

Task 1: Provision the lab environment

In this task, you will deploy three virtual machines, each into a separate virtual network, with two of them in the same Azure region and the third one in another Azure region.

```
PowerShell ? [ ] {} { }
PS /home/andrej> New-AzResourceGroupDeployment `
>> -ResourceGroupName $rgName `
>> -TemplateFile $HOME/az104-05-vnetvm-loop-template.json `
>> -TemplateParameterFile $HOME/az104-05-vnetvm-loop-parameters.json `
>> -location1 $location1 `
>> -location2 $location2

DeploymentName      : az104-05-vnetvm-loop-template
ResourceGroupName   : az104-05-rg1
ProvisioningState    : Succeeded
Timestamp           : 3/26/2023 4:56:07 PM
Mode                 : Incremental
TemplateLink         :
Parameters          :
                    Name                Type                Value
                    =====            =
                    vmSize               String              "Standard_D2s_v3"
                    location1            String              "eastus"
                    location2             String              "westus"
                    adminUsername         String              "Student"
                    adminPassword          SecureString        null

Outputs             :
DeploymentDebugLogLevel :
```

Task 2: Configure local and global virtual network peering

In this task, you will configure local and global peering between the virtual networks you deployed in the previous tasks.

- This step establishes two local peerings - one from az104-05-vnet0 to az104-05-vnet1 and the other from az104-05-vnet1 to az104-05-vnet0.

```
PowerShell
PS /home/andrej> Add-AzVirtualNetworkPeering -Name 'az104-05-vnet0_to_az104-05-vnet1' -VirtualNetwork $vnet0 -RemoteVirtualNetworkId $vnet1.Id

Name                : az104-05-vnet0_to_az104-05-vnet1
Id                  : /subscriptions/6e58e49b-f4f5-4b19-9ff0-b815383a0405/resourceGroups/az104-05-rg1/providers/Microsoft.Network/virtualNetworks/az104-05-vne
t0/virtualNetworkPeerings/az104-05-vnet0_to_az104-05-vnet1
Etag                : W/"f06ab635-1ef6-4948-a912-3c4eb1d53338"
ResourceGroupName   : az104-05-rg1
VirtualNetworkName   : az104-05-vnet0
PeeringSyncLevel     : RemoteNotInSync
PeeringState         : Initiated
ProvisioningState     : Succeeded
RemoteVirtualNetwork : {
  "Id": "/subscriptions/6e58e49b-f4f5-4b19-9ff0-b815383a0405/resourceGroups/az104-05-rg1/providers/Microsoft.Network/virtualNetworks/az1
04-05-vnet1"
}
AllowVirtualNetworkAccess : True
AllowForwardedTraffic    : False
AllowGatewayTransit      : False
UseRemoteGateways        : False
RemoteGateways           : null
PeeredRemoteAddressSpace : {
  "AddressPrefixes": [
    "10.51.0.0/22"
  ]
}
RemoteVirtualNetworkAddressSpace : {
  "AddressPrefixes": [
    "10.51.0.0/22"
  ]
}
```

```
PowerShell
PS /home/andrej> Add-AzVirtualNetworkPeering -Name 'az104-05-vnet1_to_az104-05-vnet0' -VirtualNetwork $vnet1 -RemoteVirtualNetworkId $vnet0.Id

Name                : az104-05-vnet1_to_az104-05-vnet0
Id                  : /subscriptions/6e58e49b-f4f5-4b19-9ff0-b815383a0405/resourceGroups/az104-05-rg1/providers/Microsoft.Network/virtualNetworks/az104-05-vne
t1/virtualNetworkPeerings/az104-05-vnet1_to_az104-05-vnet0
Etag                : W/"8629aa05-b4ca-4b74-9a6c-f50acfa6f29"
ResourceGroupName   : az104-05-rg1
VirtualNetworkName   : az104-05-vnet1
PeeringSyncLevel     : FullyInSync
PeeringState         : Connected
ProvisioningState     : Succeeded
RemoteVirtualNetwork : {
  "Id": "/subscriptions/6e58e49b-f4f5-4b19-9ff0-b815383a0405/resourceGroups/az104-05-rg1/providers/Microsoft.Network/virtualNetworks/az1
04-05-vnet0"
}
AllowVirtualNetworkAccess : True
AllowForwardedTraffic    : False
AllowGatewayTransit      : False
UseRemoteGateways        : False
RemoteGateways           : null
PeeredRemoteAddressSpace : {
  "AddressPrefixes": [
    "10.50.0.0/22"
  ]
}
RemoteVirtualNetworkAddressSpace : {
  "AddressPrefixes": [
    "10.50.0.0/22"
  ]
}
```

-

```
PS /home/andrej> Add-AzVirtualNetworkPeering -Name "az104-05-vnet2_to_az104-05-vnet0" -VirtualNetwork $vnet2 -RemoteVirtualNetworkId $vnet0.Id

Name                               : az104-05-vnet2_to_az104-05-vnet0
Id                                 : /subscriptions/6e58e49b-f4f5-4019-9ff0-b815383a0405/resourceGroups/az104-05-rg1/providers/Microsoft.Network/virtualNetworks/az104-05-vnet2/virtualNetworkPeerings/az104-05-vnet2_to_az104-05-vnet0
Etag                               : W/"e1704043f-0558-4ade-b32f-f0413d2a5ffe"
ResourceGroupName                  : az104-05-rg1
VirtualNetworkName                 : az104-05-vnet2
PeeringSyncLevel                   : FullyInSync
PeeringState                       : Connected
ProvisioningState                   : Succeeded
RemoteVirtualNetwork               : {
  "Id": "/subscriptions/6e58e49b-f4f5-4019-9ff0-b815383a0405/resourceGroups/az104-05-rg1/providers/Microsoft.Network/virtualNetworks/az104-05-vnet0"
}
AllowVirtualNetworkAccess          : True
AllowForwardedTraffic              : False
AllowGatewayTransit                : False
UseRemoteGateways                  : False
RemoteGateways                     : null
PeeredRemoteAddressSpace           : {
  "AddressPrefixes": [
    "10.50.0.0/22"
  ]
}
RemoteVirtualNetworkAddressSpace : {
  "AddressPrefixes": [
    "10.50.0.0/22"
  ]
}
```

