PRIYAM MITRA

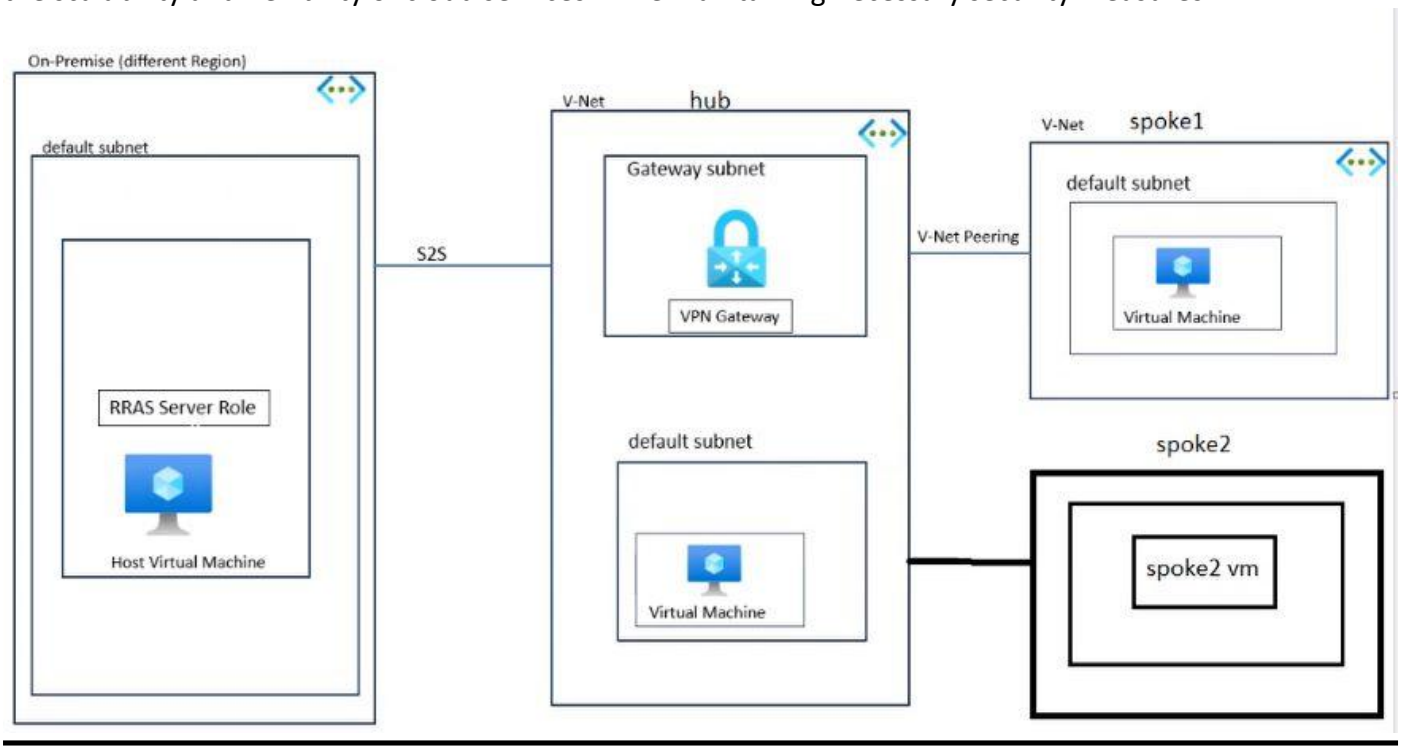
Aim: To implement a connection between on-premise Vm and Spoke Vm through a Hub network.

"In this project, I configured a hybrid network architecture connecting an on- premises network to Azure-Hub using Site-to-Site (S2S) tunneling. The architecture was designed using the Hub and Spoke topology, where the Hub VNet served as the central point for connecting multiple Spoke VNets. To achieve this, I deployed a Virtual Network Gateway (VNG) within the Hub VNet and set up Routing and Remote Access Service (RRAS) on an on-premises Virtual Machine (VM).

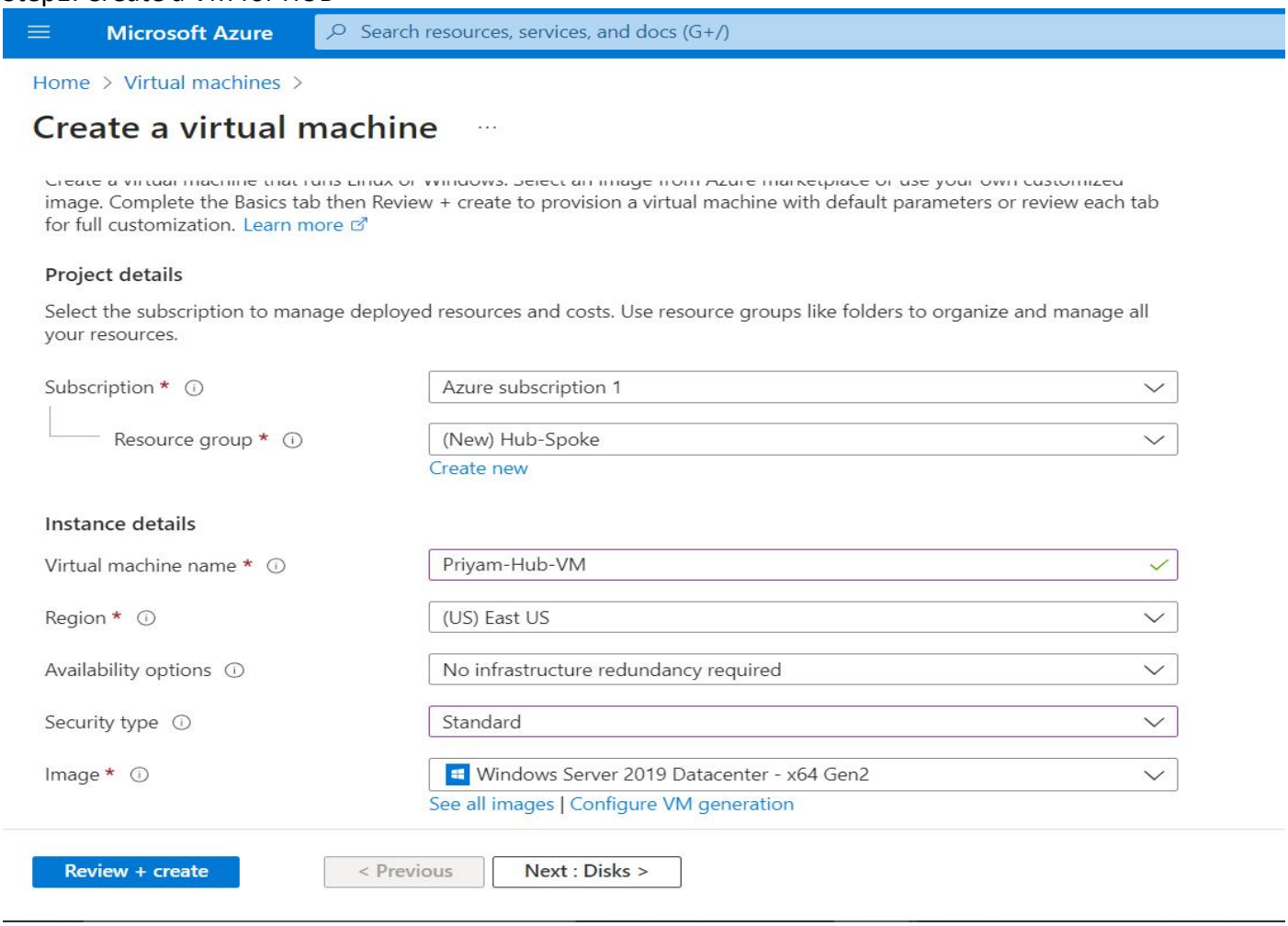
The on-premises VM was equipped with RRAS, acting as the VPN server for the on-premises network. By establishing a secure S2S connection between the RRAS VM and the Virtual Network Gateway in Azure-Hub, I enabled bidirectional communication between the on-premises network and both the Hub and Spoke VMs.

To ensure seamless connectivity between Spoke VNets, I used Transit VNet peering. This allowed the Hub VNet to serve as a transit hub, facilitating communication between the Spoke VNets without establishing direct connectivity between them and the on-premises VNet.

