Lab 2
CST8912_011
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Submitted to :
Prof. Tanishq Bansal1.

Introduction

This report describes the steps to create virtual networks, configure VNet peering, deploy virtual machines, and test private communication.

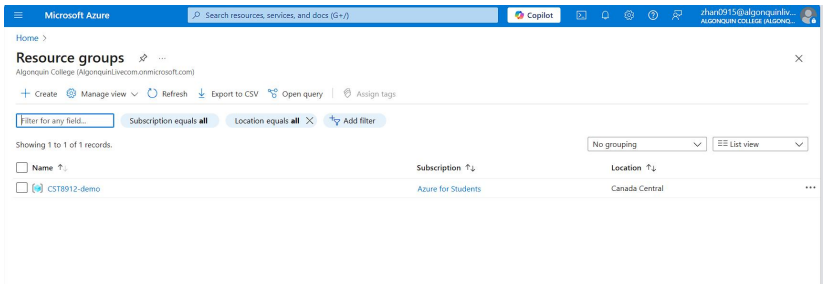
2. Lab Environment

The lab used an Azure Student Subscription with resources in Canada Central and East US regions. A resource group named CST8912-demo was created. Three virtual networks (cst8912_vnet0, cst8912_vnet1, cst8912_vnet2) and three virtual machines (VM0, VM1, VM2) were deployed.

3. Lab Steps and Results

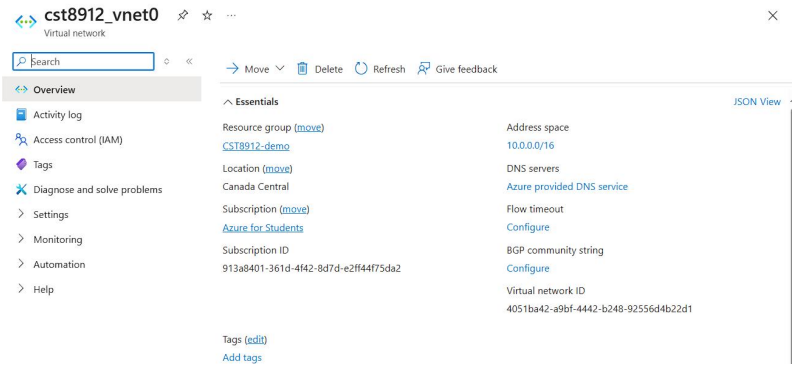
Step 1: Resource Group Creation

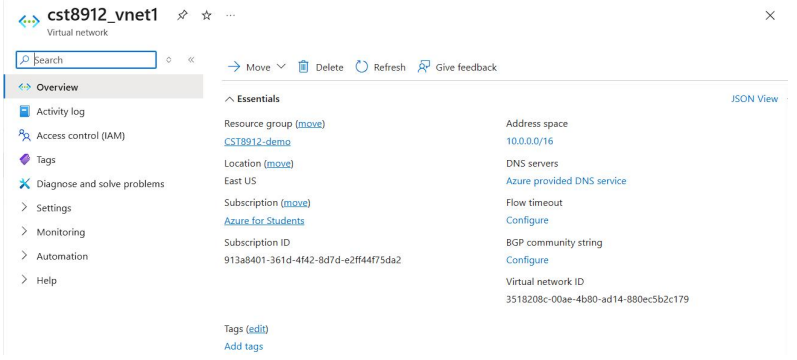
A resource group named CST8912-demo was created in Canada Central.

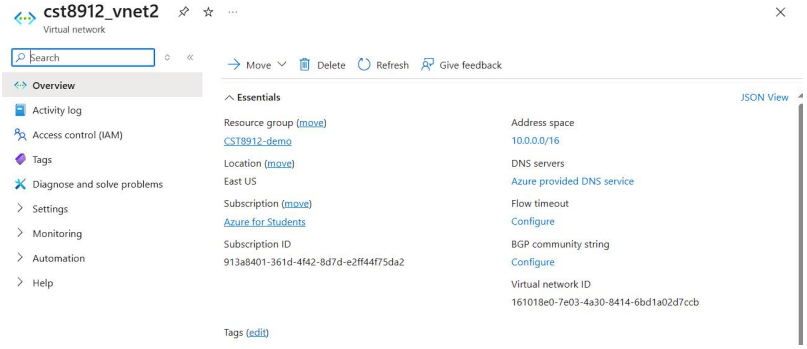


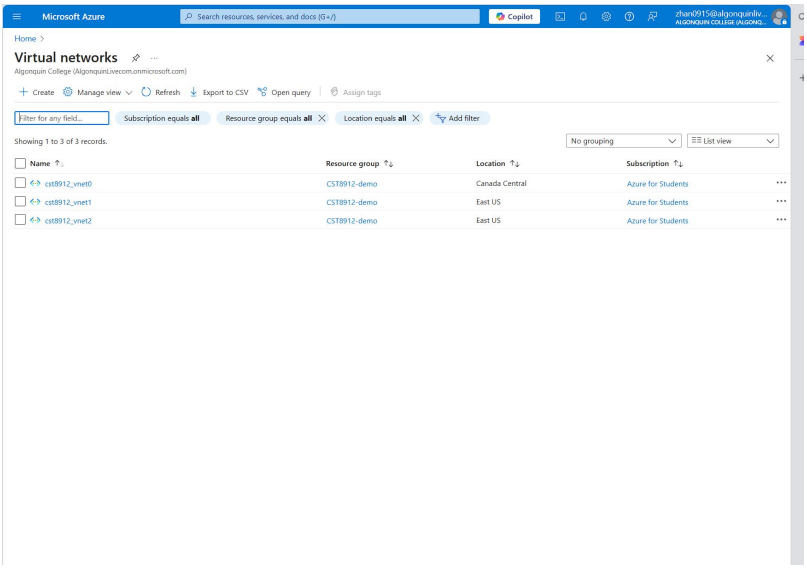
Step 2: Virtual Network Configuration

Three virtual networks were created with unique address spaces: cst8912_vnet0 (10.0.0.0/16), cst8912_vnet1 (10.1.0.0/16), and cst8912_vnet2 (10.2.0.0/16).