This step establishes two global peerings - one from az104-05-vnet1 to az104-05-vnet2 and the other from az104-05-vnet2 to az104-05-vnet1.

```
PowerShell PS /home/andrej> Add-AzVirtualNetworkPeering -Name 'az104-05-vnet1_to_az104-05-vnet2' -VirtualNetwork $vnet1 -RemoteVirtualNetworkId $vnet2.Id

Name                : az104-05-vnet1_to_az104-05-vnet2
Id                  : /subscriptions/6e58e49b-f4f5-4019-9ff0-b815383a0405/resourceGroups/az104-05-rg1/providers/Microsoft.Network/virtualNetworks/az104-05-vne
                    t1/virtualNetworkPeerings/az104-05-vnet1_to_az104-05-vnet2
Etag                 : W/"f6a8ac0a-87d1-4085-b0e7-c02afe4db089"
ResourceGroupName   : az104-05-rg1
VirtualNetworkName   : az104-05-vnet1
PeeringSyncLevel     : RemoteNotInSync
PeeringState         : Initiated
ProvisioningState     : Succeeded
RemoteVirtualNetwork : {
  "Id": "/subscriptions/6e58e49b-f4f5-4019-9ff0-b815383a0405/resourceGroups/az104-05-rg1/providers/Microsoft.Network/virtualNetworks/az1
                    04-05-vnet2"
}
AllowVirtualNetworkAccess : True
AllowForwardedTraffic      : False
AllowGatewayTransit        : False
UseRemoteGateways          : False
RemoteGateways              : null
PeeredRemoteAddressSpace    : {
  "AddressPrefixes": [
    "10.52.0.0/22"
  ]
}
RemoteVirtualNetworkAddressSpace : {
  "AddressPrefixes": [
    "10.52.0.0/22"
  ]
}
```