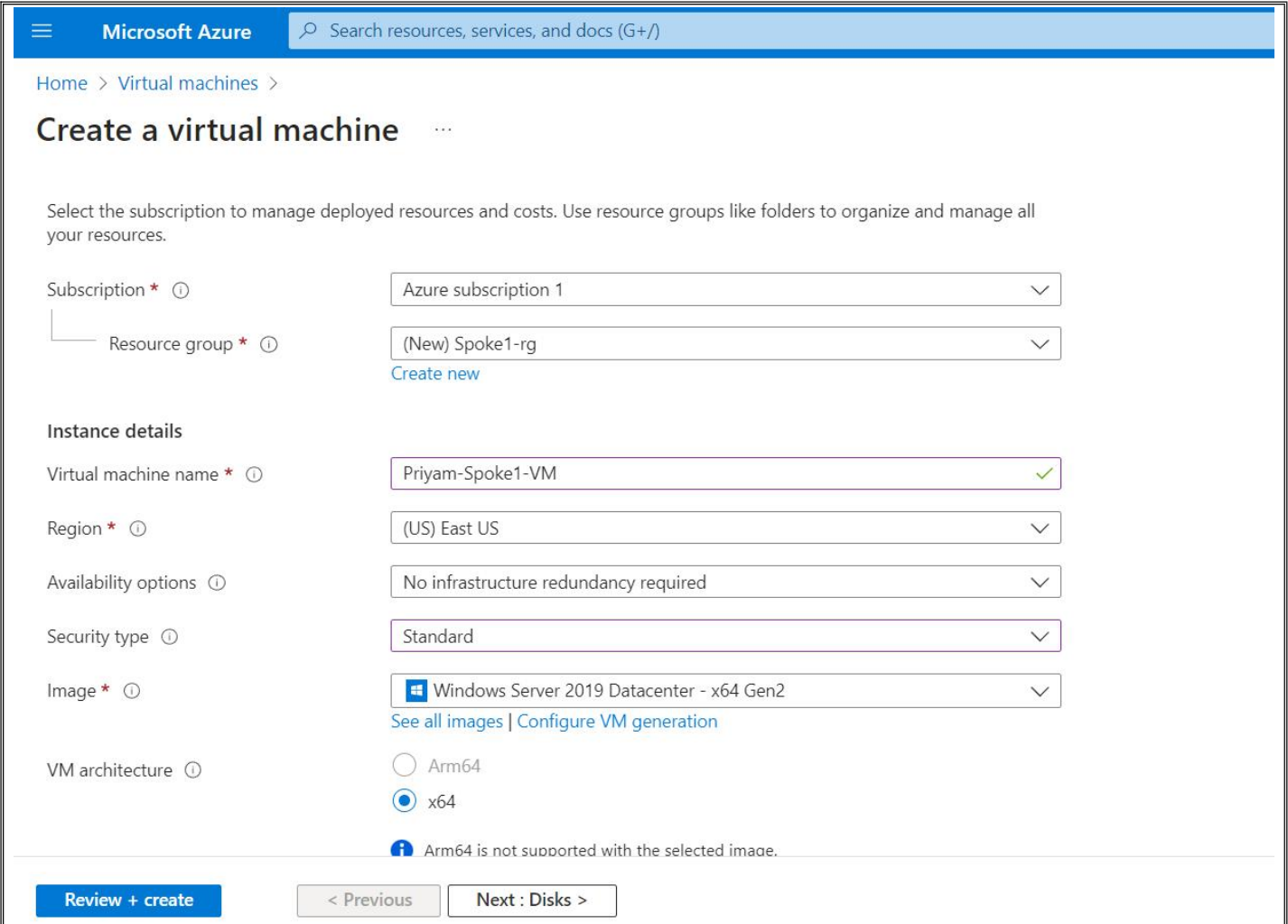
Upon successful implementation, the on-premises VM could ping the VM in the Hub and both Spoke VM's, achieving a fully functional hybrid network environment. The project's configuration allowed for secure data transfer and resource access between the on-premises network and Azure-Hub, leveraging the scalability and flexibility of cloud services while maintaining necessary security measures."