cst8912_vnet0
Virtual network
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Settings
Monitoring
Automation
Help
Move
Delete
Refresh
Give feedback
Essentials
JSON View
Resource group (move)
CST8912-demo
Location (move)
Canada Central
Subscription (move)
Azure for Students
Subscription ID
913a8401-361d-4f42-8d7d-e2ff44f75da2
Address space
10.0.0.0/16
DNS servers
Azure provided DNS service
Flow timeout
Configure
BGP community string
Configure
Virtual network ID
4051ba42-a9bf-4442-b248-92556d4b22d1
Tags (edit)
Add tags

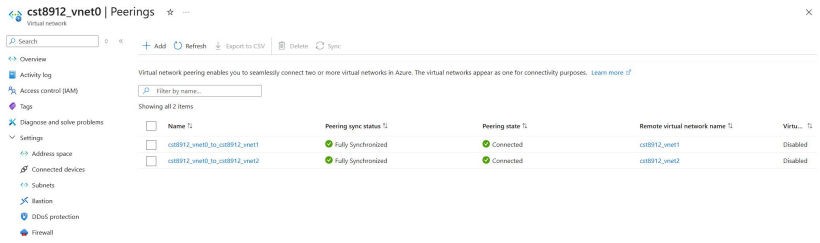

cst8912_vnet1
Virtual network
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Settings
Monitoring
Automation
Help
Move
Delete
Refresh
Give feedback
Essentials
JSON View
Resource group (move)
CST8912-demo
Location (move)
East US
Subscription (move)
Azure for Students
Subscription ID
913a8401-361d-4f42-8d7d-e2ff44f75da2
Address space
10.0.0.0/16
DNS servers
Azure provided DNS service
Flow timeout
Configure
BGP community string
Configure
Virtual network ID
3518208c-00ae-4b80-ad14-880ec5b2c179
Tags (edit)
Add tags

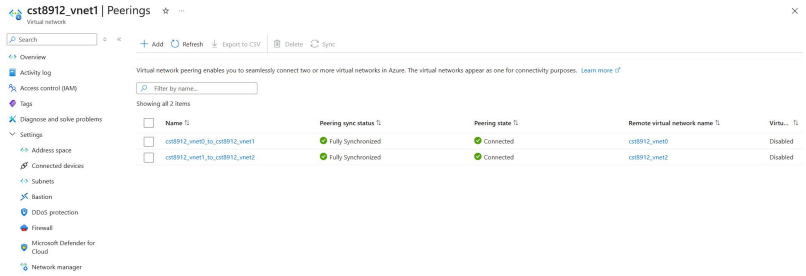

cst8912_vnet2
Virtual network
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Settings
Monitoring
Automation
Help
Move
Delete
Refresh
Give feedback
Essentials
JSON View
Resource group (move)
CST8912-demo
Location (move)
East US
Subscription (move)
Azure for Students
Subscription ID
913a8401-361d-4f42-8d7d-e2ff44f75da2
Address space
10.0.0.0/16
DNS servers
Azure provided DNS service
Flow timeout
Configure
BGP community string
Configure
Virtual network ID
161018e0-7e03-4a30-8414-6bd1a02d7ccb
Tags (edit)


Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
Home
Virtual networks
Algonquin College (AlgonquinLivecom.onmicrosoft.com)
Create
Manage view
Refresh
Export to CSV
Open query
Assign tags
Filter for any field...
Subscription equals all
Resource group equals all
Location equals all
Add filter
Showing 1 to 3 of 3 records.
No grouping
List view
Name
Resource group
Location
Subscription
cst8912_vnet0
CST8912-demo
Canada Central
Azure for Students
cst8912_vnet1
CST8912-demo
East US
Azure for Students
cst8912_vnet2
CST8912-demo
East US
Azure for Students

