more.
* They can also be used to deploy resources from the Azure Marketplace, such as SaaS applications and IaaS offerings.
* ARM templates are an important part of the Azure DevOps process, as they can be used to automate the deployment of resources as part of a CI/CD pipeline.
* They can be used in conjunction with Azure Automation to automate the deployment and management of resources on a scheduled basis.

**Architecture Diagram**

Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente

**Task Details**

1. Sign in to Azure Portal
2. Explore the ARM template
3. Deploy the ARM template
4. Verify your deployment
5. Validation test
6. Delete the Resources

**Launching Lab Environment**

1. To launch the lab environment, Enter in Azure portal.
2. Please wait until the cloud environment is provisioned.
3. Once the lab is started, you will be provided with a ***yourusername@tajamar365.com***and ***password***.

**Lab Steps**

**Task 1: Explore the ARM template**

1. Download the ARM template which we will use to deploy Azure Windows VM using the link below and extract the zip folder to get the **template.json** file.
2. The ARM template will look similar to this.

{

  "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",

  "contentVersion": "1.0.0.0",

  "metadata": {

    "\_generator": {

      "name": "bicep",

      "version": "0.8.9.13224",

      "templateHash": "15495738823141086515"

    }

  },

  "parameters": {

    "adminUsername": {

      "type": "string",

      "metadata": {

        "description": "Username for the Virtual Machine."

      }

    },

    "adminPassword": {

      "type": "secureString",

      "minLength": 12,

      "metadata": {

        "description": "Password for the Virtual Machine."

      }

    },

    "dnsLabelPrefix": {

      "type": "string",

      "defaultValue": "[toLower(format('{0}-{1}', parameters('vmName'), uniqueString(resourceGroup().id, parameters('vmName'))))]",

      "metadata": {

        "description": "Unique DNS Name for the Public IP used to access the Virtual Machine."

      }

    },

    "publicIpName": {

      "type": "string",

      "defaultValue": "myPublicIP",

      "metadata": {

        "description": "Name for the Public IP used to access the Virtual Machine."

      }

    },

    "publicIPAllocationMethod": {

      "type": "string",

      "defaultValue": "Dynamic",

      "allowedValues": [

        "Dynamic",

        "Static"

      ],

      "metadata": {

        "description": "Allocation method for the Public IP used to access the Virtual Machine."

      }

    },

    "publicIpSku": {

      "type": "string",

      "defaultValue": "Basic",

      "allowedValues": [

        "Basic",

        "Standard"

      ],

      "metadata": {

        "description": "SKU for the Public IP used to access the Virtual Machine."

      }

    },

    "OSVersion": {

      "type": "string",

      "defaultValue": "2022-datacenter-azure-edition-core",

      "allowedValues": [

        "2008-R2-SP1",

        "2008-R2-SP1-smalldisk",

        "2012-Datacenter",

        "2012-datacenter-gensecond",

        "2012-Datacenter-smalldisk",

        "2012-datacenter-smalldisk-g2",

        "2012-Datacenter-zhcn",

        "2012-datacenter-zhcn-g2",

        "2012-R2-Datacenter",

        "2012-r2-datacenter-gensecond",

        "2012-R2-Datacenter-smalldisk",

        "2012-r2-datacenter-smalldisk-g2",

        "2012-R2-Datacenter-zhcn",

        "2012-r2-datacenter-zhcn-g2",

        "2016-Datacenter",

        "2016-datacenter-gensecond",

        "2016-datacenter-gs",

        "2016-Datacenter-Server-Core",

        "2016-datacenter-server-core-g2",

        "2016-Datacenter-Server-Core-smalldisk",

        "2016-datacenter-server-core-smalldisk-g2",

        "2016-Datacenter-smalldisk",

        "2016-datacenter-smalldisk-g2",

        "2016-Datacenter-with-Containers",

        "2016-datacenter-with-containers-g2",

        "2016-datacenter-with-containers-gs",

        "2016-Datacenter-zhcn",

        "2016-datacenter-zhcn-g2",

        "2019-Datacenter",

        "2019-Datacenter-Core",

        "2019-datacenter-core-g2",

        "2019-Datacenter-Core-smalldisk",

        "2019-datacenter-core-smalldisk-g2",

        "2019-Datacenter-Core-with-Containers",

        "2019-datacenter-core-with-containers-g2",

        "2019-Datacenter-Core-with-Containers-smalldisk",

        "2019-datacenter-core-with-containers-smalldisk-g2",

        "2019-datacenter-gensecond",

        "2019-datacenter-gs",

        "2019-Datacenter-smalldisk",

        "2019-datacenter-smalldisk-g2",

        "2019-Datacenter-with-Containers",

        "2019-datacenter-with-containers-g2",

        "2019-datacenter-with-containers-gs",

        "2019-Datacenter-with-Containers-smalldisk",

        "2019-datacenter-with-containers-smalldisk-g2",

        "2019-Datacenter-zhcn",

        "2019-datacenter-zhcn-g2",

        "2022-datacenter",

        "2022-datacenter-azure-edition",

        "2022-datacenter-azure-edition-core",

        "2022-datacenter-azure-edition-core-smalldisk",

        "2022-datacenter-azure-edition-smalldisk",

        "2022-datacenter-core",

        "2022-datacenter-core-g2",

        "2022-datacenter-core-smalldisk",

        "2022-datacenter-core-smalldisk-g2",

        "2022-datacenter-g2",

        "2022-datacenter-smalldisk",

        "2022-datacenter-smalldisk-g2"

      ],

      "metadata": {

        "description": "The Windows version for the VM. This will pick a fully patched image of this given Windows version."

