

Lab2

CST8912\_011

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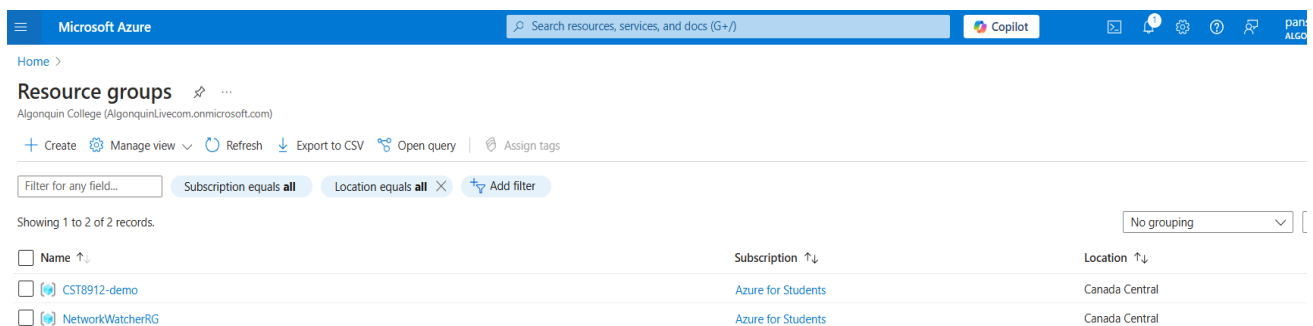
Submitted to : Prof. Tanishq Bansal

**Title :-** In this lab, I Learned how to explored Virtual Network Peering and Virtual Machine Connectivity Across Azure Regions.

**Introduction :-** I deployed virtual machines (VMs) in various locations, set up VNet peering between them, and constructed and configured many virtual networks (VNets) in Azure. The objective was to use private IP addresses over port 3389 (RDP) to verify connection between these virtual machines. This lab gave me hands-on experience setting up VNet peering across several Azure regions and showcasing how to use private IP addresses to provide safe communication between virtual machines. It made it easier for me to comprehend how to set up VNets, create peering connections, and check connectivity to make sure network communication runs well.

Steps covered in the lab :-

## 1. Create a Resource Group - CST8912-demo in Canada Central Region



Microsoft Azure		
Search resources, services, and docs (G+/I)		
Home >		
Resource groups		
Algonquin College (AlgonquinLivecom.onmicrosoft.com)		
+ Create Manage view Refresh Export to CSV Open query Assign tags		
Filter for any field... Subscription equals all Location equals all Add filter		
Showing 1 to 2 of 2 records.		
No grouping		
<input type="checkbox"/> Name ↑↓	Subscription ↑↓	Location ↑↓
<input type="checkbox"/> CST8912-demo	Azure for Students	Canada Central
<input type="checkbox"/> NetworkWatcherRG	Azure for Students	Canada Central

2. In the Azure portal, search for and select Virtual networks. Create one Virtual Network (cst8912\_vnet0) for Canada central region and two Virtual networks (cst8912\_vnet1 and cst8912\_vnet2) in EAST US region.

The screenshot shows the Microsoft Azure portal interface. At the top, there's a search bar and a Copilot button. Below the header, the page title is "Virtual networks" with a star icon and a dropdown menu. The breadcrumb trail shows "Algonquin College (AlgonquinLivecom.onmicrosoft.com)". There are action buttons: "+ Create", "Manage view", "Refresh", "Export to CSV", "Open query", and "Assign tags". A filter bar shows "Filter for any field..." and several active filters: "Subscription equals all", "Resource group equals all", and "Location equals all". Below the filter bar, it says "Showing 1 to 3 of 3 records." There are two dropdowns: "No grouping" and "List view". A table lists the virtual networks:

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

At the bottom, there's a pagination bar showing "Page 1 of 1" and a "Give feedback" link.

### 3. Reviewing Virtual Network Configuration

#### I)VM0

The screenshot shows the configuration details for the virtual network "cst8912\_vnet0". The left sidebar contains a navigation menu with options like "Overview", "Activity log", "Access control (IAM)", "Tags", "Diagnose and solve problems", "Settings", "Address space", "Connected devices", "Subnets", "Bastion", "DDoS protection", "Firewall", "Microsoft Defender for Cloud", "Network manager", "DNS servers", "Peerings", "Service endpoints", "Private endpoints", and "Properties". The main content area has a search bar and action buttons: "Move", "Delete", "Refresh", and "Give feedback". Below the search bar, there's a section for "essentials" with the following details:

- Resource group (move): CST8912-demo
- Location (move): Canada Central
- Subscription (move): Azure for Students
- Subscription ID: 63593e07-b1bc-4b20-8c26-b7fafac46e9f
- Address space: 10.0.0.0/16
- DNS servers: Azure provided DNS service
- Flow timeout: Configure
- BGP community string: Configure
- Virtual network ID: f07a2a1e-3aba-432d-b704-deb1ffd50281

Below the essentials section, there's a "Tags" section with a link to "Add tags". The "Capabilities" section is expanded, showing five capabilities:

- DDoS protection: Configure additional protection from distributed denial of service attacks. Status: Not configured.
- Azure Firewall: Protect your network with a stateful L3-L7 firewall. Status: Not configured.
- Peerings: Seamlessly connect two or more virtual networks. Status: 2 networks.
- Microsoft Defender for Cloud: Strengthen the security posture of your environment.
- Private endpoints: Privately access Azure services without sending traffic across internet. Status: Not configured.

#### II)VM1

cst8912\_vnet1

Virtual network

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Address space

Connected devices

Subnets

Bastion

DDoS protection

Firewall

Microsoft Defender for Cloud

Network manager

DNS servers

Peerings

Service endpoints

Private endpoints

Properties

Move

Delete

Refresh

Give feedback

Essentials

Resource group (move) : CST8912-demo

Location (move) : East US

Subscription (move) : Azure for Students

Subscription ID : 63593e07-b1bc-4b20-8c26-b7fafac46e9f

Address space : 10.1.0.0/16

DNS servers : Azure provided DNS service

Flow timeout : Configure

BGP community string : Configure

Virtual network ID : dee8b01d-c7f6-458c-8e6e-b78b76

Tags (edit) : Add tags

Topology

Properties

Capabilities (5)

Recommendations

Tutorials

DDoS protection

Configure additional protection from distributed denial of service attacks.

Not configured

Azure Firewall

Protect your network with a stateful L3-L7 firewall.

Not configured

Peerings

Seamlessly connect two or more virtual networks.

2 networks

Microsoft Defender for Cloud

Strengthen the security posture of your environment.

Private endpoints

Privately access Azure services without sending traffic across internet.

Not configured

### III) VM2

cst8912\_vnet2

Virtual network

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Address space

Connected devices

Subnets

Bastion

DDoS protection

Firewall

Microsoft Defender for Cloud

Network manager

DNS servers

Peerings

Service endpoints

Private endpoints

Properties

Move

Delete

Refresh

Give feedback

Essentials

Resource group (move) : CST8912-demo

Location (move) : East US

Subscription (move) : Azure for Students

Subscription ID : 63593e07-b1bc-4b20-8c26-b7fafac46e9f

Address space : 10.2.0.0/16

DNS servers : Azure provided DNS service

Flow timeout : Configure

BGP community string : Configure

Virtual network ID : 58553b89-1b15-466a-91cf-593979f8696c

Tags (edit) : Add tags

Topology

Properties

Capabilities (5)

Recommendations

Tutorials

DDoS protection

Configure additional protection from distributed denial of service attacks.

Not configured

Azure Firewall

Protect your network with a stateful L3-L7 firewall.

Not configured

Peerings

Seamlessly connect two or more virtual networks.

2 networks

Microsoft Defender for Cloud

Strengthen the security posture of your environment.

Private endpoints

Privately access Azure services without sending traffic across internet.

Not configured

## Q:- 4 & 5

Search resources, services, and docs (G+)

Copilot

pans0012@algonquinliv...  
ALGONQUIN COLLEGE (ALGONQ...

### cst8912\_vnet0 | Peerings

Virtual network

Search

+ Add Refresh Export to CSV Delete Sync

Virtual network peering enables you to seamlessly connect two or more virtual networks in Azure. The virtual networks appear as one for connectivity purposes. [Learn more](#)

Filter by name...

Showing all 2 items

<input type="checkbox"/>	Name	Peering sync status	Peering state	Remo...	Virtu...
<input type="checkbox"/>	cst8912_vnet0_to_cst8912_vnet1	Fully Synchronized	Connected	cst8912_...	Disabled
<input type="checkbox"/>	cst8912_vnet0_to_cst8912_vnet2	Fully Synchronized	Connected	cst8912_...	Disabled

Give feedback

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

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ALGONQUIN COLLEGE (ALGONQ...

### Virtual networks

Algonquin College (AlgonquinLivecom.onmicrosof...

+ Create Manage view

Filter for any field...