Step 3: VNet Peering Setup

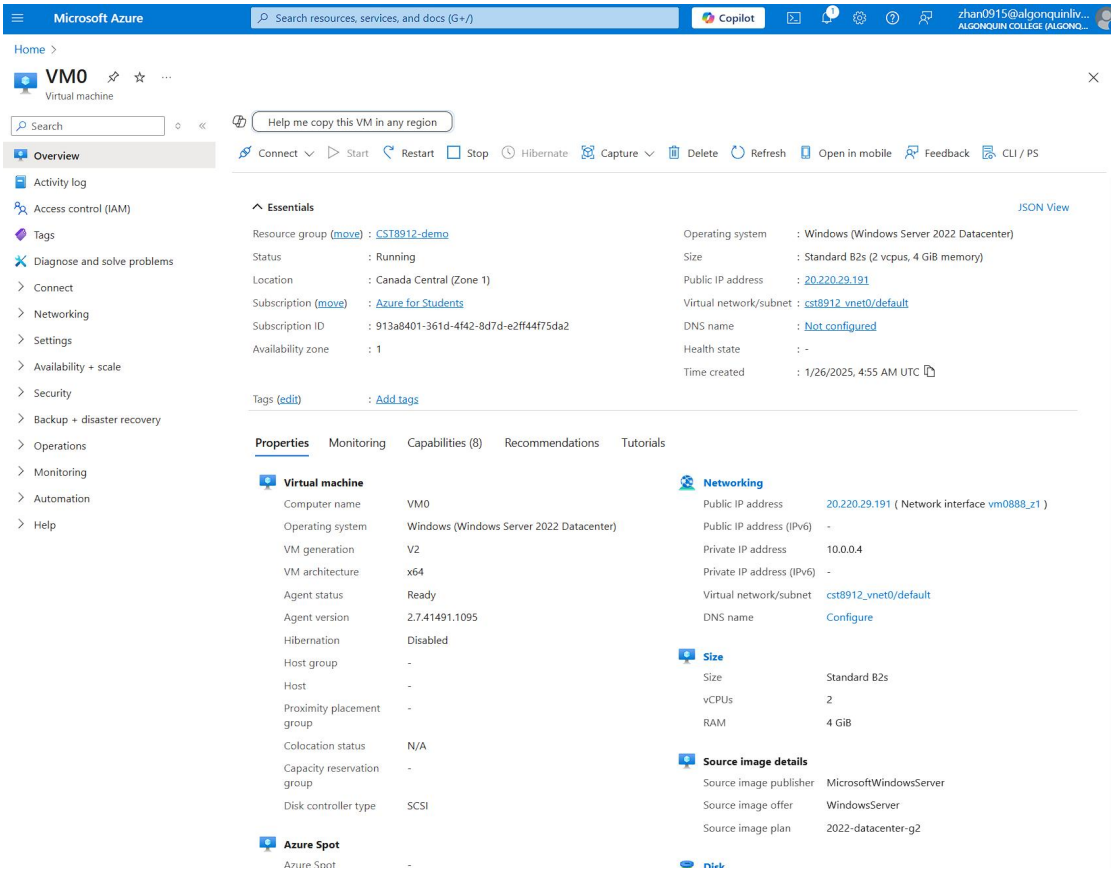
Peering was configured between all three VNets. The connections were verified as successful.