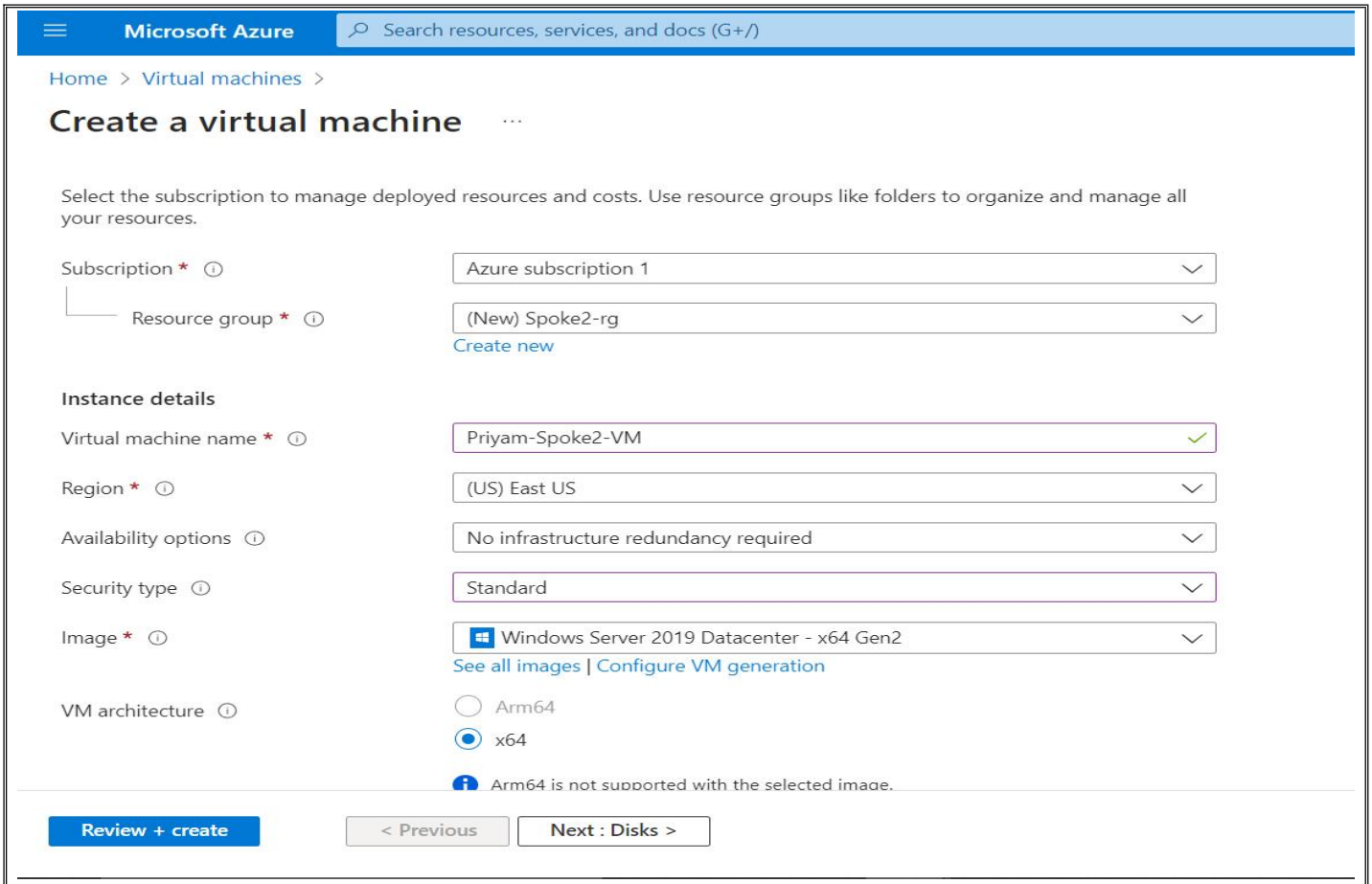
Step1: Create a VM for HUB



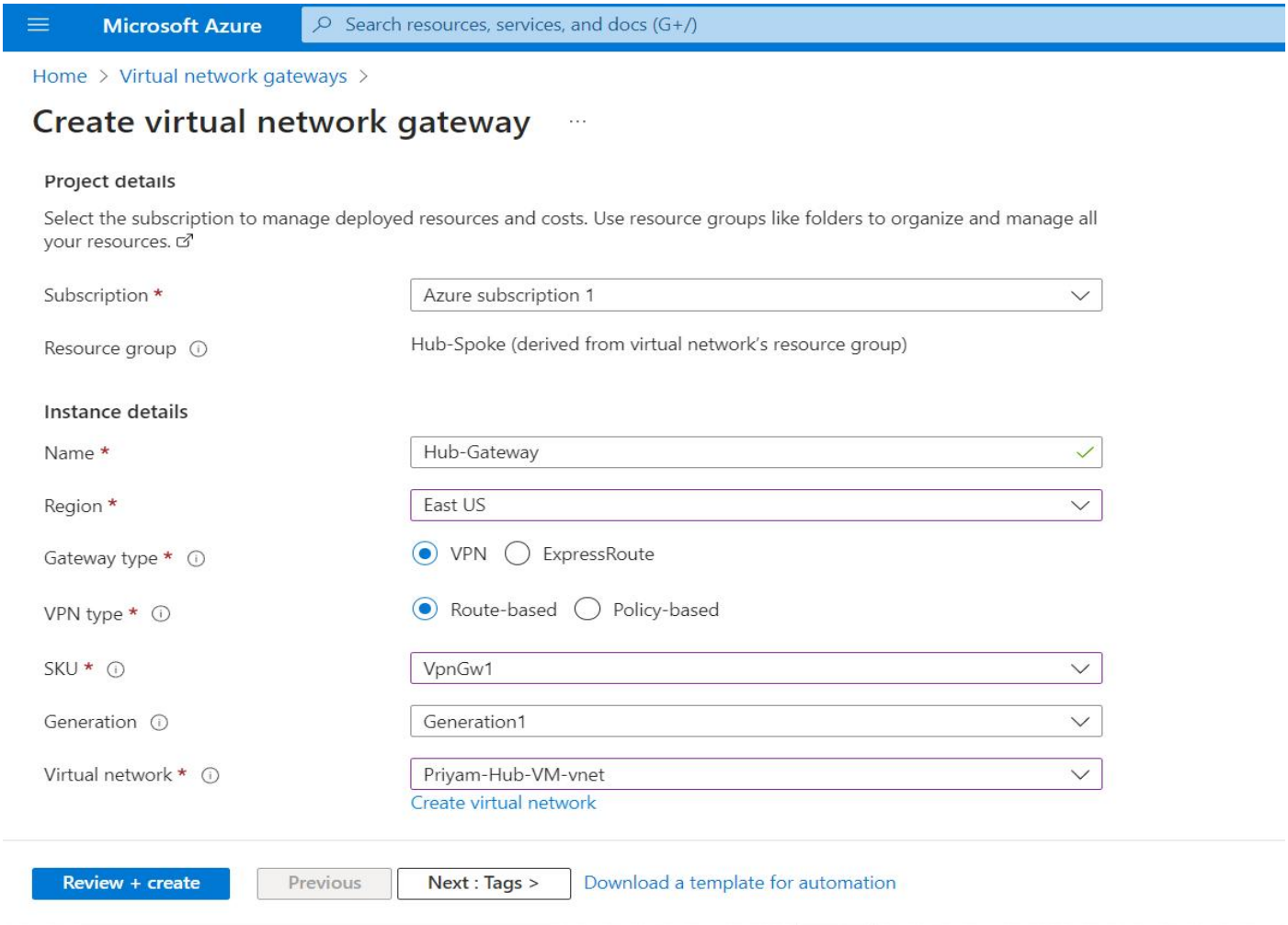
Step2: Create a VM for Spoke1 with different resource group and Vnet



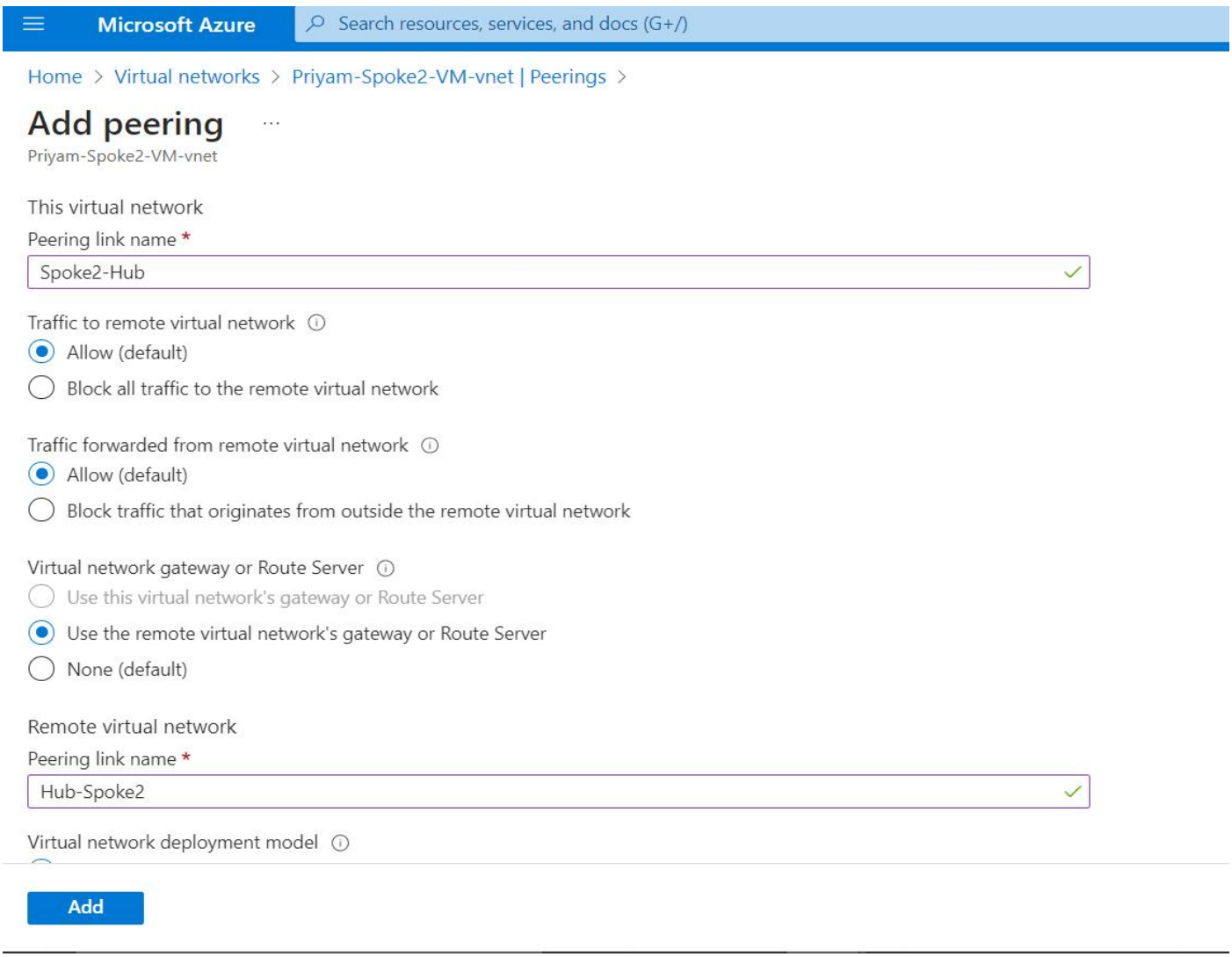
Step3: Create a VM for Spoke2 with different resource group and Vnet

