






Module 3 - Configuring and Managing Virtual Networks

Lab 1 - Create a virtual network



-  A virtual network enables Azure resources, such as virtual machines (VM), to communicate privately with each other, and with the internet. In this practice, you learn how to create a virtual network. After creating a virtual network, you deploy two VMs into the virtual network. You then connect to one VM from the internet, and communicate privately between the two VMs.

Task 1: Create a virtual network using the Azure portal

- ☐ 1. Open a web browser and navigate to  <https://portal.azure.com>.
- ☐ 2. Log in to the Azure portal using  sheikhnasirL3U1W@gdcs0.com and the password  [eG2J7ORCwedaXSYM](#).
- ☐ 3. Search for and select **Virtual Networks** from the search box.
- ☐ 4. On the **Virtual Networks** page, select + **Create**.
- ☐ 5. On the **Basics** blade enter the following information and then click **Next : IP Addresses** >:

| Setting | Value |
|----------------|--|
| Subscription | CS-SUB-0317 |
| Resource group | myResourceGroup |
| Location | Select East US |
| Name |  myVirtualNetwork |

- ☐ 6. On the **IP Addresses** blade, enter the following information.

| Setting | Value |
|---------------|---|
| Address space |  10.0.0.0/16 |
| Subnet name | default |
| Address Space |  10.0.0.0/24 |



Home > New >


Create virtual network

Basics **IP Addresses** Security Tags Review + create

The virtual network's address space, specified as one or more address prefixes in CIDR notation (e.g. 192.168.1.0/24).

IPv4 address space

10.0.0.0/16 10.0.0.0 - 10.0.255.255 (65536 addresses)

☐ Add IPv6 address space 

The subnet's address range in CIDR notation (e.g. 192.168.1.0/24). It must be contained by the address space of the virtual network.

+ Add subnet  Remove subnet

☐ Subnet name Subnet address range

☐ default 10.0.0.0/24




- ☐ 7. Click **Review + create** then select **Create**.

Task 2: Create a VM

- ☐ 1. In the search bar, search for and select **Virtual Machines**.