Name

- cst8912\_vnet0
- cst8912\_vnet1
- cst8912\_vnet2

### cst8912\_vnet1 | Peerings

Virtual network

Search

+ Add Refresh Export to CSV Delete Sync

Virtual network peering enables you to seamlessly connect two or more virtual networks in Azure. The virtual networks appear as one for connectivity purposes. [Learn more](#)

Filter by name...

Showing all 2 items

<input type="checkbox"/>	Name	Peering sync status	Peering state	Remo...	Virtu...
<input type="checkbox"/>	cst8912_vnet0_to_cst8912_vnet1	Fully Synchronized	Connected	cst8912_...	Disabled
<input type="checkbox"/>	cst8912_vnet1_to_cst8912_vnet2	Fully Synchronized	Connected	cst8912_...	Disabled

Give feedback

**cst8912\_vnet2 | Peerings** ☆ ...

Virtual network

Search

+ Add Refresh Export to CSV Delete Sync

Virtual network peering enables you to seamlessly connect two or more virtual networks in Azure. The virtual networks appear as one for connectivity purposes. [Learn more](#)

Filter by name...

Showing all 2 items

Name	Peering sync status	Peering state	Remo...	Virtu...
cst8912_vnet0_to_cst8912_vnet2	Fully Synchronized	Connected	cst8912...	Disabled
cst8912_vnet1_to_cst8912_vnet2	Fully Synchronized	Connected	cst8912...	Disabled

Give feedback

7. In the Azure portal, search for and select Virtual machines. In the list of virtual machines, create VM0 in Canada Central on Vnet 0 and VM1 and VM2 in East US (use Windows Server 2022 Datacenter) image on Vnet1 and Vnet 2 respectively

Microsoft Azure Search resources, services, and docs (G+/I) Copilot pans0012@algonquinliv... ALGONQUIN COLLEGE

Home >

**Virtual machines** ☆ ...

Algonquin College

+ Create Switch to classic Reservations Manage view Refresh Export to CSV Open query Assign tags Start Restart Stop Delete Services Maintenance

Filter for any field... Subscription equals all Type equals all Resource group equals all Location equals all Add filter

Showing 1 to 3 of 3 records. No grouping List view

Name	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks	Update status
VM0	Azure for Students	CST8912-demo	Canada Central	Running	Windows	Standard_B2s	20.151.77.163	1	Enable periodic assess...
VM1	Azure for Students	CST8912-demo	East US	Running	Windows	Standard_B1s	20.119.82.146	1	Enable periodic assess...
VM2	Azure for Students	CST8912-demo	East US	Running	Windows	Standard_B1s	-	1	Enable periodic assess...

8. Select VM0 and connect using RDP signing in with username and password

The screenshot shows the Azure VM Connect interface for a virtual machine named 'VM0'. The left sidebar contains navigation options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Bastion, and Windows Admin Center. The 'Connect' section is active, showing a 'Connecting using' dropdown set to 'Public IP address | 20.151.77.163'. Below this, fields for 'Admin username' (vm0), 'Port' (3389), and 'Just-in-time policy' are visible. A 'Most common' section highlights the 'Native RDP' method, describing it as a way to connect without additional software. The right pane, titled 'Native RDP', provides a step-by-step guide: 1. Configure prerequisites for Native RDP (validating port 3389 access and public IP address), 2. Open Remote Desktop Connection (on Windows), and 3. Download and open the RDP file. It includes a 'Download RDP file' button and a 'Forgot password?' link.

9. Within RDP ,in the Windows PowerShell console window, run the following to test connectivity to vm1 (use private ip) over TCP port 3389: `Test-NetConnection -ComputerName "ip" -Port 3389 -InformationLevel 'Detailed'`

**VM0 to VM1 connection:**

The screenshot shows a Windows PowerShell console window titled 'Administrator: Windows PowerShell'. The command `Test-NetConnection -ComputerName 10.1.0.6 -Port 3389 -InformationLevel 'Detailed'` has been executed. The output displays detailed network connectivity information, including the computer name (10.1.0.6), remote address (10.1.0.6), remote port (3389), and the result of the TCP test (Succeeded: True).

```
+ FullyQualifiedErrorId : NamedParameterNotFound,Test-NetConnection

PS C:\Users\vm0> Test-NetConnection -ComputerName 10.1.0.6 -Port 3389 -InformationLevel 'Detailed'

ComputerName           : 10.1.0.6
RemoteAddress          : 10.1.0.6
RemotePort             : 3389
NameResolutionResults  : 10.1.0.6
MatchingIPsecRules     :
NetworkIsolationContext : Internet
InterfaceAlias         : Ethernet
SourceAddress          : 10.0.0.6
NetRoute (NextHop)    : 10.0.0.1
TcpTestSucceeded       : True

PS C:\Users\vm0>
```