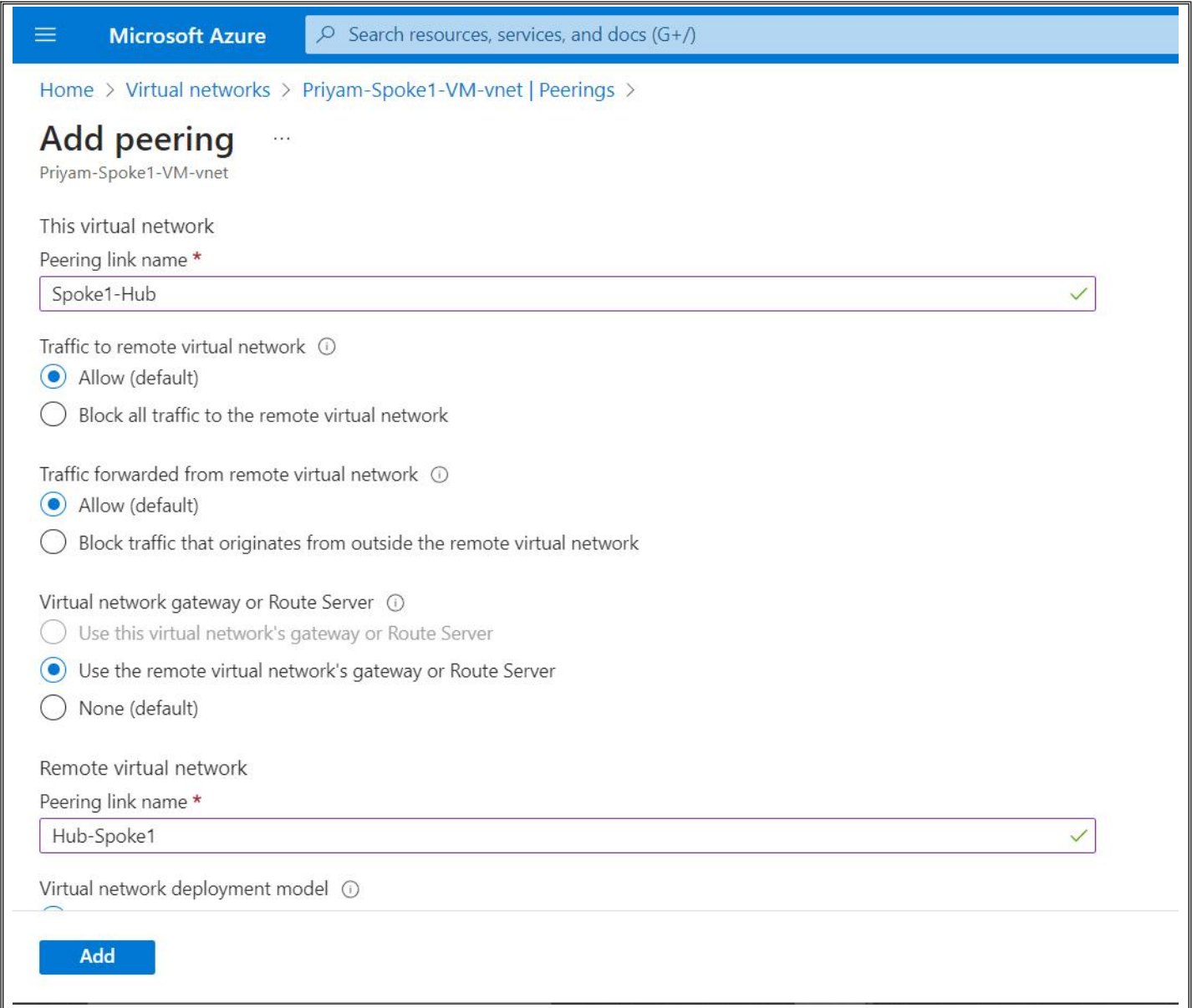


Step4: Create a VNG in the Hub Resource group .

