**Module 12: Azure Services**

**Exercise 1: Create Azure Bastion Host**

#### Task 1: Deploy an Azure virtual machines by using the Azure portal

In this task, you will deploy Azure virtual machines into different availability zones by using the Azure portal.

1. Sign in to the [Azure portal](http://portal.azure.com/).
2. In the Azure portal, search for and select **Virtual machines** and, on the **Virtual machines** blade, click **+ Add**.
3. On the **Basics** tab of the **Create a virtual machine** blade, specify the following settings (leave others with their default values):

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Subscription | **the name of the Azure subscription you will be using in this lab** |
| Resource group | **the name of a new resource group az104-12a-rg01** |
| Virtual machine name | **az104-12a-vm0** |
| Region | **select one of the regions that support availability zones and where you can provision Azure virtual machines** |
| Availability options | **Availability zone** |
| Availability zone | **1** |
| Security type | **Standard** |
| Image | **Windows Server 2019 Datacenter – Gen2** |
| Azure Spot instance | **No** |
| Size | **Standard D2s v3** |
| Username | **Student** |
| Password | **Pa55w.rd1234** |
| Public inbound ports | **None** |
| Already have a Windows Server license | **No** |

1. Click **Next: Disks >** and, on the **Disks** tab of the **Create a virtual machine** blade, specify the following settings (leave others with their default values):

|  |  |
| --- | --- |
| **Setting** | **Value** |
| OS disk type | **Standard HDD** |
| Enable Ultra Disk compatibility | **No** |

1. Click **Next: Networking >** and, on the **Networking** tab of the **Create a virtual machine** blade, click **Create new** below the **Virtual network** textbox.
2. On the **Create virtual network** blade, specify the following settings (leave others with their default values):

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Name | **az104-12a-rg01-vnet** |
| Address range | **10.0.0.0/20** |
| Subnet name | **subnet0** |
| Subnet range | **10.0.0.0/24** |

1. Click **OK** and, back on the **Networking** tab of the **Create a virtual machine** blade, specify the following settings (leave others with their default values):

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Public IP | **None** |
| NIC network security group | **None** |
| Accelerated networking | **Off** |
| Place this virtual machine behind an existing load balancing solution? | **No** |

1. Click **Next: Management >** and, on the **Management** tab of the **Create a virtual machine** blade, specify the following settings (leave others with their default values):

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Boot diagnostics | **On** |
| Diagnostics storage account | **the default value** |

**Note**: Identify the name of diagnostics storage account. You will use it in the next task.

1. Click **Next: Advanced >**, on the **Advanced** tab of the **Create a virtual machine** blade, review the available settings without modifying any of them, and click **Review + Create**.
2. On the **Review + Create** blade, click **Create**.
3. In the Azure portal, search for and select **Virtual machines** and, on the **Virtual machines** blade, click **+ Add**.
4. On the **Basics** tab of the **Create a virtual machine** blade, specify the following settings (leave others with their default values):

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Subscription | **the name of the Azure subscription you will be using in this lab** |
| Resource group | **the name of a new resource group az104-12a-rg01** |
| Virtual machine name | **az104-12a-vm1** |
| Region | **select one of the regions that support availability zones and where you can provision Azure virtual machines** |
| Availability options | **Availability zone** |
| Availability zone | **1** |
| Security type | **Standard** |
| Image | **Debian 10 Buster - Gen1** |
| Azure Spot instance | **No** |
| Size | **Standard D2s v3** |
| Authentication type | **SSH public key** |
| Username | **Student** |
| SSH public key source | **Generate new key pair** |
| Key pair name | **VM1** |
| Public inbound ports | **None** |

1. Click **Next: Disks >** and, on the **Disks** tab of the **Create a virtual machine** blade, specify the following settings (leave others with their default values):

|  |  |
| --- | --- |
| **Setting** | **Value** |
| OS disk type | **Standard HDD** |
| Enable Ultra Disk compatibility | **No** |