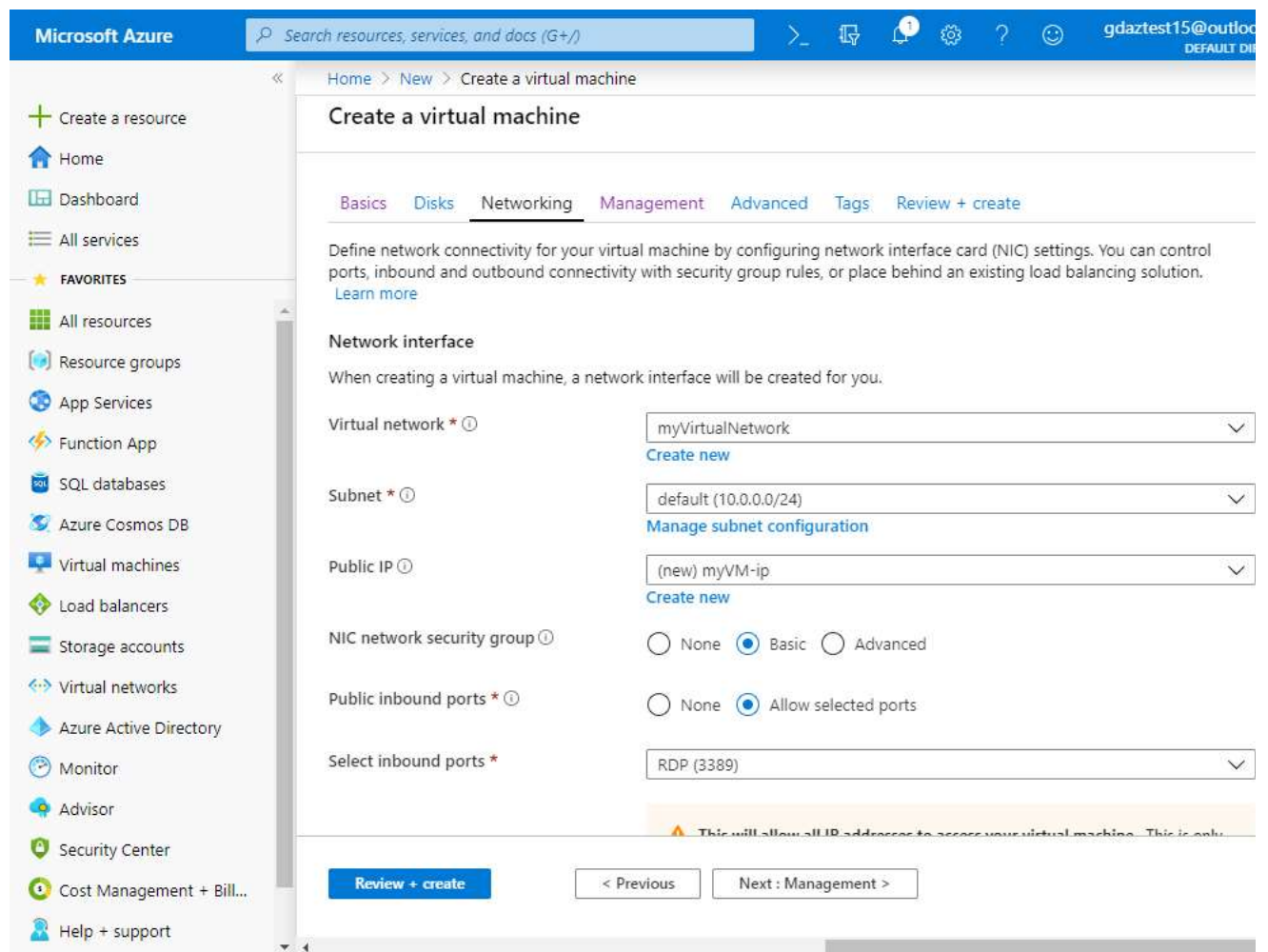
☐ 2. On the **Virtual Machines** page, select **+ Create** and then select **+ Virtual Machine**.

☐ 3. On the basics tab, enter the following information:

| Setting | Value |
|----------------------|---|
| Subscription | CS-SUB-0317 |
| Resource group | Select myResourceGroup |
| Virtual machine Name |  myVM1 |
| Location | Select East US |
| Image | Windows Server 2019 Datacenter - Gen 2 |
| Size | Standard_D2s_v3 |
| User name |  localadmin |
| Password |  eG2J7ORCwedaXSYM |
| Public inbound ports | Select RDP (3389) |

☐ 4. Click on the **Management** tab and next to **Boot diagnostics** select **Disable**.

☐ 5. On the **Networking Tab**, notice your Virtual network has already been selected based on the Resource Group you selected.



The screenshot shows the 'Create a virtual machine' page in the Microsoft Azure portal, specifically the 'Networking' tab. The left sidebar contains navigation links for 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area is titled 'Create a virtual machine' and has tabs for 'Basics', 'Disks', 'Networking' (selected), 'Management', 'Advanced', 'Tags', and 'Review + create'. Below the tabs, there is a description of network connectivity and a 'Learn more' link. The 'Network interface' section states that a network interface will be created. The configuration fields are as follows: 'Virtual network' is set to 'myVirtualNetwork' with a 'Create new' link; 'Subnet' is set to 'default (10.0.0.0/24)' with a 'Manage subnet configuration' link; 'Public IP' is set to '(new) myVM-ip' with a 'Create new' link; 'NIC network security group' has radio buttons for 'None', 'Basic' (selected), and 'Advanced'; 'Public inbound ports' has radio buttons for 'None' and 'Allow selected ports' (selected); and 'Select inbound ports' is set to 'RDP (3389)'. At the bottom, there is a yellow warning banner, a 'Review + create' button, and 'Previous' and 'Next: Management' buttons.

☐ 6. Click **Review + create** and then on the validation page click **Create** to start VM deployment. The VM takes a few minutes to deploy.

