**The laboratory work 12**

**Create a virtual network**

1. From the Azure portal menu, select **Create a resource**. From the Azure Marketplace, select **Networking** > **Virtual network**.
2. In **Create virtual network**, enter or select this information:

|  |  |
| --- | --- |
| Table 1 | |
| **Setting** | **Value** |
| Subscription | Select your subscription. |
| Resource group | Select **Create new**, enter *myResourceGroup*, then select **OK**. |
| Name | Enter *myVirtualNetwork*. |
| Location | Select **East US**. |

1. Select **Next: IP Addresses**, and for **IPv4 address space**, enter *10.1.0.0/16*.
2. Select **Add subnet**, then enter *myVirtualSubnet* for **Subnet name** and *10.1.0.0/24* for **Subnet address range**.
3. Select **Add**, then select **Review + create**. Leave the rest as default and select **Create**.
4. In **Create virtual network**, select **Create**.

**Create virtual machines**

Create two VMs in the virtual network:

**Create the first VM**

1. From the Azure portal menu, select **Create a resource**.
2. From the Azure Marketplace, select **Compute** > **Windows Server 2019 Datacenter**. Select **Create**.
3. In **Create a virtual machine - Basics**, enter or select this information:

|  |  |
| --- | --- |
| Table 2 | |
| **Setting** | **Value** |
| **Project details** |  |
| Subscription | Select your subscription. |
| Resource group | Select **myResourceGroup**. You created this resource group in the previous section. |
| **Instance details** |  |
| Virtual machine name | Enter *myVm1*. |
| Region | Select **East US**. |
| Availability options | Default to **No infrastructure redundancy required**. |
| Image | Default to **Windows Server 2019 Datacenter**. |
| Size | Default to **Standard DS1 v2**. |
| **Administrator account** |  |
| Username | Enter a username of your choosing. |
| Password | Enter a password of your choosing. The password must be at least 12 characters long and meet the [defined complexity requirements](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/faq?toc=/azure/virtual-network/toc.json#what-are-the-password-requirements-when-creating-a-vm). |
| Confirm Password | Re-enter password. |
| **Inbound port rules** |  |
| Public inbound ports | Select **Allow selected ports**. |
| Select inbound ports | Enter *HTTP (80)* and *RDP (3389)*. |
| **Save money** |  |
| Already have a Windows license? | Default to **No**. |

1. Select **Next: Disks**.
2. In **Create a virtual machine - Disks**, keep the defaults and select **Next: Networking**.
3. In **Create a virtual machine - Networking**, select this information:

|  |  |
| --- | --- |
| Table 3 | |
| **Setting** | **Value** |
| Virtual network | Default to **myVirtualNetwork**. |
| Subnet | Default to **myVirtualSubnet (10.1.0.0/24)**. |
| Public IP | Default to **(new) myVm-ip**. |
| NIC network security group | Default to **Basic**. |
| Public inbound ports | Default to **Allow selected ports**. |
| Select inbound ports | Default to **HTTP** and **RDP**. |

1. Select **Next: Management**.
2. In **Create a virtual machine - Management**, for **Diagnostics storage account**, select **Create New**.
3. In **Create storage account**, enter or select this information:

|  |  |
| --- | --- |
| Table 4 | |
| **Setting** | **Value** |
| Name | Enter *myvmstorageaccount*. If this name is taken, create a unique name. |
| Account kind | Default to **Storage (general purpose v1)**. |
| Performance | Default to **Standard**. |
| Replication | Default to **Locally-redundant storage (LRS)**. |

1. Select **OK**, then select **Review + create**. You're taken to the **Review + create** page where Azure validates your configuration.
2. When you see the **Validation passed** message, select **Create**.

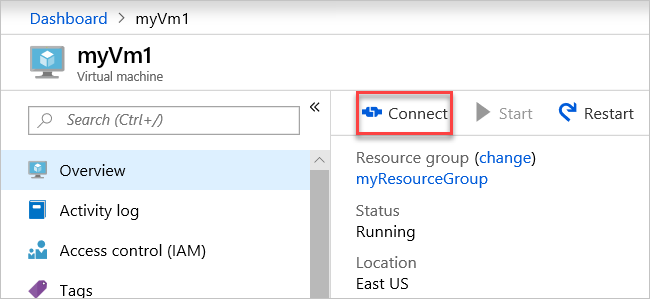
**Create the second VM**

Repeat the procedure in the previous section to create another virtual machine.

## Connect to a VM from the internet

After you've created myVm1, connect to the internet.

1. In the Azure portal, search for and select myVm1.
2. Select **Connect**, then **RDP**.



The **Connect** page opens.

1. Select **Download RDP File**. Azure creates a Remote Desktop Protocol (.rdp) file and downloads it to your computer.
2. Open the RDP file. If prompted, select **Connect**.
3. Enter the username and password you specified when creating the VM.
4. Select **OK**.
5. You may receive a certificate warning when you sign in. If you receive a certificate warning, select **Yes** or **Continue**.
6. Once the VM desktop appears, minimize it to go back to your local desktop.

**Communicate between VMs**

1. In the Remote Desktop of *myVm1*, open PowerShell.
2. Enter ping myVm2.

You'll receive a message similar to this output:

 Pinging myVm2.0v0zze1s0uiedpvtxz5z0r0cxg.bx.internal.clouda

Request timed out.

Request timed out.

Request timed out.

Request timed out.

Ping statistics for 10.1.0.5:

Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

The ping fails, because ping uses the Internet Control Message Protocol (ICMP). By default, ICMP isn't allowed through the Windows firewall.

 To allow *myVm2* to ping *myVm1* in a later step, enter this command:

PowerShell

 New-NetFirewallRule –DisplayName "Allow ICMPv4-In" –Protocol ICMPv4

This command allows ICMP inbound through the Windows firewall:

 Close the remote desktop connection to *myVm1*.

 Complete the steps in [Connect to a VM from the internet](https://docs.microsoft.com/en-us/azure/virtual-network/quick-create-portal#connect-to-a-vm-from-the-internet) again, but connect to *myVm2*.

 From a command prompt, enter ping myvm1.

You'll get back something like this message:

 Pinging myVm1.0v0zze1s0uiedpvtxz5z0r0cxg.bx.internal.cloudapp.net [10.1.0.4] with 32 bytes of data:

Reply from 10.1.0.4: bytes=32 time=1ms TTL=128

Reply from 10.1.0.4: bytes=32 time<1ms TTL=128

Reply from 10.1.0.4: bytes=32 time<1ms TTL=128

Reply from 10.1.0.4: bytes=32 time<1ms TTL=128

Ping statistics for 10.1.0.4:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

You receive replies from *myVm1*, because you allowed ICMP through the Windows firewall on the *myVm1* VM in step 3.

 Close the remote desktop connection to *myVm2*.