      }

    },

    "vmSize": {

      "type": "string",

      "defaultValue": "standard\_b2s",

      "metadata": {

        "description": "Size of the virtual machine."

      }

    },

    "location": {

      "type": "string",

      "defaultValue": "[resourceGroup().location]",

      "metadata": {

        "description": "Location for all resources."

      }

    },

    "vmName": {

      "type": "string",

      "defaultValue": "simple-vm",

      "metadata": {

        "description": "Name of the virtual machine."

      }

    }

  },

  "variables": {

    "storageAccountName": "[format('bootdiags{0}', uniqueString(resourceGroup().id))]",

    "nicName": "myVMNic",

    "addressPrefix": "10.0.0.0/16",

    "subnetName": "Subnet",

    "subnetPrefix": "10.0.0.0/24",

    "virtualNetworkName": "MyVNET",

    "networkSecurityGroupName": "default-NSG"

  },

  "resources": [

    {

      "type": "Microsoft.Storage/storageAccounts",

      "apiVersion": "2021-04-01",

      "name": "[variables('storageAccountName')]",

      "location": "[parameters('location')]",

      "sku": {

        "name": "Standard\_LRS"

      },

      "kind": "Storage"

    },

    {

      "type": "Microsoft.Network/publicIPAddresses",

      "apiVersion": "2021-02-01",

      "name": "[parameters('publicIpName')]",

      "location": "[parameters('location')]",

      "sku": {

        "name": "[parameters('publicIpSku')]"

      },

      "properties": {

        "publicIPAllocationMethod": "[parameters('publicIPAllocationMethod')]",

        "dnsSettings": {

          "domainNameLabel": "[parameters('dnsLabelPrefix')]"

        }

      }

    },

    {

      "type": "Microsoft.Network/networkSecurityGroups",

      "apiVersion": "2021-02-01",

      "name": "[variables('networkSecurityGroupName')]",

      "location": "[parameters('location')]",

      "properties": {

        "securityRules": [

          {

            "name": "default-allow-3389",

            "properties": {

              "priority": 1000,

              "access": "Allow",

              "direction": "Inbound",

              "destinationPortRange": "3389",

              "protocol": "Tcp",

              "sourcePortRange": "\*",

              "sourceAddressPrefix": "\*",

              "destinationAddressPrefix": "\*"

            }

          }

        ]

      }

    },

    {

      "type": "Microsoft.Network/virtualNetworks",

      "apiVersion": "2021-02-01",

      "name": "[variables('virtualNetworkName')]",

      "location": "[parameters('location')]",

      "properties": {

        "addressSpace": {

          "addressPrefixes": [

            "[variables('addressPrefix')]"

          ]

        },

        "subnets": [

          {

            "name": "[variables('subnetName')]",

            "properties": {

              "addressPrefix": "[variables('subnetPrefix')]",

              "networkSecurityGroup": {

                "id": "[resourceId('Microsoft.Network/networkSecurityGroups', variables('networkSecurityGroupName'))]"

              }

            }

          }

        ]

      },

      "dependsOn": [

        "[resourceId('Microsoft.Network/networkSecurityGroups', variables('networkSecurityGroupName'))]"

      ]

    },

    {

      "type": "Microsoft.Network/networkInterfaces",

      "apiVersion": "2021-02-01",

      "name": "[variables('nicName')]",

      "location": "[parameters('location')]",

      "properties": {

        "ipConfigurations": [

          {

            "name": "ipconfig1",

            "properties": {

              "privateIPAllocationMethod": "Dynamic",

              "publicIPAddress": {

                "id": "[resourceId('Microsoft.Network/publicIPAddresses', parameters('publicIpName'))]"

              },

              "subnet": {

                "id": "[resourceId('Microsoft.Network/virtualNetworks/subnets', variables('virtualNetworkName'), variables('subnetName'))]"

              }

            }

          }

        ]

      },

      "dependsOn": [

        "[resourceId('Microsoft.Network/publicIPAddresses', parameters('publicIpName'))]",

        "[resourceId('Microsoft.Network/virtualNetworks', variables('virtualNetworkName'))]"

      ]

    },

    {

      "type": "Microsoft.Compute/virtualMachines",

      "apiVersion": "2021-03-01",

      "name": "[parameters('vmName')]",

      "location": "[parameters('location')]",

      "properties": {

        "hardwareProfile": {

          "vmSize": "[parameters('vmSize')]"