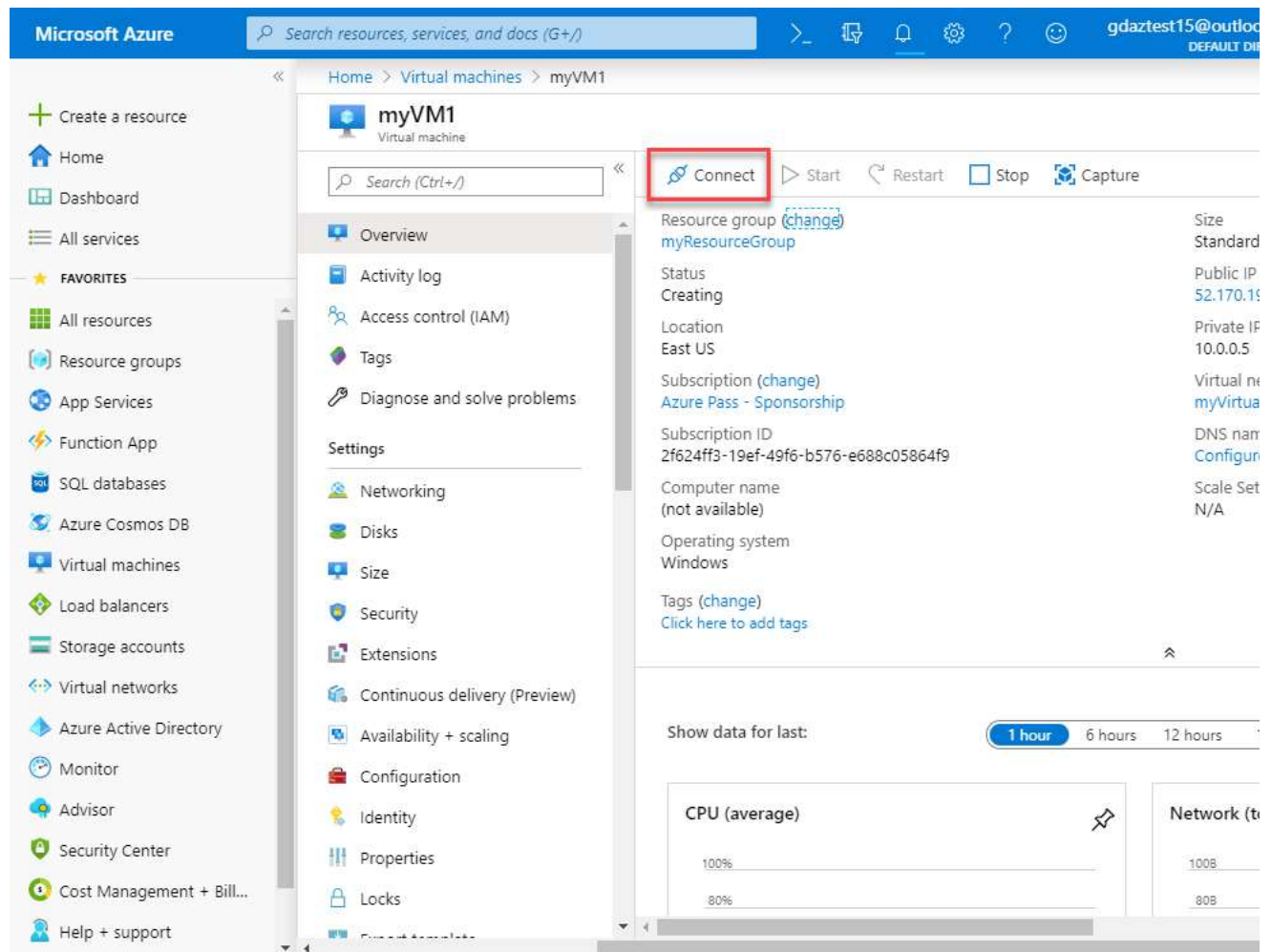
Task 3: Create the second VM

- ☐ 1. Complete steps 1-6 again, but in step 3, name the VM *myVM2*.

