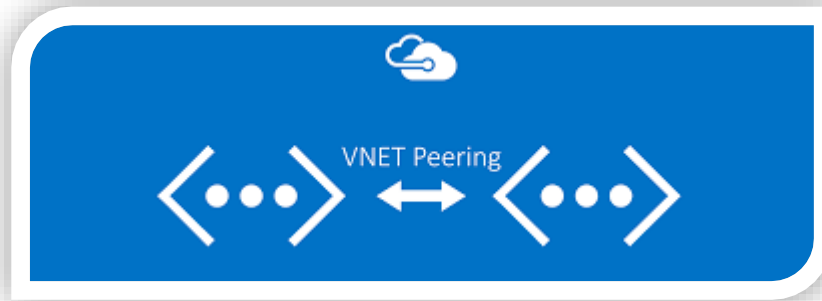# VNET PEERING IN AZURE

VNet peering (or Virtual Network peering) enables you to connect virtual networks. A VNet peering connection between virtual networks enables you to route traffic between them privately through IPv4 addresses. Virtual machines in the peered VNets can communicate with each other as if they are within the same network.

VNet Peering Types:

1. Regional VNet Peering: Connecting VNets within the same Azure region.

2. Global VNet Peering: Connecting VNets across Azure regions.

Virtual network peering. Virtual network peering connects two Azure virtual networks. Once peered, the virtual networks appear as one for connectivity purposes. Traffic between virtual machines in the peered virtual networks is routed through the Microsoft backbone infrastructure, through private IP addresses only. No public internet is involved. You can also peer virtual networks across Azure regions (global peering).
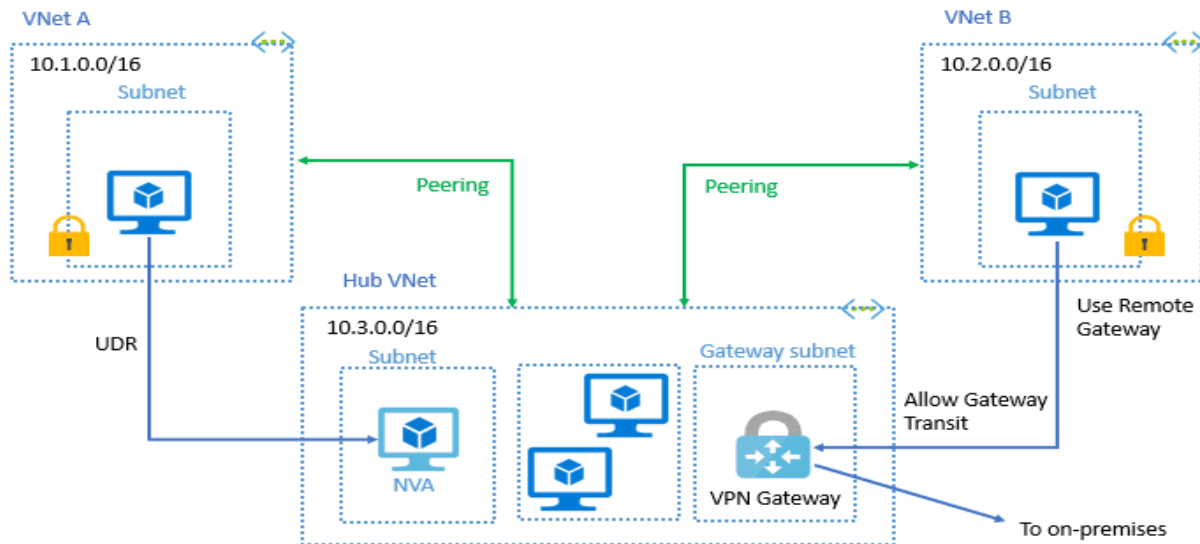
Capabilities