11. Repeat the same step to connect Vm0 to Vm2 and Vm1 to Vm2 and test the connection

## VM0 to VM2 Connection:

Administrator: Windows PowerShell

```
PS C:\Users\vm0> Test-NetConnection -ComputerName 10.1.0.6 -Port 3389 -InformationLevel 'Detailed'

ComputerName           : 10.1.0.6
RemoteAddress          : 10.1.0.6
RemotePort             : 3389
NameResolutionResults  : 10.1.0.6
MatchingIPsecRules     :
NetworkIsolationContext : Internet
InterfaceAlias         : Ethernet
SourceAddress          : 10.0.0.6
NetRoute (NextHop)     : 10.0.0.1
TcpTestSucceeded       : True

PS C:\Users\vm0> Test-NetConnection -ComputerName 10.2.0.4 -Port 3389 -InformationLevel 'Detailed'

ComputerName           : 10.2.0.4
RemoteAddress          : 10.2.0.4
RemotePort             : 3389
NameResolutionResults  : 10.2.0.4
MatchingIPsecRules     :
NetworkIsolationContext : Internet
InterfaceAlias         : Ethernet
SourceAddress          : 10.0.0.6
NetRoute (NextHop)     : 10.0.0.1
TcpTestSucceeded       : True
```

## VM1 to VM2 Connection:

```
PS C:\Users\vm0> Test-NetConnection -ComputerName 10.2.0.4 -Port 3389 -InformationLevel 'Detailed'

ComputerName           : 10.2.0.4
RemoteAddress          : 10.2.0.4
RemotePort             : 3389
NameResolutionResults  : 10.2.0.4
MatchingIPsecRules     :
NetworkIsolationContext : Internet
InterfaceAlias         : Ethernet
SourceAddress          : 10.0.0.6
NetRoute (NextHop)     : 10.0.0.1
TcpTestSucceeded       : True
```

12. After demo delete all the resources created during this lab and create a lab report documenting all the steps with screenshots



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ALGONQUIN COLLEGE

Home >

All resources

Algonquin College

Create

Manage view

Refresh

Export to CSV

Open query

Assign tags

Delete

Filter for any field...

Subscription equals all

Resource group equals all

Type equals all

Location equals all

Add filter

0 Unsecure resources

1 Recommendations

30 Changed resources

No grouping

List view

<input type="checkbox"/>	Name ↑↓	Type ↑↓	Resource group ↑↓	Location ↑↓	Subscription ↑↓	
<input type="checkbox"/>	↔ cs8912_vnet0	Virtual network	CST8912-demo	Canada Central	Azure for Students	...
<input type="checkbox"/>	↔ cs8912_vnet1	Virtual network	CST8912-demo	East US	Azure for Students	...
<input type="checkbox"/>	↔ cs8912_vnet2	Virtual network	CST8912-demo	East US	Azure for Students	...
<input type="checkbox"/>	🌀 NetworkWatcher_canadacentral	Network Watcher	NetworkWatcherRG	Canada Central	Azure for Students	...
<input type="checkbox"/>	🌀 NetworkWatcher_eastus	Network Watcher	NetworkWatcherRG	East US	Azure for Students	...
<input type="checkbox"/>	🌐 VM0-ip	Public IP address	CST8912-demo	Canada Central	Azure for Students	...
<input type="checkbox"/>	🛡️ VM0-nsg	Network security group	CST8912-demo	Canada Central	Azure for Students	...
<input type="checkbox"/>	🌐 vm0345_z1	Network Interface	CST8912-demo	Canada Central	Azure for Students	...
<input type="checkbox"/>	🌐 vm0372_z1	Network Interface	CST8912-demo	Canada Central	Azure for Students	...
<input type="checkbox"/>	🌐 vm0674_z1	Network Interface	CST8912-demo	Canada Central	Azure for Students	...
<input type="checkbox"/>	🌐 VM0ip653	Public IP address	CST8912-demo	Canada Central	Azure for Students	...
<input type="checkbox"/>	🌐 VM0ip976	Public IP address	CST8912-demo	Canada Central	Azure for Students	...
<input type="checkbox"/>	🛡️ VM0nsg697	Network security group	CST8912-demo	Canada Central	Azure for Students	...
<input type="checkbox"/>	🛡️ VM0nsg886	Network security group	CST8912-demo	Canada Central	Azure for Students	...

< Previous Page 1 of 1 Next > Showing 1 to 29 of 29 records.

Give feedback

Executing delete command on 30 selected items  
Succeeded: 0, Failed: 0, Canceled: 0.