Note: You do not need to wait for the first VM to deploy before deploying the second VM

Task 4: Connect to a VM from the internet

- ☐ 1. After *myVm1* and *myVm2* are created, connect to it. At the top of the Azure portal, enter *myVm1*. When **myVm1** appears in the search results, select it. Select the **Connect** button.



- ☐ 2. After selecting the **Connect** button, a Remote Desktop Protocol (.rdp) file is created and downloaded to your computer.
- ☐ 3. Open the downloaded rdp file. If prompted, select **Connect**. Enter the user name and password you specified when creating the VM. You may need to select **More choices**, then **Use a different account**, to specify the credentials you entered when you created the VM.
- ☐ 4. Select **OK**.
- ☐ 5. You may receive a certificate warning during the sign-in process. If you receive the warning, select **Yes** or **Continue**, to proceed with the connection.

Task 5: Communicate between VMs

- ☐ 1. From PowerShell, enter

```
ping myvm2
```

- ☐ 2. Close the remote desktop connection to *myVm1*.
- ☐ 3. Complete the steps in **Task 4** again, but connect to *myVm2*. From a command prompt, enter

```
ping myvm1
```

You receive replies from *myVm1*

- ☐ 4. Close the remote desktop connection to *myVm2*.

Task 6: Create an additional address space and subnet

- ☐ 1. In the Azure Portal click **Virtual Networks** and click **myVirtualNetwork**.

Microsoft Azure

Search resources, services, and docs (G+)

Home > Virtual networks

Virtual networks

Default Directory

+ Add Edit columns Refresh Export to CSV Assign tags Feedback Leave preview

Filter by name... Subscription == all Resource group == all Location == all Add filter No grouping

Showing 1 to 1 of 1 records.

| Name | Resource group | Location | Subscription |
|------------------|-----------------|----------|------------------|
| myVirtualNetwork | myResourceGroup | East US | Azure Pass - Spc |

< Previous Page 1 of 1 Next >

2. Click **Address Space**.

Microsoft Azure

Search resources, services, and docs (G+)

Home > Virtual networks > myVirtualNetwork

myVirtualNetwork

Virtual network

Search (Ctrl+J) Refresh Move Delete

Overview Activity log Access control (IAM) Tags Diagnose and solve problems

Settings

Address space

Connected devices

Subnets DDoS protection Firewall Security DNS servers Peerings Service endpoints Private endpoints

Resource group (change) myResourceGroup Address: 10.0.0.0/24

Location East US DNS serv Azure pr

Subscription (change) Azure Pass - Sponsorship

Subscription ID 2f624ff3-19ef-49f6-b576-e688c05864f9

Tags (change) Click here to add tags

Connected devices

Search connected devices

| Device | Type | IP A |
|----------|-------------------|----------|
| myvm529 | Network interface | 10.0.0.1 |
| myvm1673 | Network interface | 10.0.0.2 |
| myvm2509 | Network interface | 10.0.0.3 |

3. Enter the following IP Range (CIDR) - **192.168.3.0/24** and click **Save**.

Microsoft Azure

Search resources, services, and docs (G+)

Home > Virtual networks > myVirtualNetwork - Address space

myVirtualNetwork - Address space

Virtual network

Search (Ctrl+)

Save Discard

10.0.0.0/16

192.168.3.0/24

Add additional address range

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Address space

Connected devices

Subnets

DDoS protection

Firewall

Security

DNS servers

Peerings

Service endpoints

Private endpoints

Create a resource

Home

Dashboard

All services

FAVORITES

All resources

Resource groups

App Services

Function App

SQL databases

Azure Cosmos DB

Virtual machines

Load balancers

Storage accounts

Virtual networks

Azure Active Directory

Monitor

Advisor

Security Center

Cost Management + Bill...

4. Click **Subnets**.

Microsoft Azure

Search resources, services, and docs (G+)

Home > Virtual networks > myVirtualNetwork - Subnets

myVirtualNetwork - Subnets

Virtual network

+ Subnet + Gateway subnet

Search subnets

| Name | Address ... | IPv4 avail... | Delegate... | Security ... |
|---------|-------------|---------------|-------------|--------------|
| default | 10.0.0.0/24 | 248 | - | - |

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Address space

Connected devices

Subnets

DDoS protection

Firewall

Security

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Create a resource

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Storage accounts

Virtual networks

Azure Active Directory

Monitor

Advisor

Security Center

Cost Management + Bill...