- **Provides connectivity over private IP.**
- **Supports cross-subscription connectivity.**
- **Supports cross-region connectivity.**
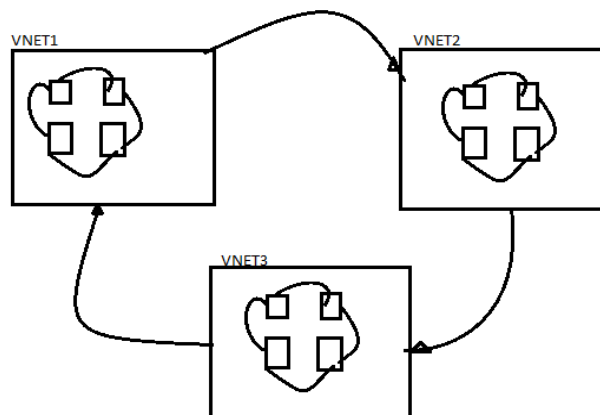
Let's say we have multiple Vnets and we've a no. of servers deployed in them. It is easier to establish connection between resources within the same Vnet.

We can also establish connection between different VNETS if we have the public IP addresses. But let's say VNET3 has only private IP assigned to it. So, in this case it's difficult to have a connection between these VNETs. Hence, to solve this we go ahead with the VNET peering setup.

By peering setup, Azure will allow connections to be established internally without going to internet. We can also perform peering between two different azure accounts and also between VNETS present in different regions or same regions.

VPN Gateway:

Each VNET will have VMs deployed in them. Every VM has a gateway that holds the public IP to connect to the internet. If a user hits the gateway Public IP, then the gateway converts/translates the request to private IP and gives the user access to the application deployed in the VM.
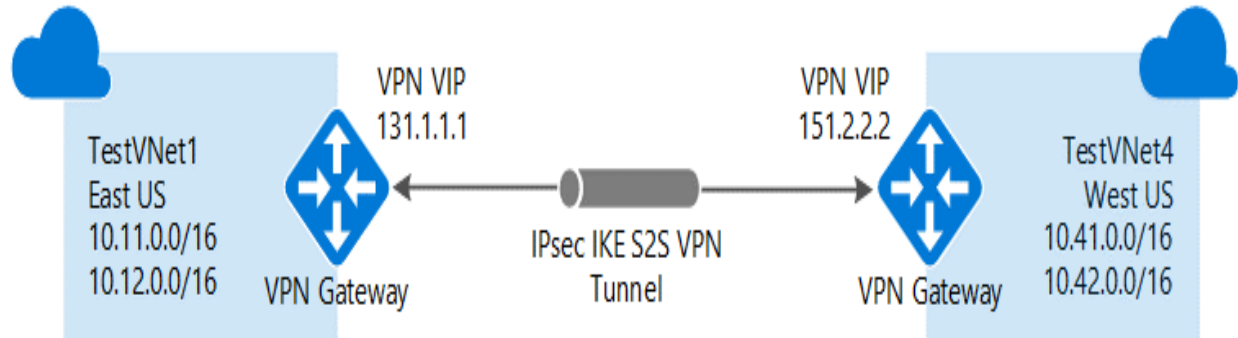
Let's consider file/data transfer between two VMs. Via gateway using the internet file transfer can be done. But this is not recommended. Because, your cloud service providers will charge you for both VMs running and also the bandwidth of data transferred. So, to avoid this we go for VNET peering setup.

By VNET peering we can have data transfer between VMs too. In this case we'll be using the private IPs for data transfer.

LAB SETUP:

Create Resource Group (Peering-RG) in Central-US region.

Create VNETs.

1. Central-Us-vnet1 (10.0.0.0/16). Add subnet-1 with CIDR (10.0.1.0/24).

2. Create second VNET – Central-Us-Vnet-2 with CIDR (11.0.0.0/16). Add subnet-2 to it with CIDR value (11.0.1.0/24).

Now Create VMs within the VNETS "Vm-1-Vnet-1" into Subnet-1 and "Vm-2-Vnet-2" into Subnet-2 respectively.

Now Connect VM-1 and VM-2 via SSH using Xshell.

Try pinging to google.com from each VM to check whether the servers have access to internet or not.

We can see that Ping is successful for both VM-1 and VM-2.

We can also ping the public IP of one VM from another VM as they have internet access. But the same can't be done with their private IP addresses. To establish the same we'll go for Peering connection setup.