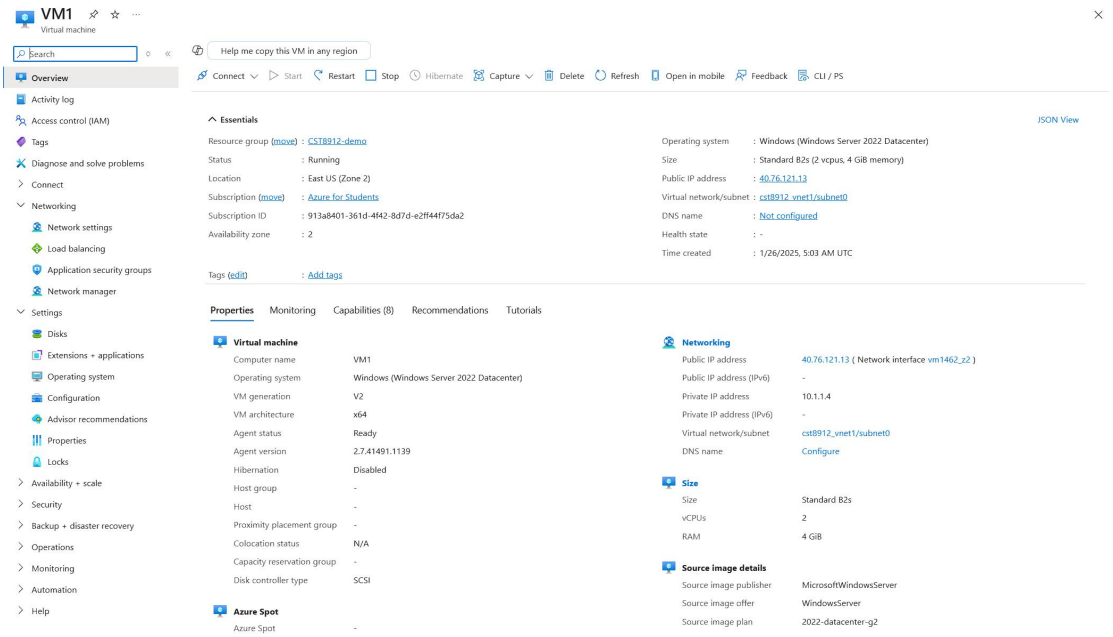


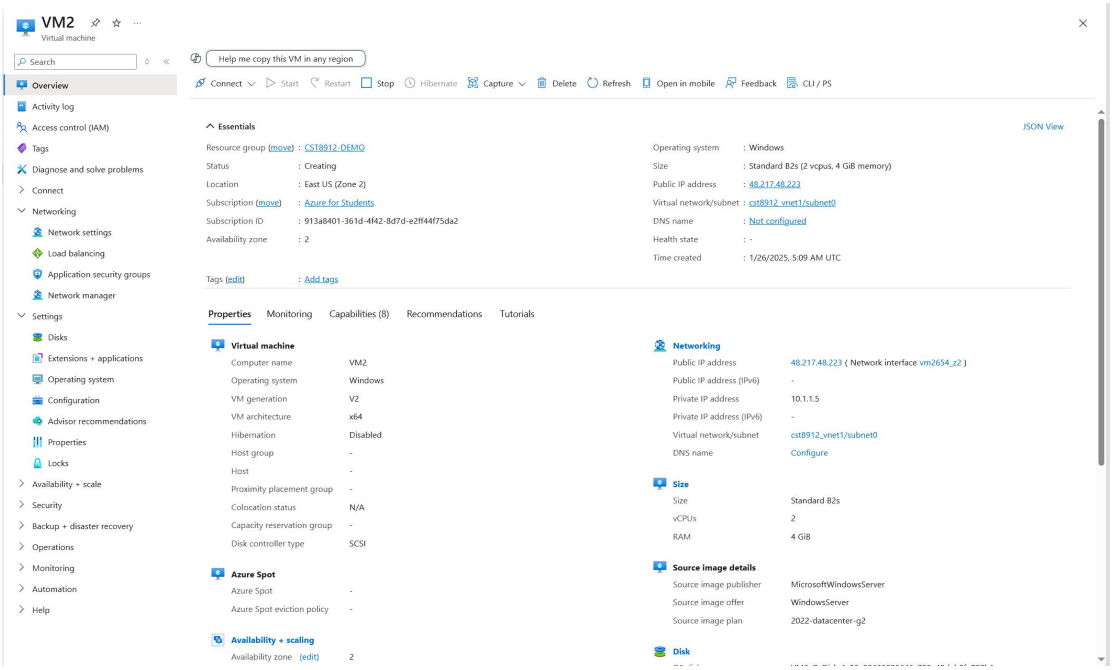


Step 4: Virtual Machine Deployment

VM0 was deployed in cst8912_vnet0, VM1 in cst8912_vnet1, and VM2 in cst8912_vnet2. Windows Server 2022 Datacenter was used for all VMs.


Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
zhan0915@algonquinliv...
ALGONQUIN COLLEGE (ALGONQ...
Home
VM0
Virtual machine
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Connect
Networking
Settings
Availability + scale
Security
Backup + disaster recovery
Operations
Monitoring
Automation
Help
Help me copy this VM in any region
Connect
Start
Restart
Stop
Hibernate
Capture
Delete
Refresh
Open in mobile
Feedback
CLI / PS
Essentials
JSON View
Resource group (move) : CST8912-demo
Status : Running
Location : Canada Central (Zone 1)
Subscription (move) : Azure for Students
Subscription ID : 913a8401-361d-4f42-8d7d-e2ff44f75da2
Availability zone : 1
Operating system : Windows (Windows Server 2022 Datacenter)
Size : Standard B2s (2 vcpus, 4 GiB memory)
Public IP address : 20.220.29.191
Virtual network/subnet : cst8912_vnet0/default
DNS name : Not configured
Health state : -
Time created : 1/26/2025, 4:55 AM UTC
Tags (edit) : Add tags
Properties
Monitoring
Capabilities (8)
Recommendations
Tutorials
Virtual machine
Computer name VM0
Operating system Windows (Windows Server 2022 Datacenter)
VM generation V2
VM architecture x64
Agent status Ready
Agent version 2.7.41491.1095
Hibernation Disabled
Host group -
Host -
Proximity placement group -
Colocation status N/A
Capacity reservation group -
Disk controller type SCSI
Azure Spot
Azure Spot -
Networking
Public IP address 20.220.29.191 (Network interface vm0888_z1)
Public IP address (IPv6) -
Private IP address 10.0.0.4
Private IP address (IPv6) -
Virtual network/subnet cst8912_vnet0/default
DNS name Configure
Size
Size Standard B2s
vCPUs 2
RAM 4 GiB
Source image details
Source image publisher MicrosoftWindowsServer
Source image offer WindowsServer
Source image plan 2022-datacenter-g2

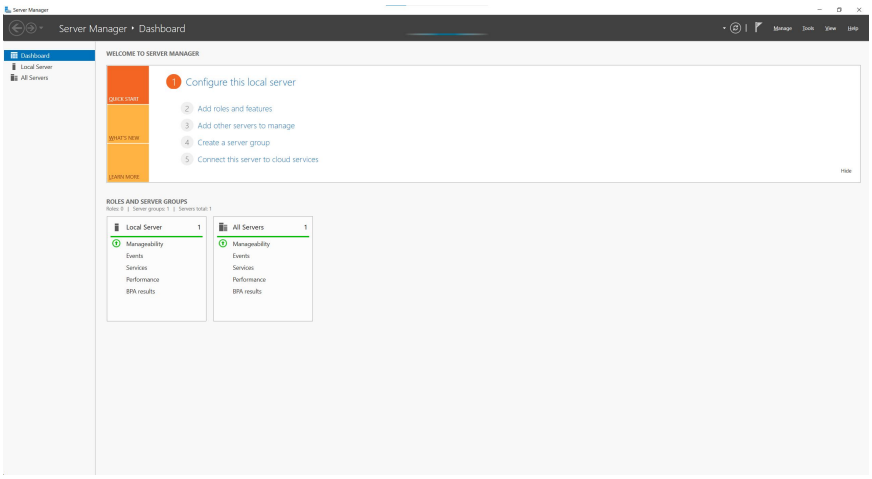

VM1
Virtual machine
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Connect
Networking
Network settings
Load balancing
Application security groups
Network manager
Settings
Disks
Extensions + applications
Operating system
Configuration
Advisor recommendations
Properties
Locks
Availability + scale
Security
Backup + disaster recovery
Operations
Monitoring
Automation
Help
Help me copy this VM in any region
Connect
Start
Restart
Stop
Hibernate
Capture
Delete
Refresh
Open in mobile
Feedback
CLI / PS
Essentials
JSON View
Resource group (move) : CST8912-demo
Status : Running
Location : East US (Zone 2)
Subscription (move) : Azure for Students
Subscription ID : 913a8401-361d-4f42-8d7d-e2ff44f75da2
Availability zone : 2
Operating system : Windows (Windows Server 2022 Datacenter)
Size : Standard B2s (2 vcpus, 4 GiB memory)
Public IP address : 40.76.121.13
Virtual network/subnet : cst8912_vnet1/subnet0
DNS name : Not configured
Health state : -
Time created : 1/26/2025, 5:03 AM UTC
Tags (edit) : Add tags
Properties
Monitoring
Capabilities (8)
Recommendations
Tutorials
Virtual machine
Computer name VM1
Operating system Windows (Windows Server 2022 Datacenter)
VM generation V2
VM architecture x64
Agent status Ready
Agent version 2.7.41491.1139
Hibernation Disabled
Host group -
Host -
Proximity placement group -
Colocation status N/A
Capacity reservation group -
Disk controller type SCSI
Azure Spot
Azure Spot -
Networking
Public IP address 40.76.121.13 (Network interface vm1462_z2)
Public IP address (IPv6) -
Private IP address 10.1.1.4
Private IP address (IPv6) -
Virtual network/subnet cst8912_vnet1/subnet0
DNS name Configure
Size
Size Standard B2s
vCPUs 2
RAM 4 GiB
Source image details
Source image publisher MicrosoftWindowsServer
Source image offer WindowsServer
Source image plan 2022-datacenter-g2