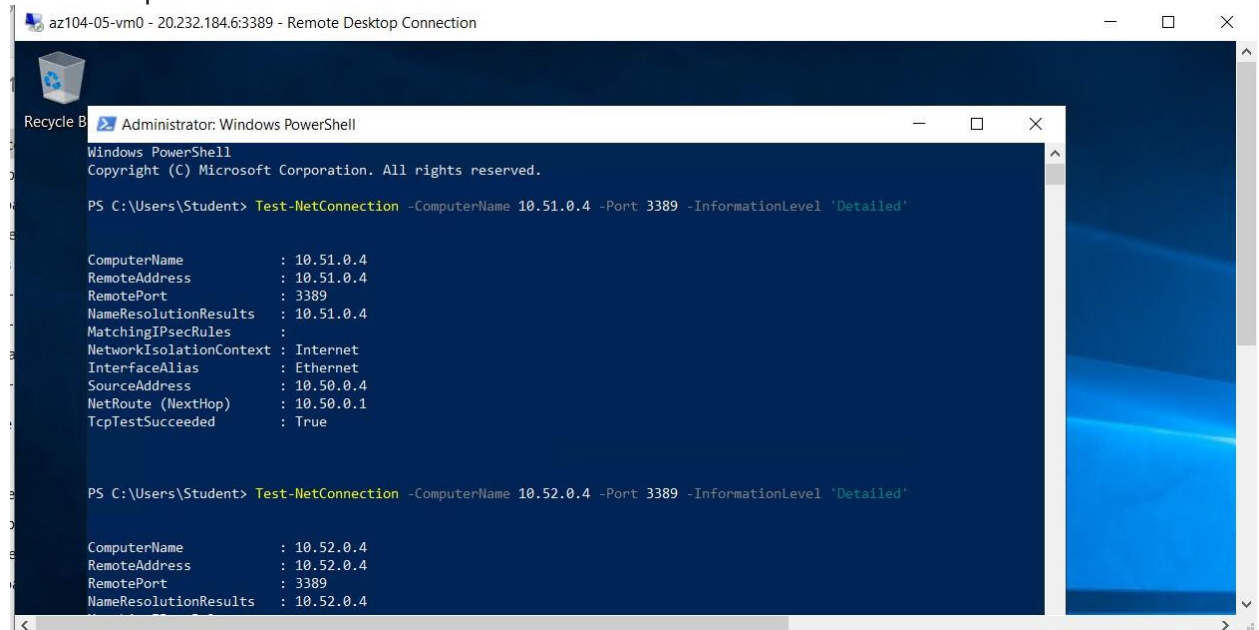
```
PowerShell PS /home/andrej> Add-AzVirtualNetworkPeering -Name 'az104-05-vnet2_to_az104-05-vnet1' -VirtualNetwork $vnet2 -RemoteVirtualNetworkId $vnet1.Id

Name                : az104-05-vnet2_to_az104-05-vnet1
Id                  : /subscriptions/6e58e49b-f4f5-4019-9ff0-b815383a0405/resourceGroups/az104-05-rg1/providers/Microsoft.Network/virtualNetworks/az104-05-vne
                    t2/virtualNetworkPeerings/az104-05-vnet2_to_az104-05-vnet1
Etag                 : W/"597882af-32b8-4317-94bb-5688746e72b8"
ResourceGroupName   : az104-05-rg1
VirtualNetworkName   : az104-05-vnet2
PeeringSyncLevel     : FullyInSync
PeeringState         : Connected
ProvisioningState     : Succeeded
RemoteVirtualNetwork : {
  "Id": "/subscriptions/6e58e49b-f4f5-4019-9ff0-b815383a0405/resourceGroups/az104-05-rg1/providers/Microsoft.Network/virtualNetworks/az1
                    04-05-vnet1"
}
AllowVirtualNetworkAccess : True
AllowForwardedTraffic      : False
AllowGatewayTransit        : False
UseRemoteGateways          : False
RemoteGateways              : null
PeeredRemoteAddressSpace    : {
  "AddressPrefixes": [
    "10.51.0.0/22"
  ]
}
RemoteVirtualNetworkAddressSpace : {
  "AddressPrefixes": [
    "10.51.0.0/22"
  ]
}
```

Task 3: Test intersite connectivity

In this task, you will test connectivity between virtual machines on the three virtual networks that you connected via local and global peering in the previous task.

1. Within the Remote Desktop session to **az104-05-vm0**, right-click the **Start** button and, in the right-click menu, click **Windows PowerShell (Admin)**.
2. In the Windows PowerShell console window, run the following to test connectivity to **az104-05-vm1** (which has the private IP address of **10.51.0.4**) over TCP port 3389:



The screenshot shows a Remote Desktop Connection window titled "az104-05-vm0 - 20.232.184.6:3389 - Remote Desktop Connection". Inside the window, a Windows PowerShell console window titled "Administrator: Windows PowerShell" is open. The console displays the following commands and output:

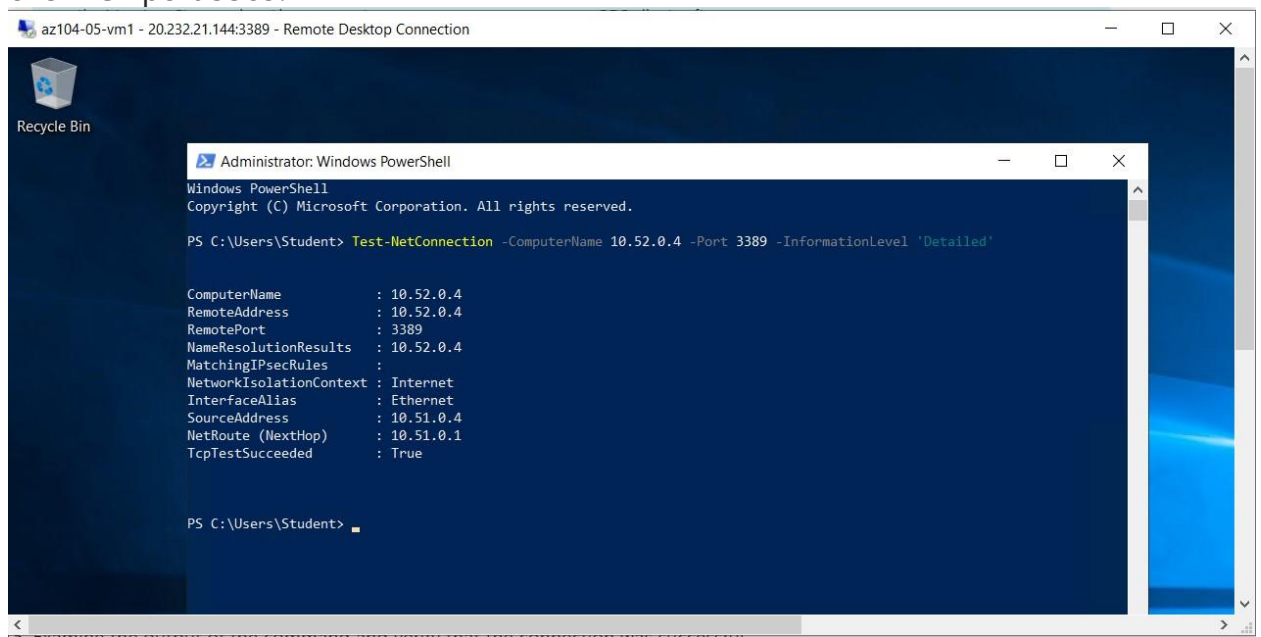
```
PS C:\Users\Student> Test-NetConnection -ComputerName 10.51.0.4 -Port 3389 -InformationLevel 'Detailed'
```

ComputerName	: 10.51.0.4
RemoteAddress	: 10.51.0.4
RemotePort	: 3389
NameResolutionResults	: 10.51.0.4
MatchingIPsecRules	:
NetworkIsolationContext	: Internet
InterfaceAlias	: Ethernet
SourceAddress	: 10.50.0.4
NetRoute (NextHop)	: 10.50.0.1
TcpTestSucceeded	: True

```
PS C:\Users\Student> Test-NetConnection -ComputerName 10.52.0.4 -Port 3389 -InformationLevel 'Detailed'
```

ComputerName	: 10.52.0.4
RemoteAddress	: 10.52.0.4
RemotePort	: 3389
NameResolutionResults	: 10.52.0.4

1. Within the Remote Desktop session to **az104-05-vm1**, right-click the **Start** button and, in the right-click menu, click **Windows PowerShell (Admin)**.
2. In the Windows PowerShell console window, run the following to test connectivity to **az104-05-vm2** (which has the private IP address of **10.52.0.4**) over TCP port 3389:



The screenshot shows a Remote Desktop Connection window titled "az104-05-vm1 - 20.232.21.144:3389 - Remote Desktop Connection". Inside the window, a "Recycle Bin" icon is visible on the desktop. An "Administrator: Windows PowerShell" window is open, displaying the following text:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\Student> Test-NetConnection -ComputerName 10.52.0.4 -Port 3389 -InformationLevel 'Detailed'

ComputerName           : 10.52.0.4
RemoteAddress           : 10.52.0.4
RemotePort              : 3389
NameResolutionResults   : 10.52.0.4
MatchingIPsecRules      :
NetworkIsolationContext : Internet
InterfaceAlias          : Ethernet
SourceAddress           : 10.51.0.4
NetRoute (NextHop)      : 10.51.0.1
TcpTestSucceeded        : True

PS C:\Users\Student>
```