Peering Connection Setup: (within same region):
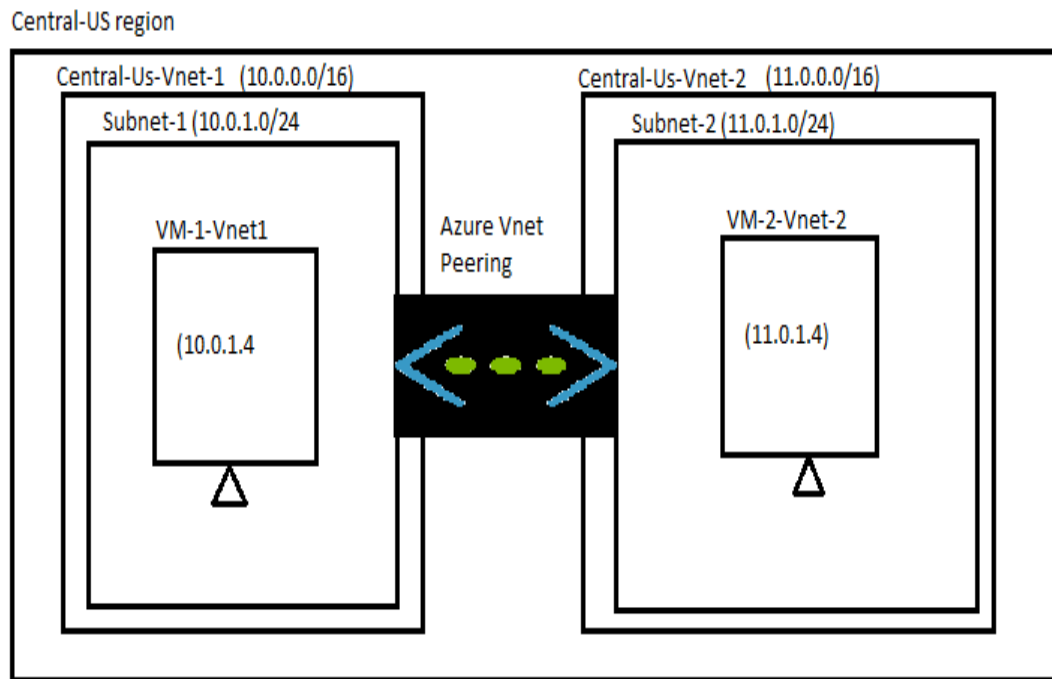
Go to peering – add connection.
In Central-us-vnet-2 perform the peering operation.

Home > Virtual networks > Central-Us-Vnet-2 >

central-us-vnet1_to_central-us-vnet2 ...
Central-Us-Vnet-2

This virtual network

Peering link name
central-us-vnet1_to_central-us-vnet2

Peering status
Fully Synchronized

Peering state
Updating

Traffic to remote virtual network ⓘ
◉ Allow (default)
◯ Block all traffic to the remote virtual network

Traffic forwarded from remote virtual network ⓘ
◉ Allow (default)
◯ Block traffic that originates from outside this virtual network

Virtual network gateway or Route Server ⓘ
◯ Use this virtual network's gateway or Route Server
◯ Use the remote virtual network's gateway or Route Server
◉ None (default)

Remote virtual network

Remote Vnet Id
/subscriptions/9dbeb810-be7d-4dd9-9a12-0f2dd16c41aa/resourceGroups/Peering-RG/providers/Microsoft.Network/vi...