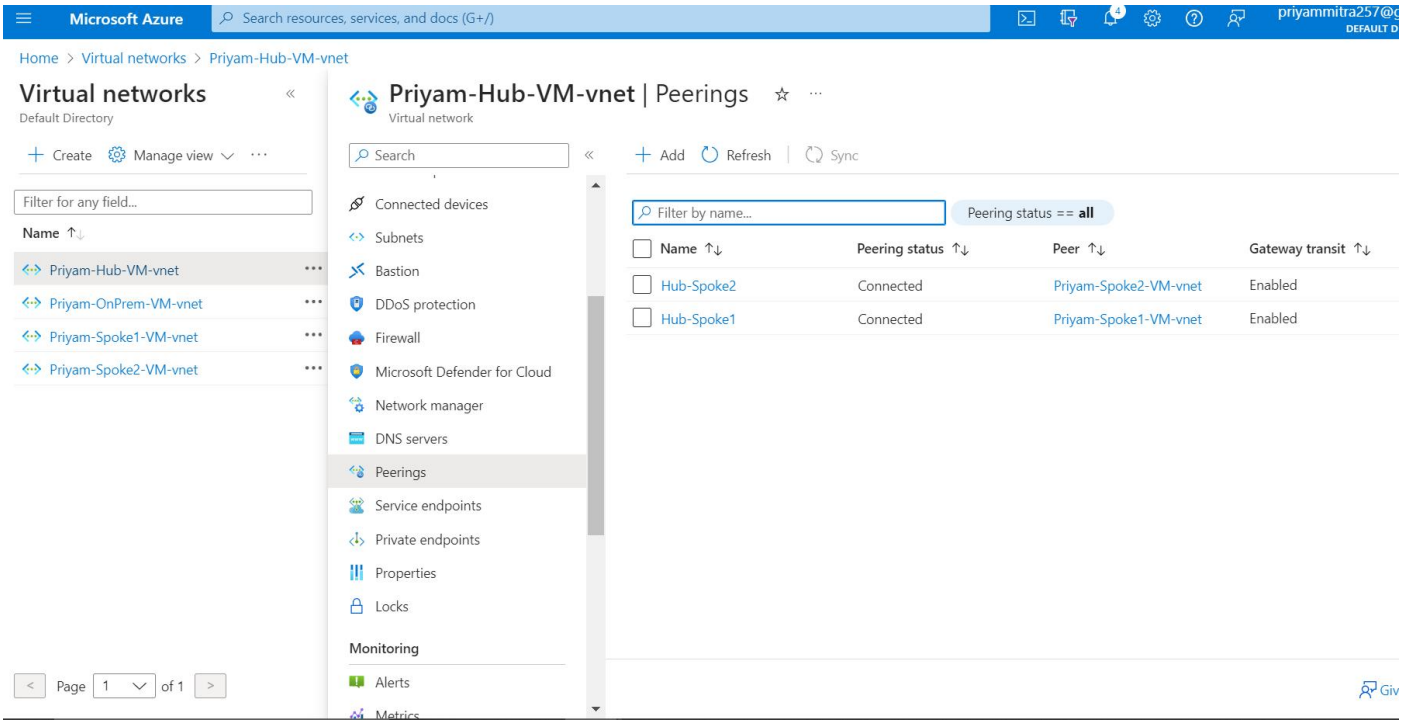


Step5: Add peering between Spoke2 & HUB and Spoke1 & HUB through VNG

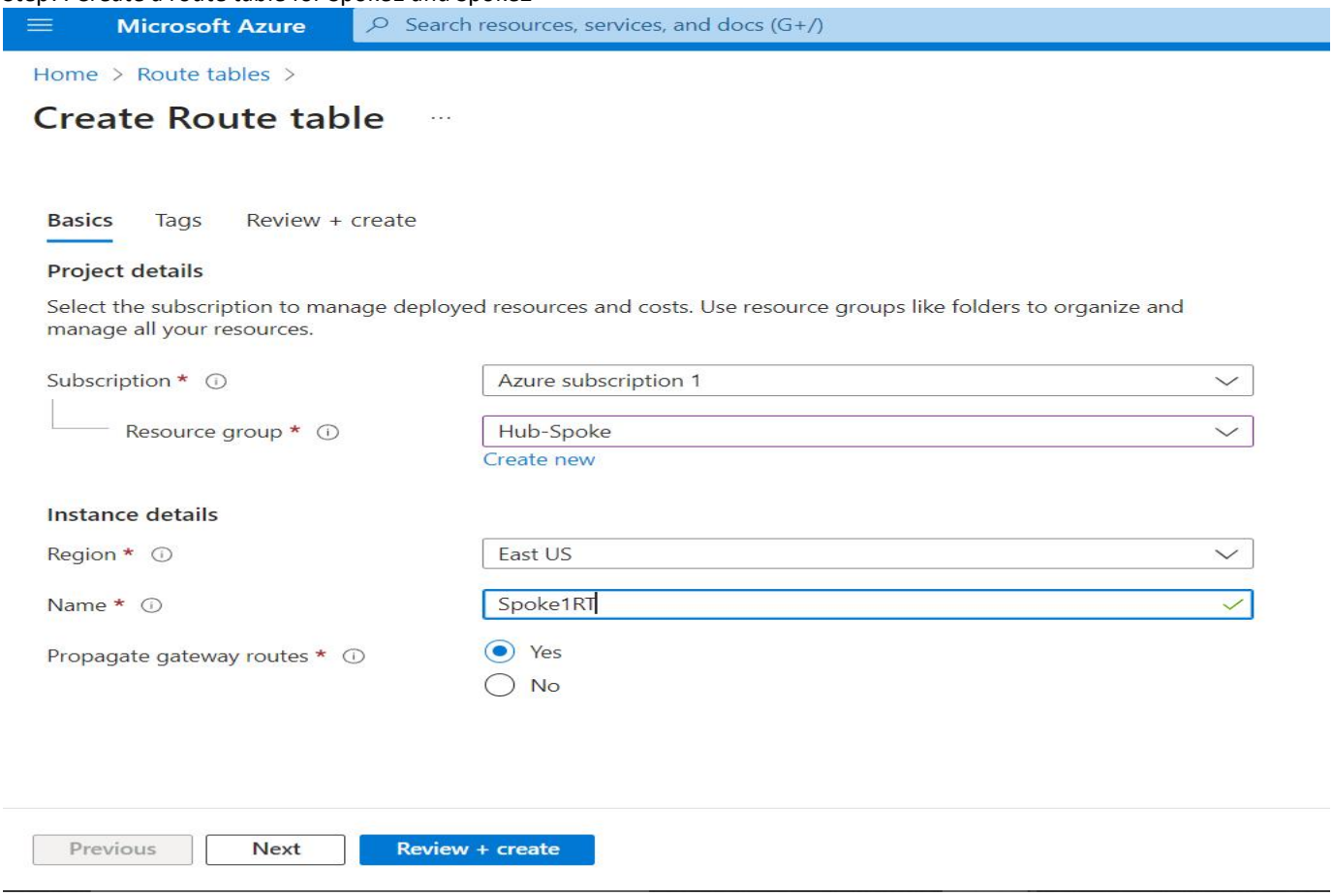


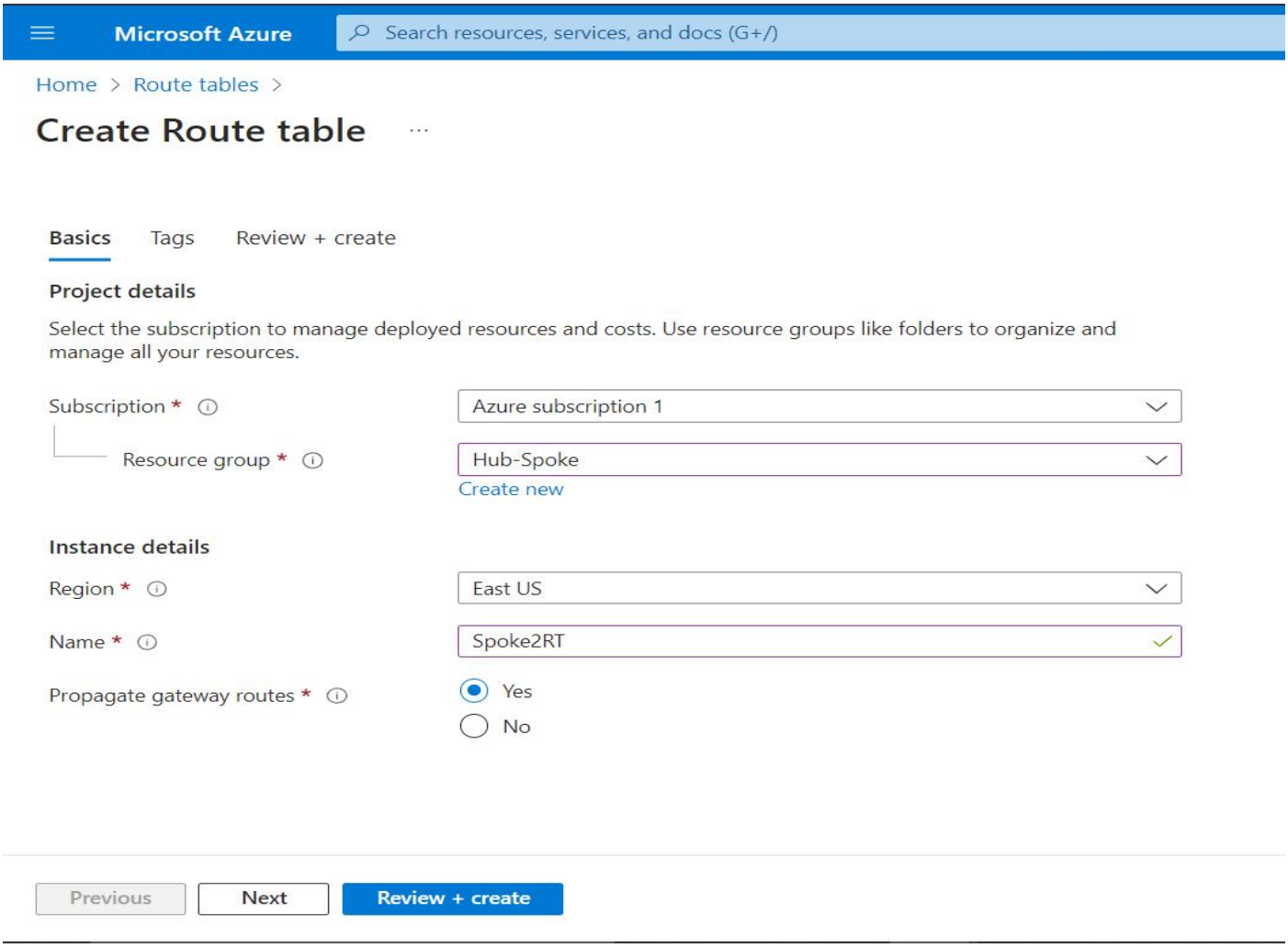


Step6: Both the Peerings have been added.