        },

        "osProfile": {

          "computerName": "[parameters('vmName')]",

          "adminUsername": "[parameters('adminUsername')]",

          "adminPassword": "[parameters('adminPassword')]"

        },

        "storageProfile": {

          "imageReference": {

            "publisher": "MicrosoftWindowsServer",

            "offer": "WindowsServer",

            "sku": "[parameters('OSVersion')]",

            "version": "latest"

          },

          "osDisk": {

            "createOption": "FromImage",

            "managedDisk": {

              "storageAccountType": "StandardSSD\_LRS"

            }

          },

          "dataDisks": [

            {

              "diskSizeGB": 1023,

              "lun": 0,

              "createOption": "Empty"

            }

          ]

        },

        "networkProfile": {

          "networkInterfaces": [

            {

              "id": "[resourceId('Microsoft.Network/networkInterfaces', variables('nicName'))]"

            }

          ]

        },

        "diagnosticsProfile": {

          "bootDiagnostics": {

            "enabled": true,

            "storageUri": "[reference(resourceId('Microsoft.Storage/storageAccounts', variables('storageAccountName'))).primaryEndpoints.blob]"

          }

        }

      },

      "dependsOn": [

        "[resourceId('Microsoft.Network/networkInterfaces', variables('nicName'))]",

        "[resourceId('Microsoft.Storage/storageAccounts', variables('storageAccountName'))]"

      ]

    }

  ],

  "outputs": {

    "hostname": {

      "type": "string",

      "value": "[reference(resourceId('Microsoft.Network/publicIPAddresses', parameters('publicIpName'))).dnsSettings.fqdn]"

    }

  }

}

**Task 2: Deploy the ARM template**

1. In the Azure Portal, open the **Bash** session within the **Cloud Shell** pane by clicking on the **Cloud Shell** icon.

Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente

Interfaz de usuario gráfica, Texto, Aplicación

Descripción generada automáticamente

1. Click on **show advanced settings**.
2. Enter a unique storage account name and a file share name, then click on **Create storage** button.
3. In the toolbar of Cloud Shell pane, select the Upload/Download files icon, select **Upload** From the dropdown and upload **template.json** file into the Cloud Shell home directory.

Interfaz de usuario gráfica, Texto, Aplicación

Descripción generada automáticamente

Interfaz de usuario gráfica, Texto, Aplicación

Descripción generada automáticamente

1. Now deploy the resources using the given command. This step may take a few minutes in order for the resources to get deployed successfuly.

az deployment group create --name <deployment-name> --template-file <path-to-template-file> --parameters adminUsername=<admin-username> adminPassword=<admin-password> --resource-group <resource-group-name>

**NOTE:** Copy this command to a text editor and replace:

* ‘**<deployment-name>’** with the name of your deployment
* **`<resource-group-name>`** with the name of your resource group which you can get from whizlabs page of the current lab session
* **`<path-to-template-file>`** with the path to file containing the ARM template which in this case would be the file name
* **`<admin-username>`** with the username
* **`<admin-password>`** with the password of length **greater than or equal to 12**.

**Primero creamos un grupo de recursos para usar en este paso:**

Interfaz de usuario gráfica, Texto, Aplicación, Chat o mensaje de texto

Descripción generada automáticamente

Interfaz de usuario gráfica, Texto, Aplicación, Chat o mensaje de texto

Descripción generada automáticamente

**Añadimos el comando nuevo con nuestros parámetros**



**Task 3: Verify your deployments**

1. After the successful execution of the above command, you will get a similar output on the CLI.

Texto

Descripción generada automáticamente

**Correcto:**

Texto

Descripción generada automáticamente

1. Go to your resource group in Azure portal to check your deployments.

Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente

Interfaz de usuario gráfica, Texto, Aplicación, Chat o mensaje de texto

Descripción generada automáticamente

1. Now, from the resources, you can see the Windows VM created.

Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente

**Do You Know?**

Azure Resource Manager (ARM) templates can be used to define the desired state of the infrastructure and services within Azure. These templates are written in JSON (JavaScript Object Notation) and allow you to describe and deploy complex environments with multiple resources, including VMs.

**Task 4: Delete the Resources**

1. In the search box at the top of the Azure portal, enter **Resource groups**. Select **Resource groups** from the search results.

Interfaz de usuario gráfica, Texto, Aplicación

Descripción generada automáticamente

1. Click on the name of **Resource groups**

Interfaz de usuario gráfica, Texto, Aplicación, Chat o mensaje de texto

Descripción generada automáticamente

1. Select all the Resoures in that **Resource groups**

Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente

1. Go to Three dots to the right and then click **Delete** button

Interfaz de usuario gráfica, Aplicación, Word

Descripción generada automáticamente

1. Now type **delete**
2. Confirm delete

Interfaz de usuario gráfica, Texto, Aplicación, Correo electrónico

Descripción generada automáticamente

**Completion and Conclusions**

1. You have successfully logged into Azure Portal.
2. You have successfully explored the ARM template.
3. You have successfully deployed the ARM template.
4. You have successfully verified your deployment.
5. You have successfully tested the validation.
6. You have successfully deleted the resources.