Address space
10.0.0.0/16

Save   Cancel

Home > Virtual networks > Central-US-Vnet-1

Central-US-Vnet-1 | Peerings ☆ ...
Virtual network

Search (Ctrl+/)

+ Add   ↻ Refresh | ↻ Sync

- ‹⟩ Overview
- 📋 Activity log
- ᎧᎧ 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
- 🔒 Locks

Monitoring

Filter by name...   Peering status == all

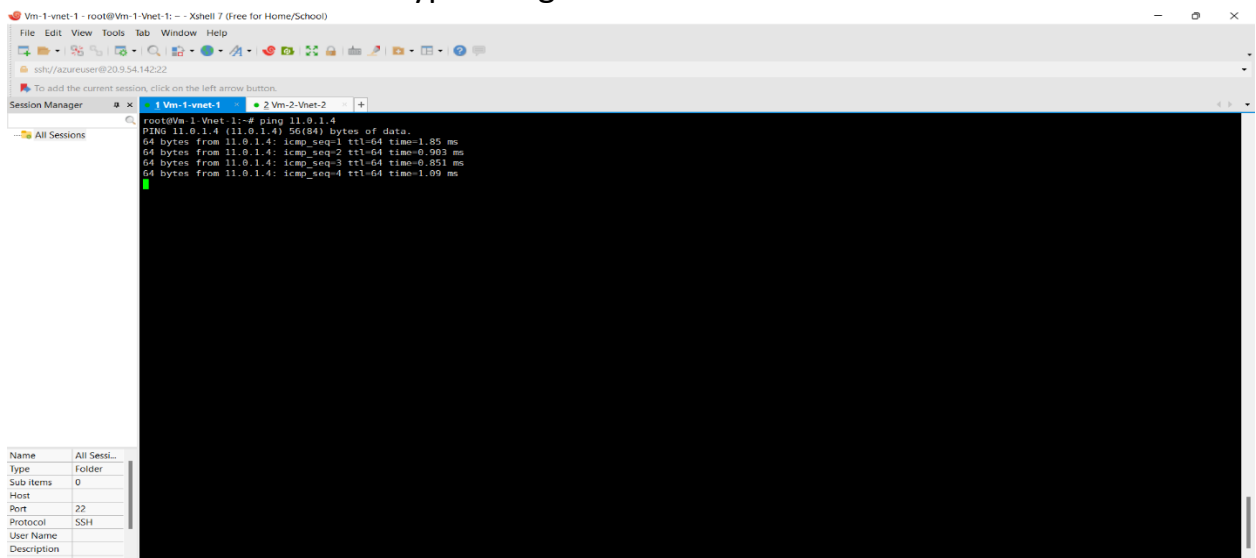| ☐ Name ↑↓	Peering status ↑↓	Peer ↑↓	Gateway transit ↑↓	