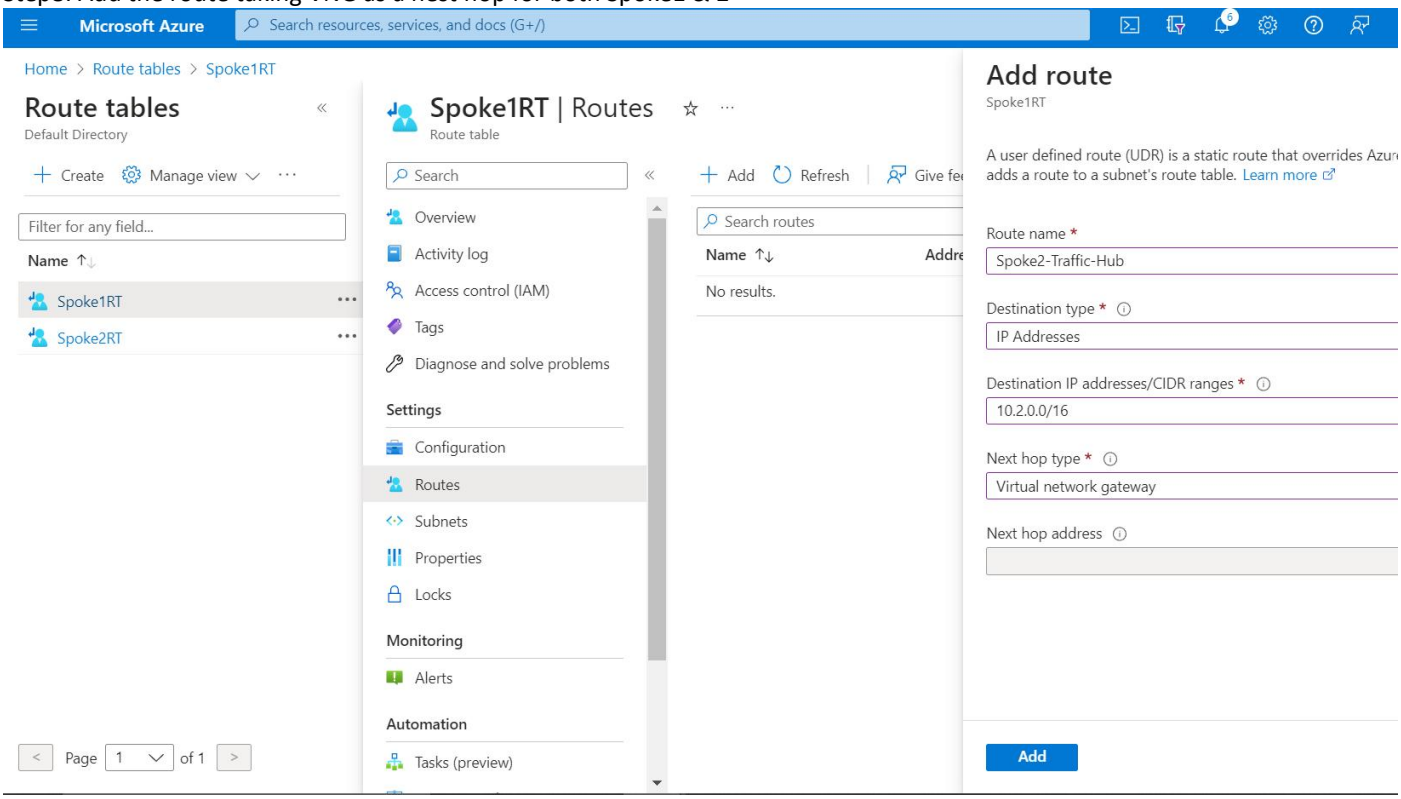


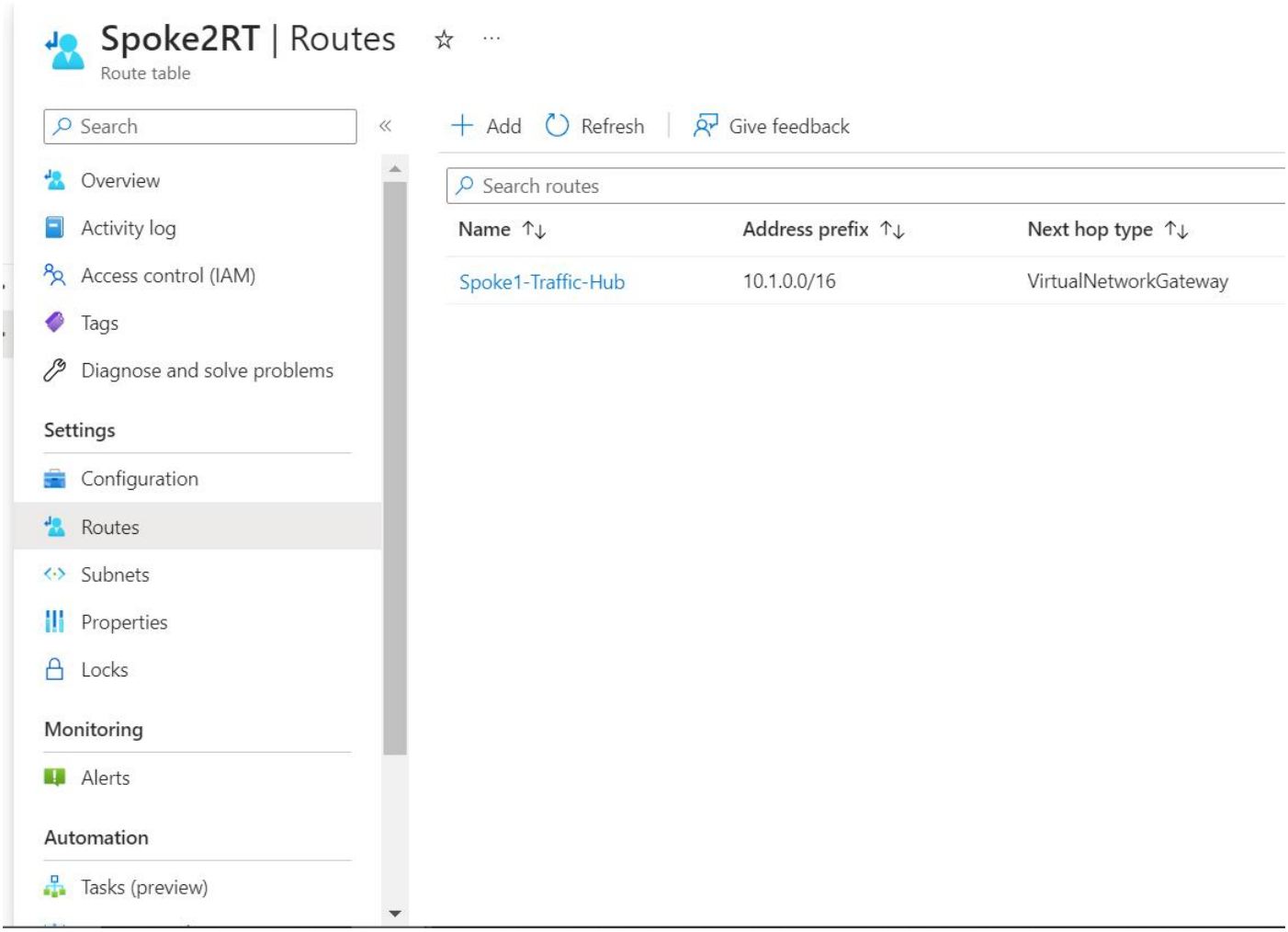
Step7: Create a route table for Spoke1 and Spoke2