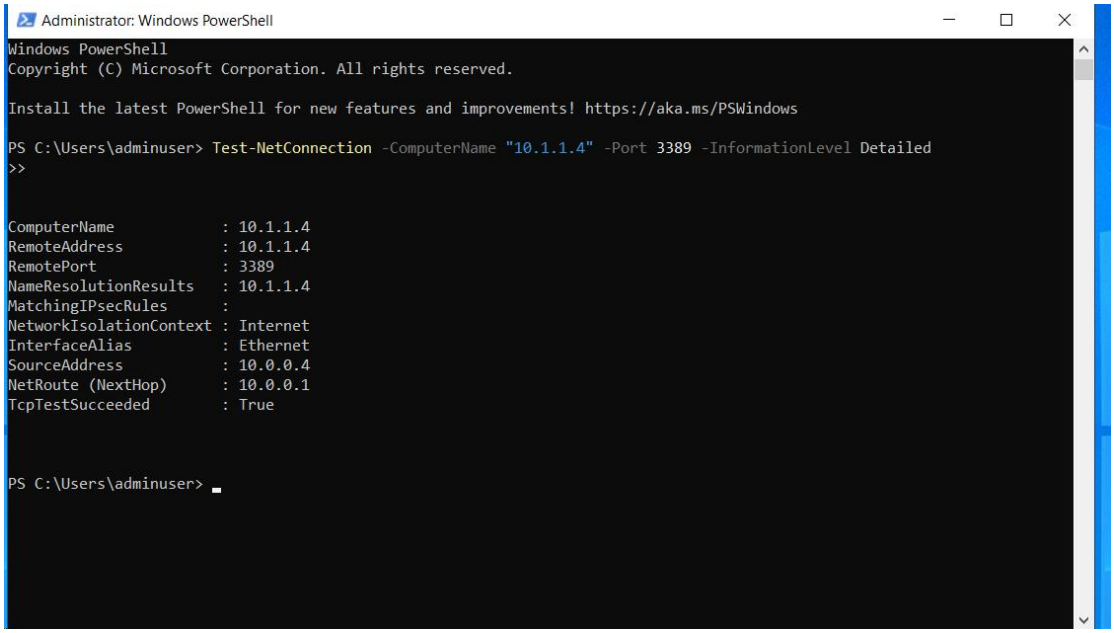
Step 5: Testing Private Communication

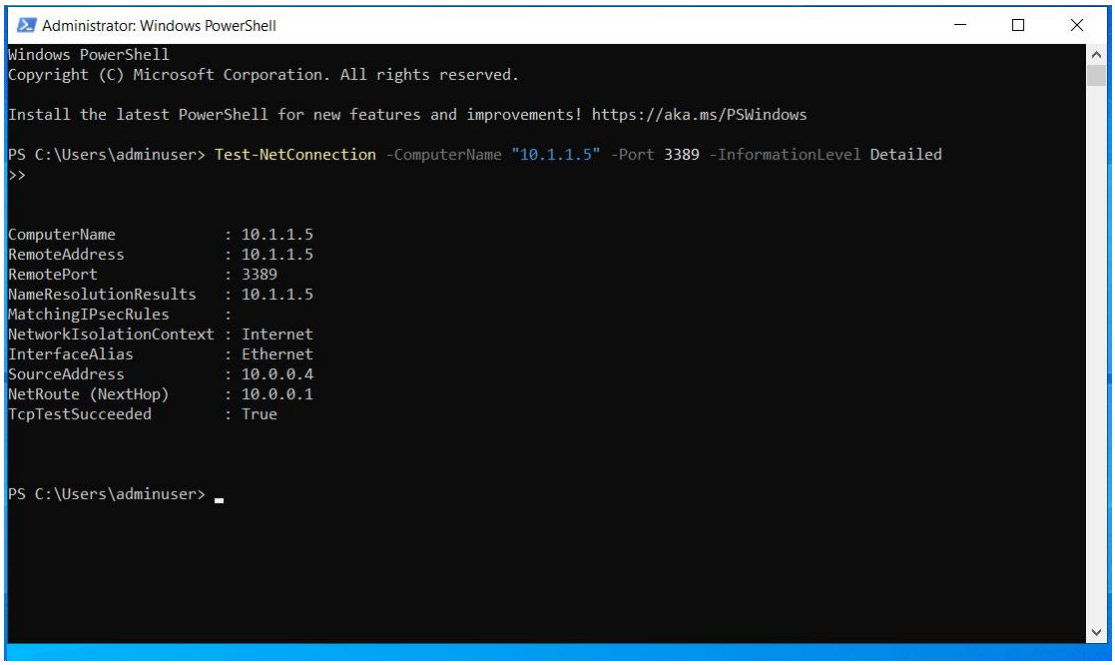
Connectivity was tested using PowerShell commands. All tests confirmed successful communication between VMs.