☐ central-us-vnet2_to_central-us-vnet1	Updating	Central-Us-Vnet-2	Disabled	...
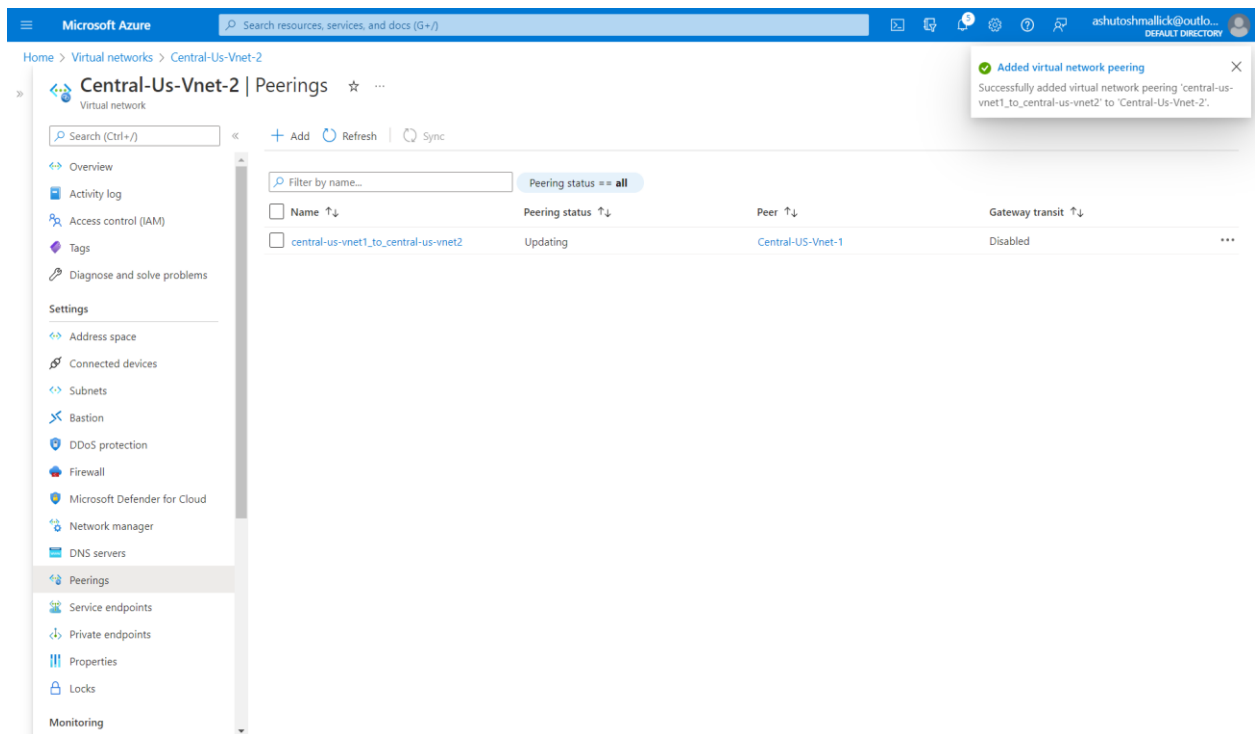
After establishing of the peering connection let's try pinging the private IP of one VM from another VM.
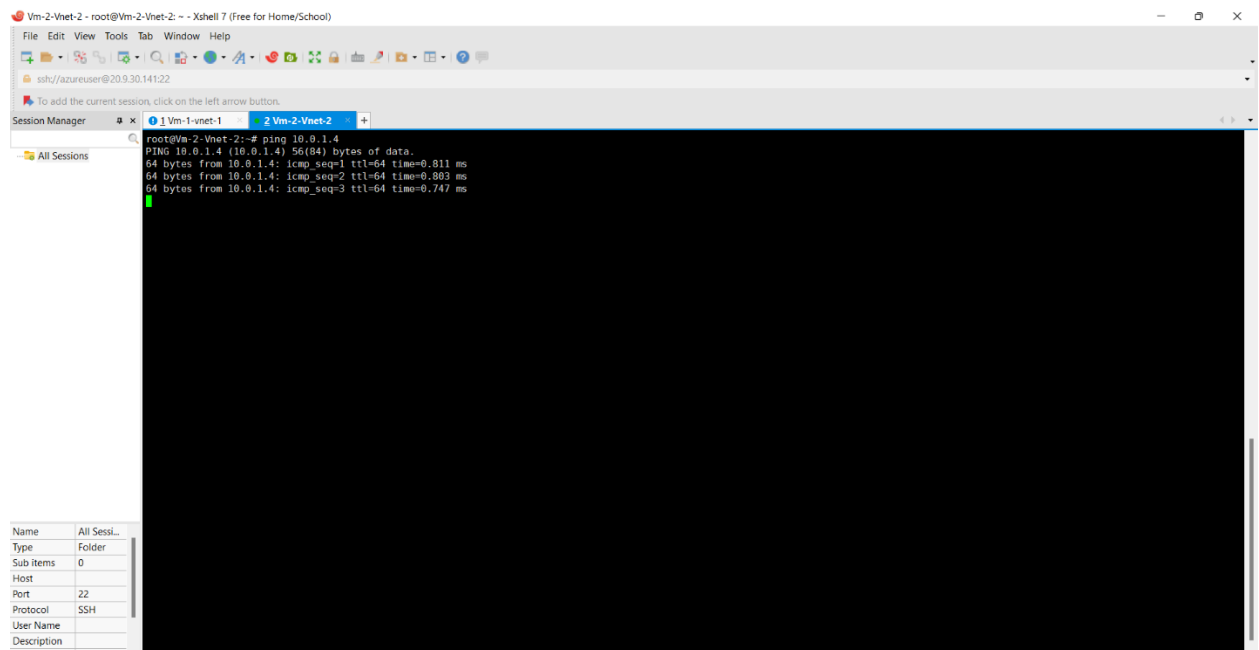
Private IP of VM-1: 10.0.1.4
Private IP of VM-2: 11.0.1.4

In VM-1 console of Xshell type "Ping 11.0.1.4"

We can see that ping request is approved. Thus, peering connection is successfully established.