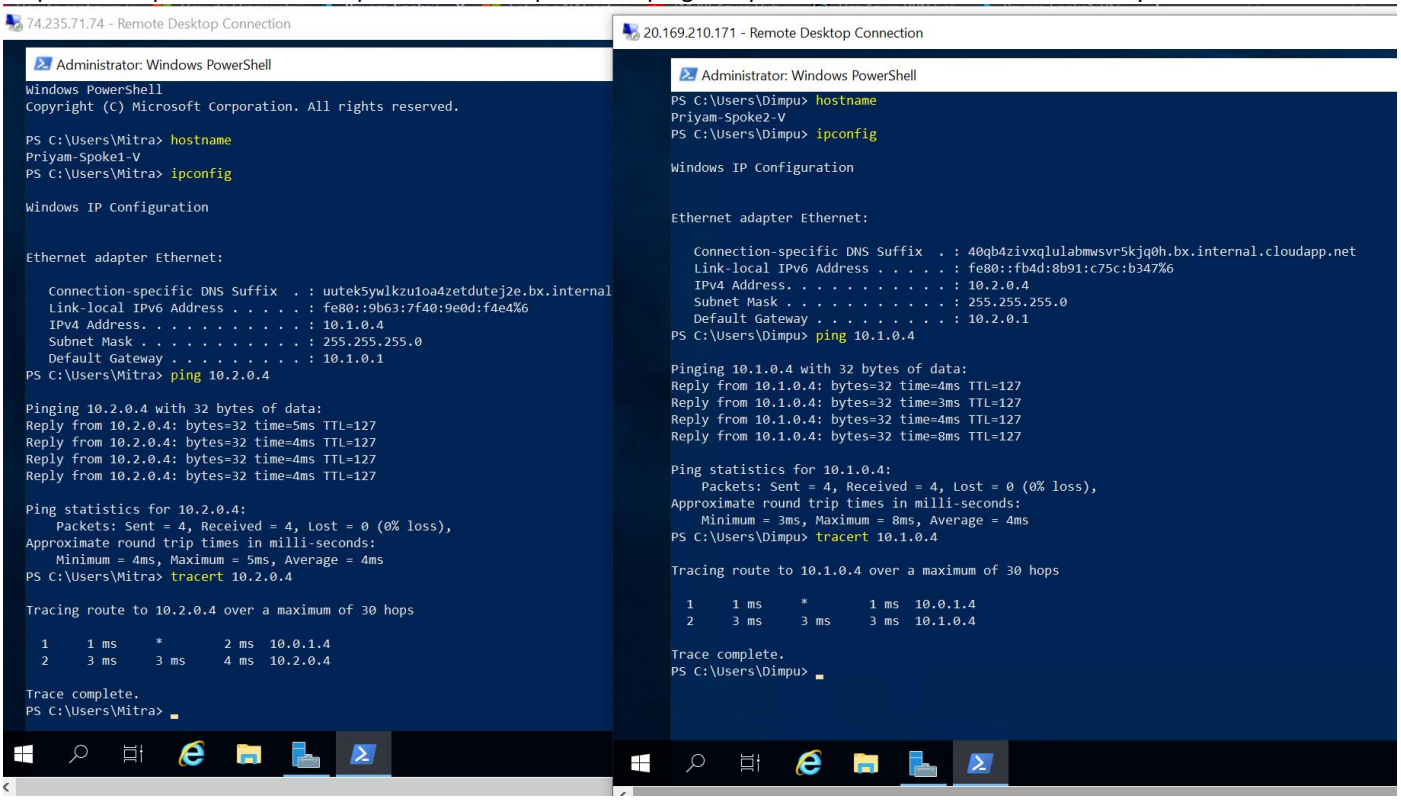


Step8: Add the route taking VNG as a nest hop for both Spoke1 & 2

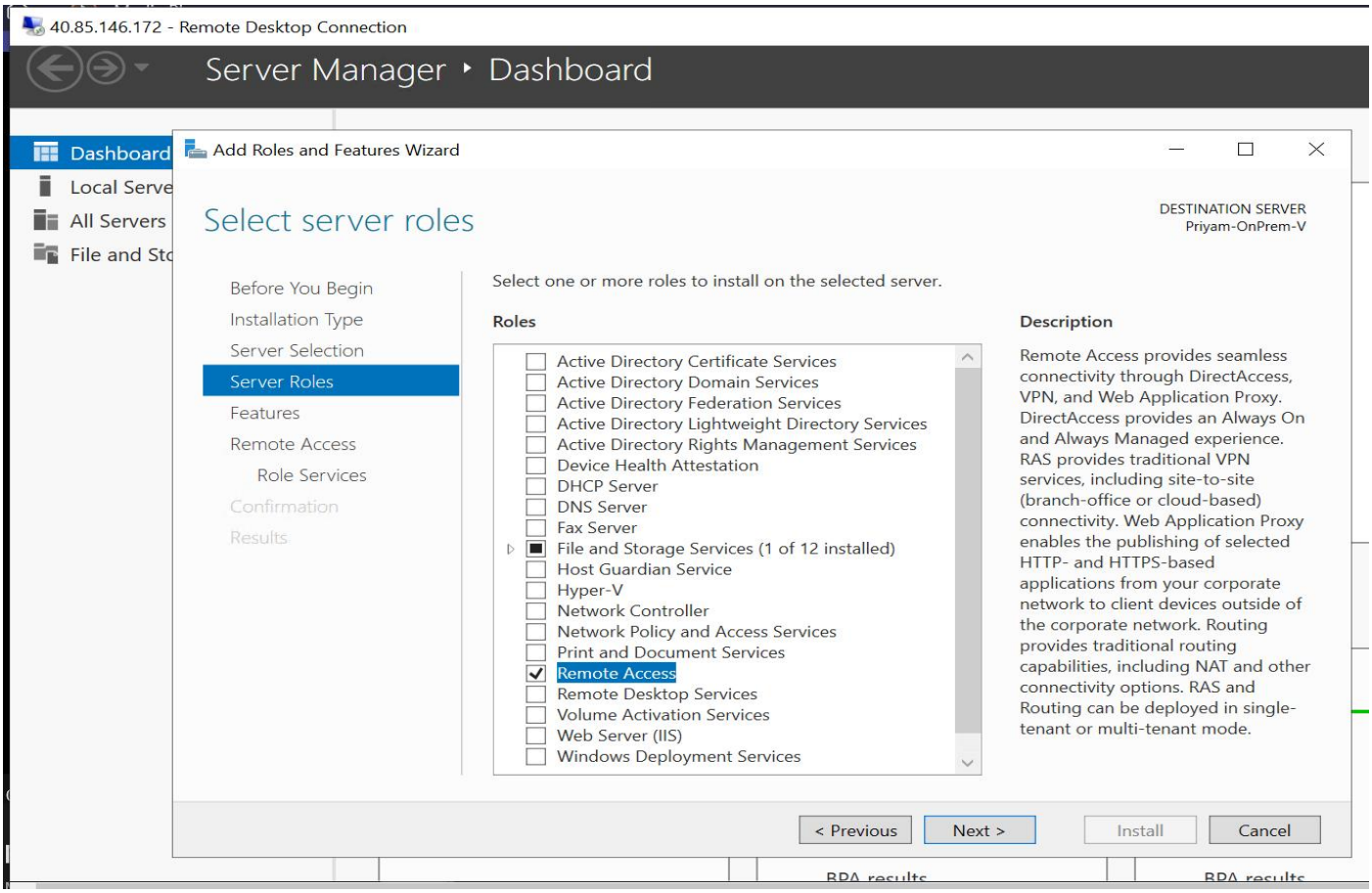


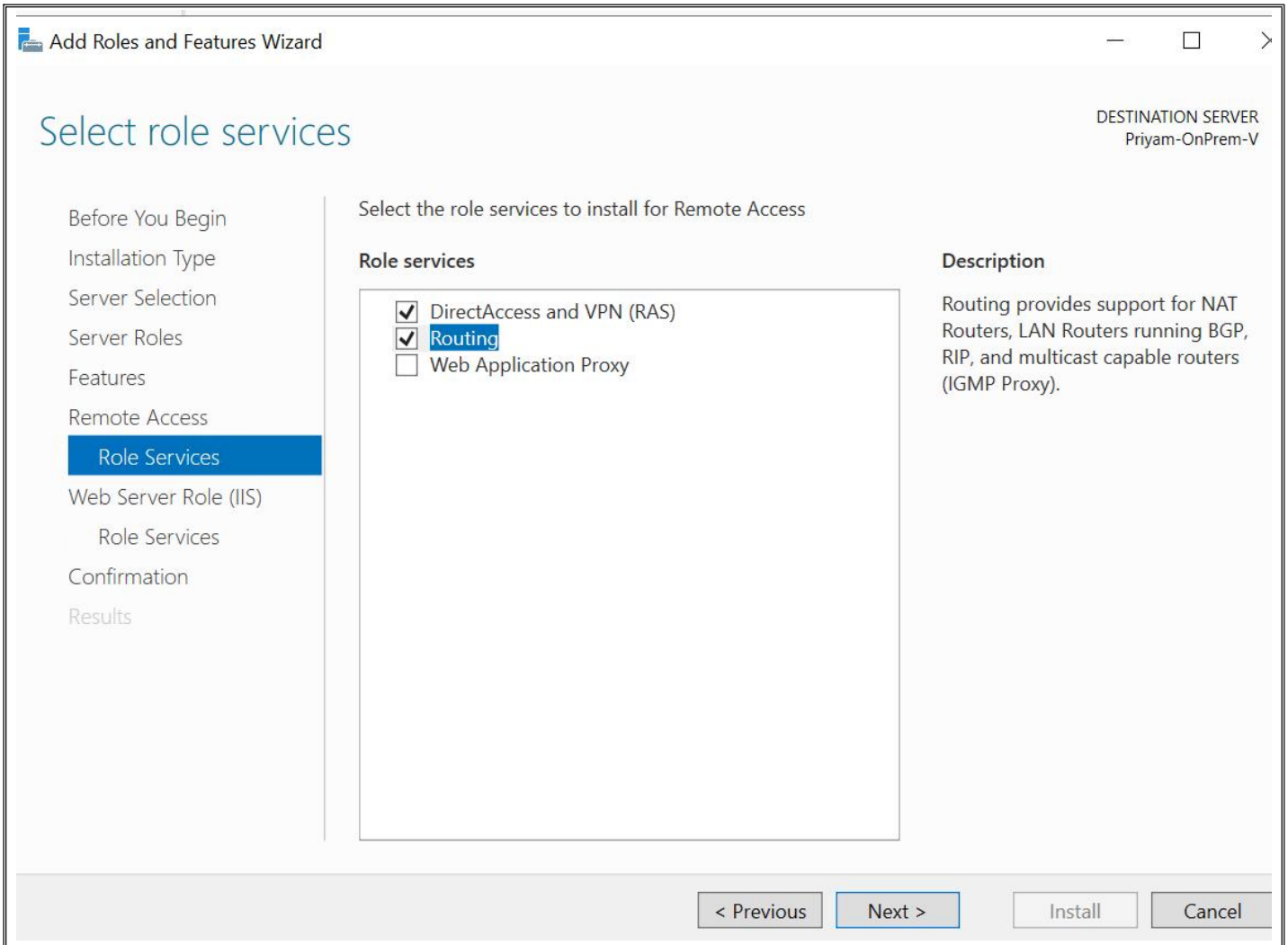


Step9: Then open both Vm's of Spoke1&2 and in powercell ping the ip address and check the connectivity.