Login VM0

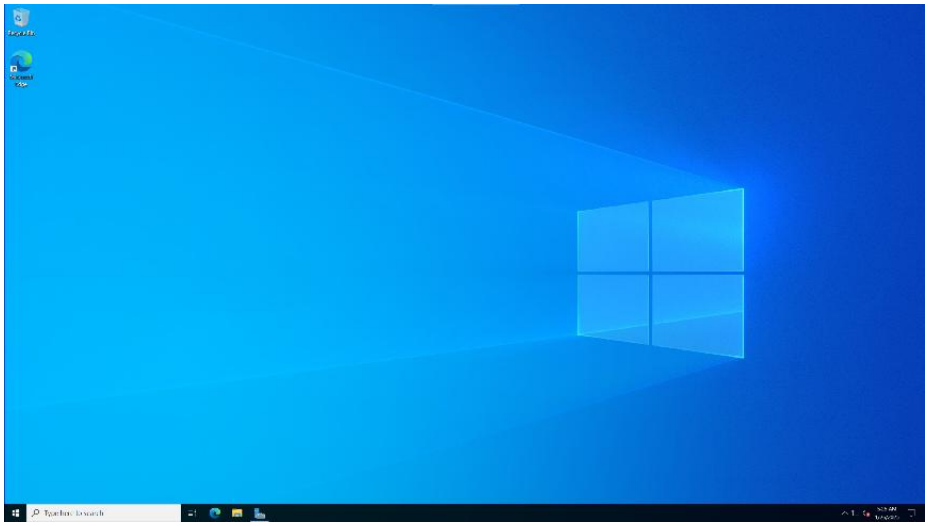


VM0 Connection test

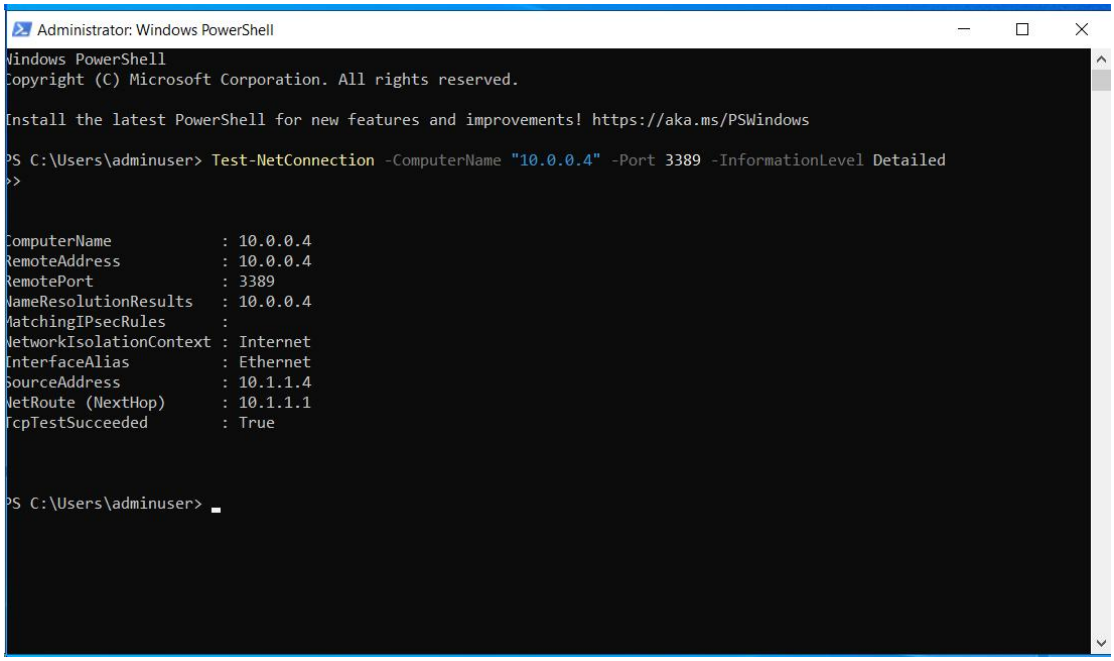

Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS C:\Users\adminuser> Test-NetConnection -ComputerName "10.1.1.4" -Port 3389 -InformationLevel Detailed
>>
ComputerName : 10.1.1.4
RemoteAddress : 10.1.1.4
RemotePort : 3389
NameResolutionResults : 10.1.1.4
MatchingIPsecRules :
NetworkIsolationContext : Internet
InterfaceAlias : Ethernet
SourceAddress : 10.0.0.4
NetRoute (NextHop) : 10.0.0.1
TcpTestSucceeded : True
PS C:\Users\adminuser>