Similarly, for VM-2 we can verify the same.

Peering connection Setup (Between two different region VNETs):

Now let's create another VNET "Central-IND-Vnet-3" in Central-India region. Give CIDR value as (12.0.0.0/16).

Attach subnet-3 to it with CIDR (12.0.1.0/24).

Create a VM "Vm-3-Vnet-3" within this VNET.

Try connecting the VM and ping google.com to check if internet works or not.

We can verify that Ping command works.

Now let's establish a peering connection between "Central-Us-Vnet-1" and "Central-IND-Vnet-3".

Peering Connection established for Central-Us-Vnet-1

Peering Connection established for Central-IND-Vnet-3
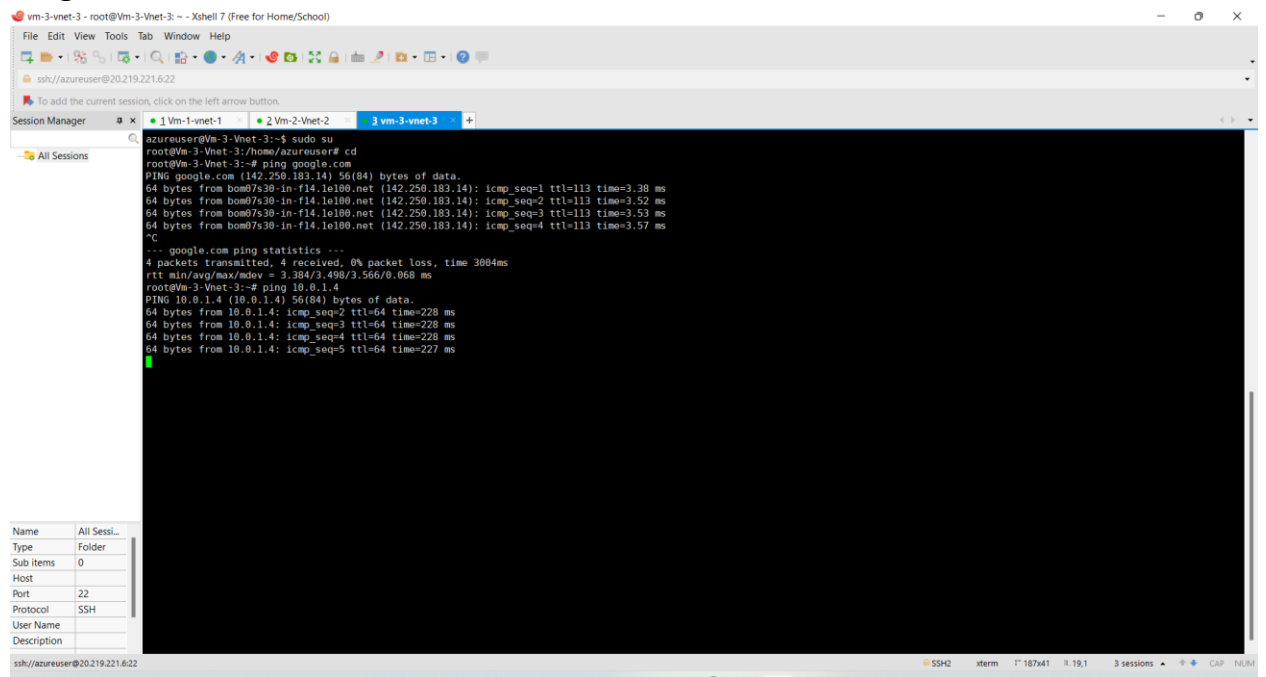

Now let's try Pinging the private IP of Vnet-1 from Vnet-3 console and vice-versa.

Ping Successful from Vnet-3 to Vnet-1.