5. Click + **Subnet**.

Microsoft Azure

Search resources, services, and docs (G+)

gdaztest15@outlook

Home > Virtual networks > myVirtualNetwork - Subnets

myVirtualNetwork - Subnets

Virtual network

Search (Ctrl+)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Address space

Connected devices

Subnets

DDoS protection

Firewall

Security

DNS servers

Peerings

Service endpoints

Private endpoints

+ Subnet + Gateway subnet

Search subnets

| Name | Address ... | IPv4 avail... | Delegate... | Security ... |
|---------|-------------|---------------|-------------|--------------|
| default | 10.0.0.0/24 | 248 | - | - |

6. In the Add subnet blade enter **subnet2** as the name and **192.168.3.0/24** as the Address Range and click **Save**.

Microsoft Azure

Search resources, services, and docs (G+)

gdaztest15@outlook

Home > Virtual networks > myVirtualNetwork - Subnets

myVirtualNetwork - Subnets

Virtual network

Search (Ctrl+)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Address space

Connected devices

Subnets

DDoS protection

Firewall

Security

DNS servers

Peerings

Service endpoints

Private endpoints

+ Subnet + Gateway subnet

Search subnets

default 10.0.0.0/24

Add subnet

myVirtualNetwork

Name *

subnet2

Address range (CIDR block) * ⓘ

192.168.3.0/24

192.168.3.0 - 192.168.3.255 (251 + 5 Azure reserved addresses)

☐ Add an IPv6 address space

Network security group

None

Route table

None

Service endpoints

Services ⓘ

0 selected

Subnet delegation

Delegate subnet to a service ⓘ

None

OK

Task 7: Create a virtual network using PowerShell

1. In the Azure portal, start a PowerShell session within the **Cloud Shell** pane by selecting on the toolbar icon directly to the right of the search textbox.

- ☐ 2. Click **Show advanced settings**.

You have no storage mounted

Azure Cloud Shell requires an Azure file share to persist files. [Learn more](#)
This will create a new storage account for you and this will incur a small monthly cost. [View pricing](#)

* Subscription
CloudShare7

Show advanced settings

Create storage Close

- ☐ 3. Select the **East US** region. Select **Use existing** Resource group and select the pre-provisioned resource group for the lab.

You have no storage mounted

* Subscription
CloudShare7

* Cloud Shell region
East US

Hide advanced settings


* Resource group
☐ Create new ☒ Use existing
onpremrgrg-5ff14358fe7

* Storage account
☒ Create new ☐ Use existing
Required field

* File share
☒ Create new ☐ Use existing
Required field

For guidance on Cloud Shell storage, please refer to the [Cloud Shell documentation](#).

Create storage Close

- ☐ 4. Enter a name for the storage account (this must be unique) and type  **cloudshell** as the name of the File share then click **Create Storage**.

You have no storage mounted

* Subscription
CloudShare7

* Cloud Shell region
East US

Hide advanced settings

* Resource group
☐ Create new ☒ Use existing
onpremrgrg-5ff14358fe7

* Storage account
☒ Create new ☐ Use existing
thisisaunique name

* File share
☒ Create new ☐ Use existing
cloudshell

For guidance on Cloud Shell storage, please refer to the [Cloud Shell documentation](#).

Create storage Close

Your Cloud Shell will now launch.

- ☐ 5. Enter the following PowerShell commands to create a Virtual Network.