1. Click **Next: Networking >** and, on the **Networking** tab of the **Create a virtual machine** blade, specify the following settings (leave others with their default values):

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Name | **az104-12a-rg01-vnet** |
| Subnet name | **subnet0 (10.0.0.0/24)** |
| Public IP | **None** |
| NIC network security group | **None** |
| Accelerated networking | **Off** |
| Place this virtual machine behind an existing load balancing solution? | **No** |

1. Click **Next: Management >** and, on the **Management** tab of the **Create a virtual machine** blade, specify the following settings (leave others with their default values):

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Boot diagnostics | **On** |
| Diagnostics storage account | **the default value** |

**Note**: Identify the name of diagnostics storage account. You will use it in the next task.

1. Click **Next: Advanced >**, on the **Advanced** tab of the **Create a virtual machine** blade, review the available settings without modifying any of them, and click **Review + Create**.
2. On the **Review + Create** blade, click **Create**.

#### Task 2: Create Azure virtual network subnet for Azure Bastion

1. In the Azure portal, search for and select **Virtual network** and, on the **Virtual network** blade, select **az104-12a-rg01-vnet.**
2. On the **Virtual network - Settings** blade, press **Subnet**, then press **+Subnet** and then specify the following settings, and click **Save**:

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Name | **AzureBastionSubnet** |
| Subnet address range | **10.0.1.0/26** |

#### Task 3: Create Azure Bastion

1. In the Azure portal, search for and select **Bastions** and, on the **Bastions** blade, click **+Create**.
2. On the **Basics** tab of the **Create a Bastion** blade, specify the following settings (leave others with their default values):

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Subscription | **the name of the Azure subscription you will be using in this lab** |
| Resource group | **az104-12a-rg01** |
| Name | **az104-12a-ba01** |
| Region | **select one of the regions that support availability zones and where you can provision Azure virtual machines** |
| Tier | **Standard** |
| Instance count | **3** |
| Virtual network | **az104-12a-rg01-vnet** |
| Subnet | **AzureBastionSubnet (10.0.1.0/26)** |
| Public IP address | **Create new** |
| Public IP address name | **az104-12a-rg01-vnet-ip** |
| Public IP address SKU | **Standard** |
| Assignment | **Static** |

1. Click **Next: Tags >** and, on the **Tags** tab click **Next:** **Advanced**.
2. On the **Advanced** tab click **Copy and paste** and **Native client support**, and click **Review + Create**.
3. On the **Review + Create** blade, click **Create**.

**Note**: Wait until the above process finish, it should take about 15 minutes.

1. Open a new Browser’s tab with Azure Bastion **az104-12a-ba01** created.

#### Task 4: Connect to a VM

1. In the Azure portal, navigate to the virtual machine that you want to connect to. On the **Overview** page, select **Connect**, then select **Bastion** and then, click **Use Bastion**.
2. On the **az104-12-vm0 - Bastion**, specify the following settings and then, press **Connect**.

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Username | **Student** |
| Password | **Pa55w.rd1234** |

1. On the **az104-12-vm1 - Bastion**, specify the following settings and then, press **Connect**.

|  |  |
| --- | --- |
| **Setting** | **Value** |
| Username | **Student** |
| Authentication Type | **SSH Private Key from Local File** |

#### Clean up resources

1. List all resource groups created throughout the labs of this module by running the following command:

*Get-AzResourceGroup -Name 'az104-12\*'*

1. Delete all resource groups you created throughout the labs of this module by running the following command:

*Get-AzResourceGroup -Name 'az104-12\*' | Remove-AzResourceGroup -Force -AsJob*

**Note**: The command executes asynchronously (as determined by the -AsJob parameter), so while you will be able to run another PowerShell command immediately afterwards within the same PowerShell session, it will take a few minutes before the resource groups are actually removed.