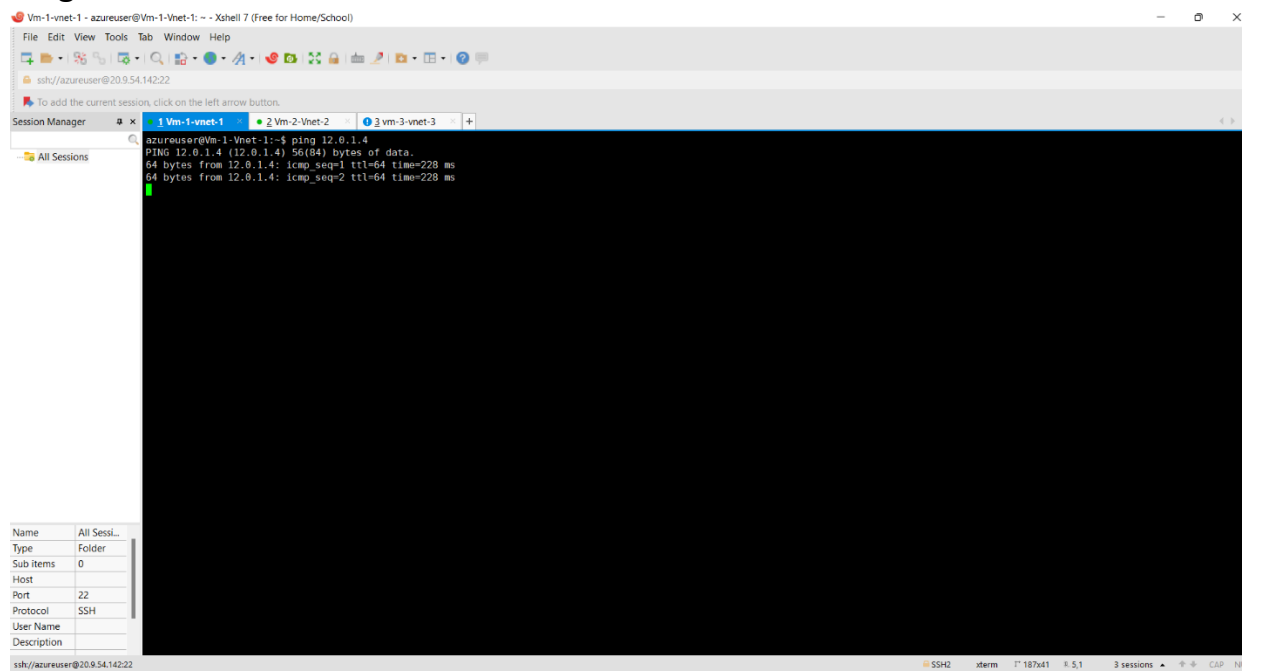Ping Successful from Vnet-1 to Vnet-3.