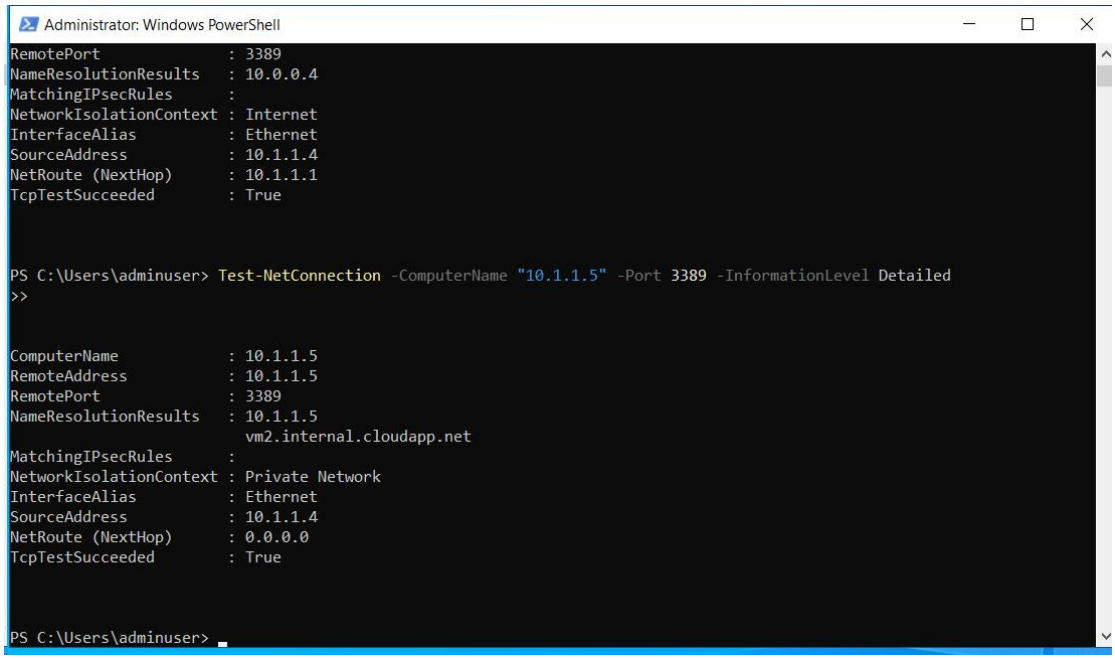

Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS C:\Users\adminuser> Test-NetConnection -ComputerName "10.1.1.5" -Port 3389 -InformationLevel Detailed
>>
ComputerName : 10.1.1.5
RemoteAddress : 10.1.1.5
RemotePort : 3389
NameResolutionResults : 10.1.1.5
MatchingIPsecRules :
NetworkIsolationContext : Internet
InterfaceAlias : Ethernet
SourceAddress : 10.0.0.4
NetRoute (NextHop) : 10.0.0.1
TcpTestSucceeded : True
PS C:\Users\adminuser>