Create a virtual network with New-AzureRmVirtualNetwork. The following command creates a default virtual network named myVirtualNetwork-PS in the EastUS location:

```
$virtualNetwork = New-AzVirtualNetwork -ResourceGroupName myResourceGroup -Location EastUS -Name myVirtualNetwork-PS -AddressPrefix 10.0.0.0/16
```

Azure resources are deployed to a subnet within a virtual network, so you need to create a subnet. Create a subnet configuration with New-AzureRmVirtualNetworkSubnetConfig.

```
$subnetConfig = Add-AzVirtualNetworkSubnetConfig -Name default -AddressPrefix 10.0.0.0/24 -VirtualNetwork $virtualNetwork
```

Write the subnet configuration to the virtual network with Set-AzureRmVirtualNetwork, which creates the subnet within the virtual network:

```
$virtualNetwork | Set-AzVirtualNetwork
```

Task 8: Create a virtual network using the Azure CLI

- ☐ 1. Switch the **Cloud Shell** to Bash.

Microsoft Azure

Search resources, services, and docs (G+J)

gdaztest15@outlook

DEFAULT DIB

Create a resource

Home

Dashboard

All services

FAVORITES

All resources

Resource groups

App Services

Function App

SQL databases

Azure Cosmos DB

Virtual machines

Azure services

Create a resource

Virtual networks

Virtual machines

Azure Active Directory

Resource groups

Subscriptions

App Services

Storage accounts

SQL databases

More services

Recent resources

| NAME | TYPE | LAST VIEWED |
|------------------|-----------------|-------------|
| myVirtualNetwork | Virtual network | 3 min ago |
| myVM1 | Virtual machine | 14 min ago |

PowerShell

Bash

- ☐ 2. Enter the following CLI commands to create a Virtual Network.

Create a virtual network with `az network vnet create`. The following command creates a default virtual network named `myVirtualNetwork-CLI` with one subnet called `default`:

```
az network vnet create --name myVirtualNetwork-CLI --resource-group myResourceGroup --address-prefix 10.0.0.0/16 --subnet-name default
```

- ☐ 3. Close the **Cloud Shell** when the command is complete.
- ☐ 4. In the Azure Portal, click **All Resources**. Note the 2 new Virtual Networks (VNETs).

Microsoft Azure Search resources, services, and docs (G+)

Home > All resources

All resources

Default Directory

+ Add Edit columns Refresh Export to CSV Assign tags Delete Feedback

Filter by name... Subscription == all Resource group == all Type == all Location == all Add filter

Showing 1 to 18 of 18 records. Show hidden types No grouping

| <input type="checkbox"/> | Name ↑↓ | Type ↑↓ | Resource group ↑↓ | Location ↑↓ | Subs |
|--------------------------|--------------------------------|------------------------|--------------------------|-------------|------|
| <input type="checkbox"/> | csb2f624ff319efx49f6xb57 | Storage account | cloud-shell-storage-w... | West Europe | Azui |
| <input type="checkbox"/> | myVirtualNetwork | Virtual network | myResourceGroup | East US | Azui |
| <input type="checkbox"/> | myVirtualNetwork-CLI | Virtual network | myResourceGroup | East US | Azui |
| <input type="checkbox"/> | myVirtualNetwork-PS | Virtual network | myResourceGroup | East US | Azui |
| <input type="checkbox"/> | myVM-ip | Public IP address | myResourceGroup | East US | Azui |
| <input type="checkbox"/> | myVM-nsg | Network security group | myResourceGroup | East US | Azui |
| <input type="checkbox"/> | myVM1 | Virtual machine | myResourceGroup | East US | Azui |
| <input type="checkbox"/> | myVM1-ip | Public IP address | myResourceGroup | East US | Azui |
| <input type="checkbox"/> | myVM1-nsg | Network security group | myResourceGroup | East US | Azui |
| <input type="checkbox"/> | myvm1673 | Network interface | myResourceGroup | East US | Azui |
| <input type="checkbox"/> | myVM1_OsDisk_1_5fb0e9bcc8b4... | Disk | MYRESOURCEGROUP | East US | Azui |
| <input type="checkbox"/> | mvVM2 | Virtual machine | mvResourceGroup | East US | Azui |

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https://portal.azure.com/#blade/HubsExtension/BrowseAllResourcesBlade/resourceType/Microsoft.Resources%2Fresources

✓ **Results:** You have now completed this Lab.

i You can now continue with your next lab by clicking the drop down menu at the top of the lab guide.