Ping between Vnet-2 and Vnet-3 can't be established since we've not established any peering connection between them.
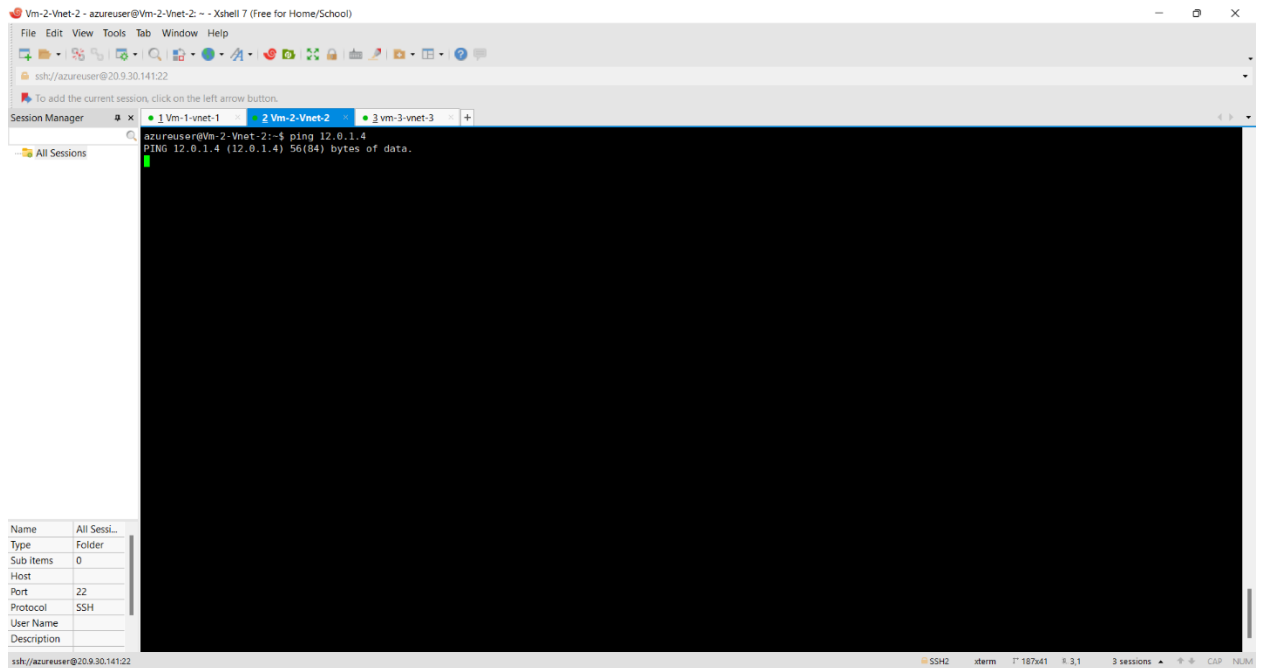
Hence, we verified that peering connection can be established between two virtual networks regardless of the region in which they exist.

Project Deployment Architecture:

Peering setup between VNET-1 and VNET-3
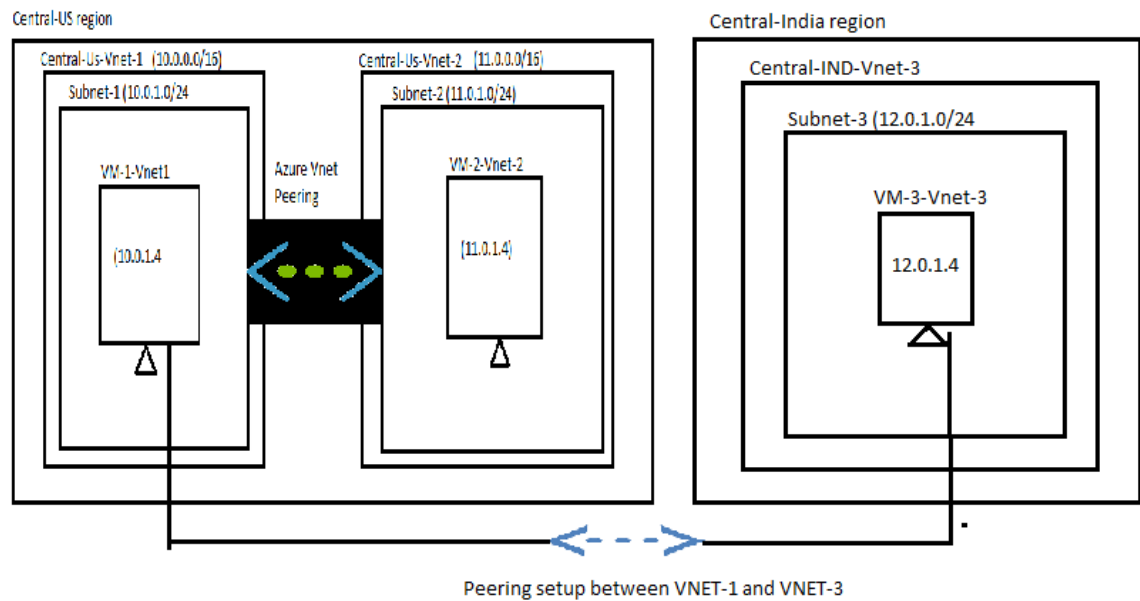
Project deployment architecture

Thank You!!