Login VM1

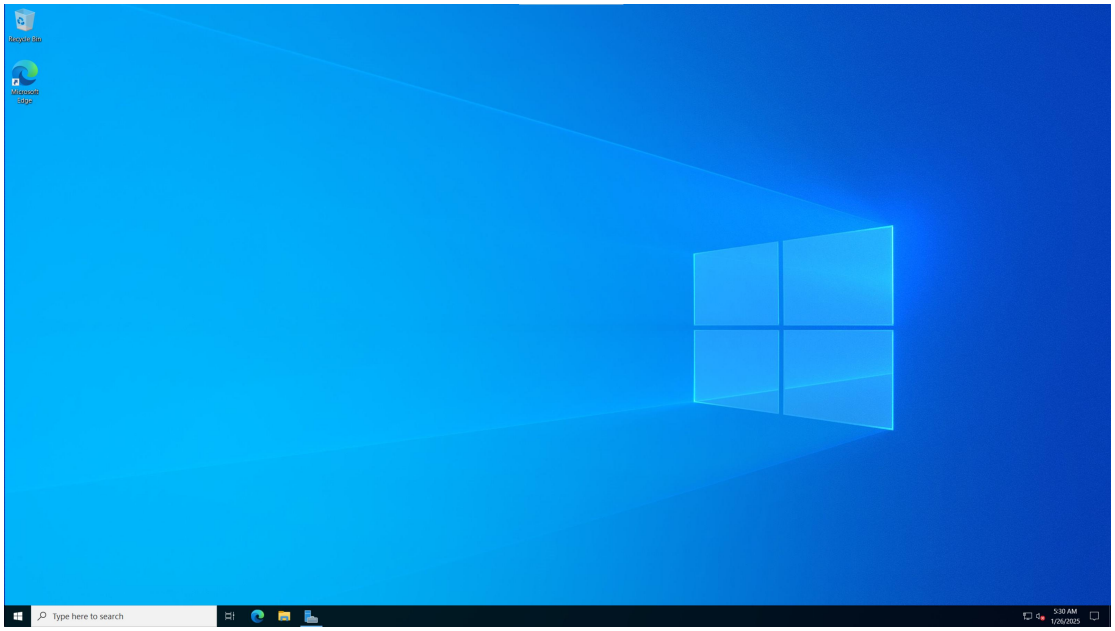


VM1 connection test

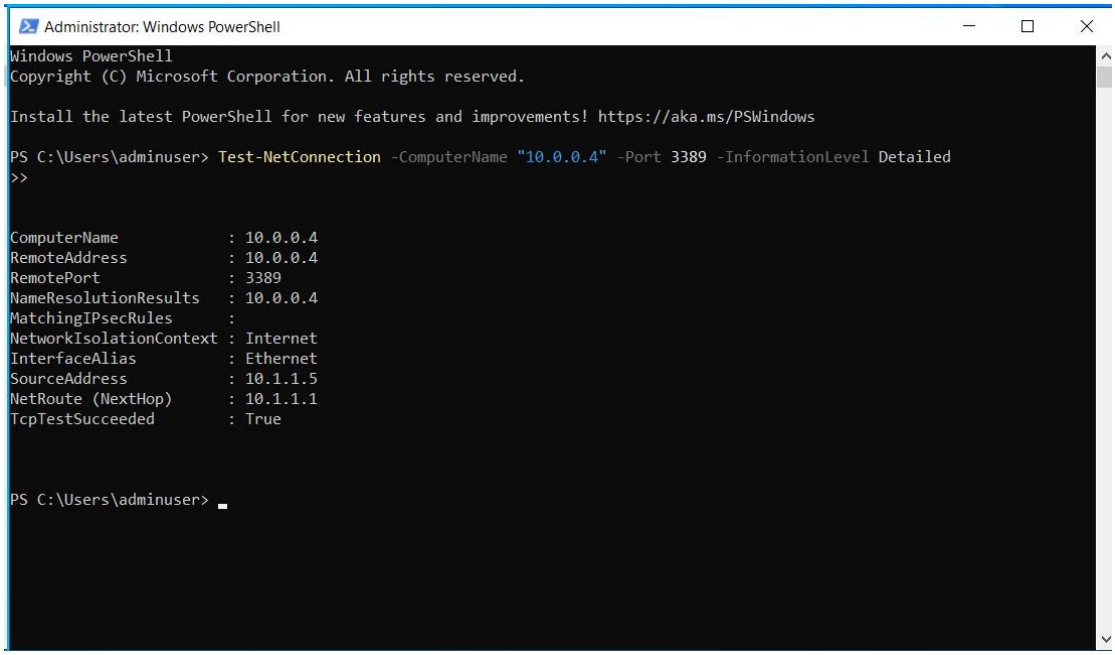


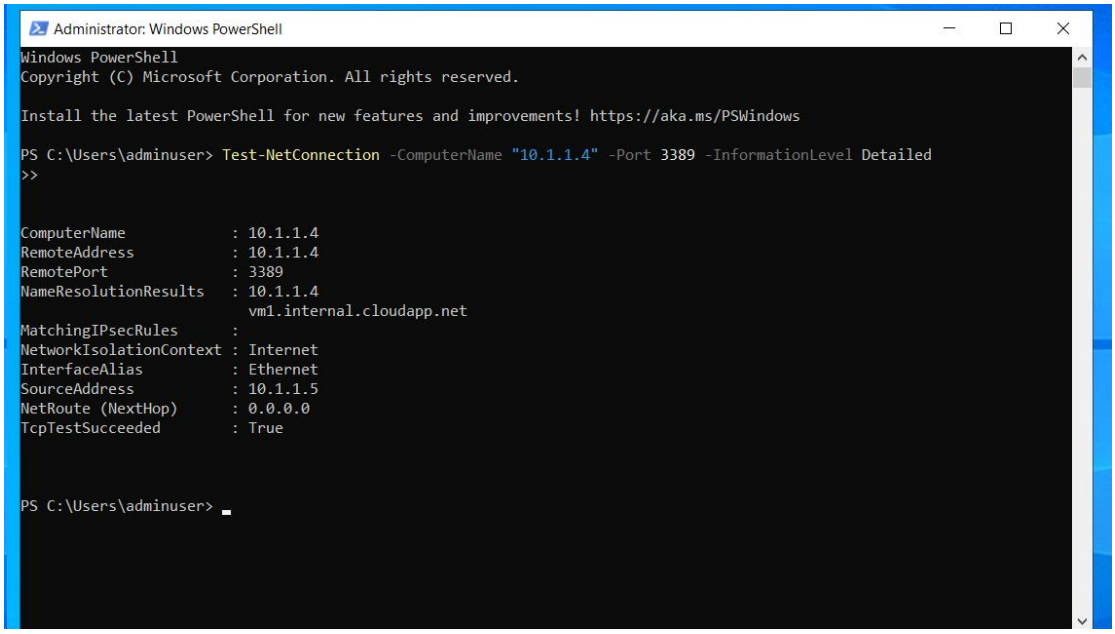


Login VM2



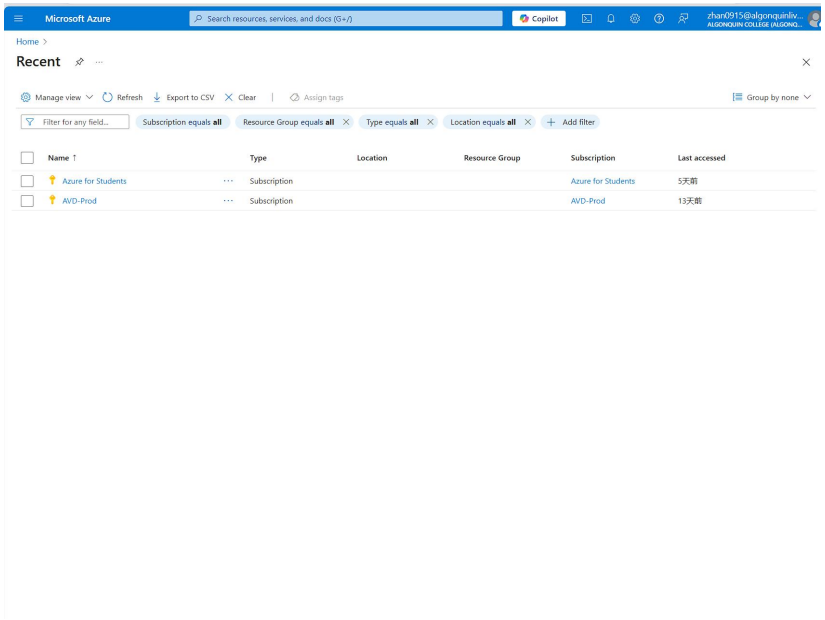
VM2 Connection test





Step 6: Resource Cleanup

The resource group CST8912-demo was deleted to remove all resources.



4. Results and Observations

VNet peering and private communication between VMs were successfully implemented. The configuration worked as expected.

5. Conclusion

This lab demonstrated how to create VNets, configure VNet peering, and enable private communication between virtual machines in Azure.

6. References

Azure Documentation on Virtual Network Peering: https://learn.microsoft.com/en-us/azure/virtual-network/virtual-network-peering-overview
YouTube Tutorials on Azure VNet Peering and Complete Demo: https://www.youtube.com/watch?v=Rqgi8tBlRnI and https://www.youtube.com/watch?v=ZWij3TZdHvU&t=376s