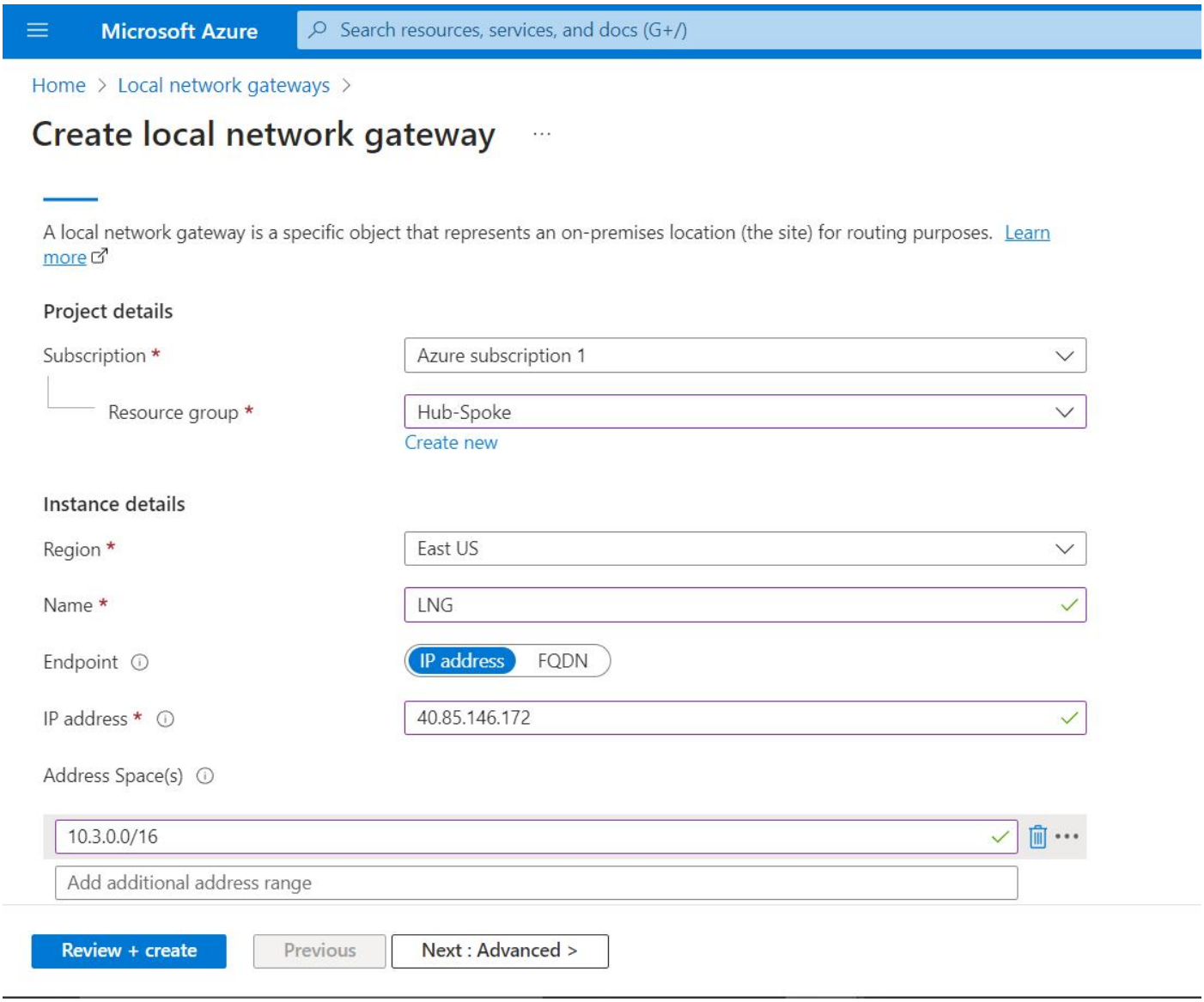


Step10: Then open the on-premise Vm and in add roles install RAAS

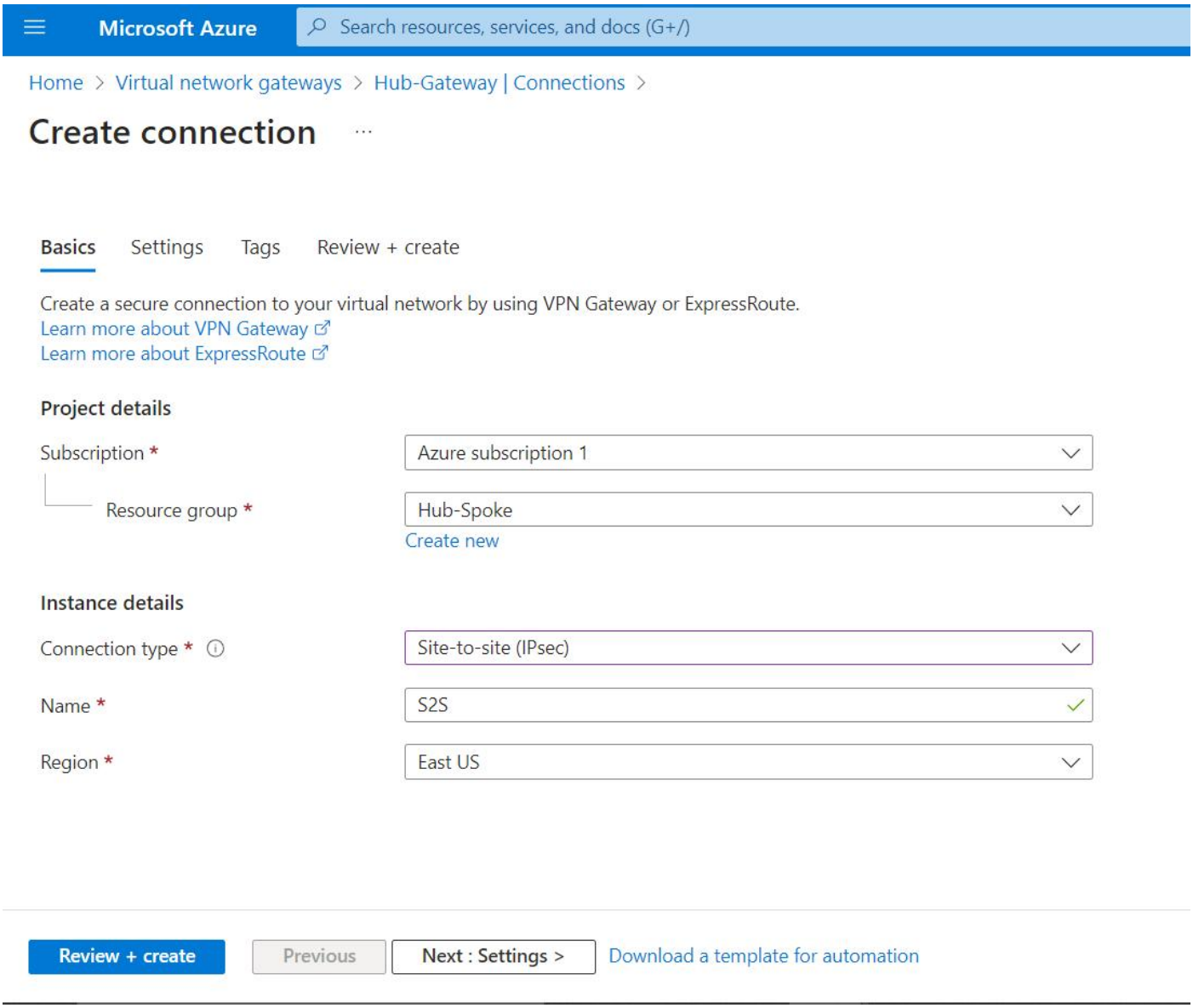


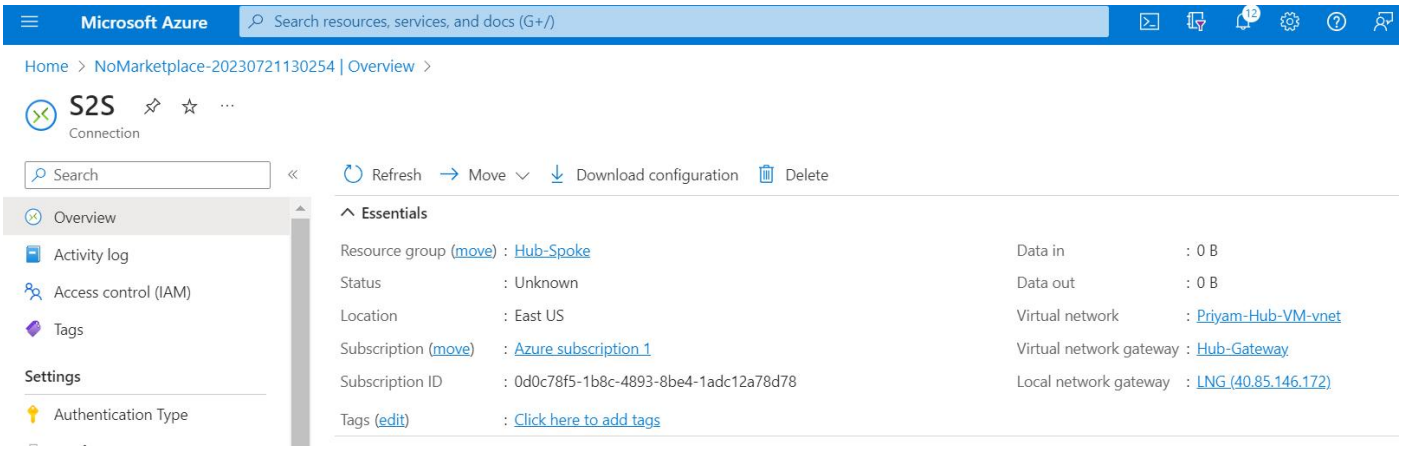

Add Roles and Features Wizard
Select role services
DESTINATION SERVER
Priyam-OnPrem-V
Before You Begin
Installation Type
Server Selection
Server Roles
Features
Remote Access
Role Services
Web Server Role (IIS)
Role Services
Confirmation
Results
Select the role services to install for Remote Access
Role services
DirectAccess and VPN (RAS)
Routing
Web Application Proxy
Description
Routing provides support for NAT Routers, LAN Routers running BGP, RIP, and multicast capable routers (IGMP Proxy).
< Previous
Next >
Install
Cancel

Step11: Create a local network gateway to connect the Hub and on-premise vm through VNG

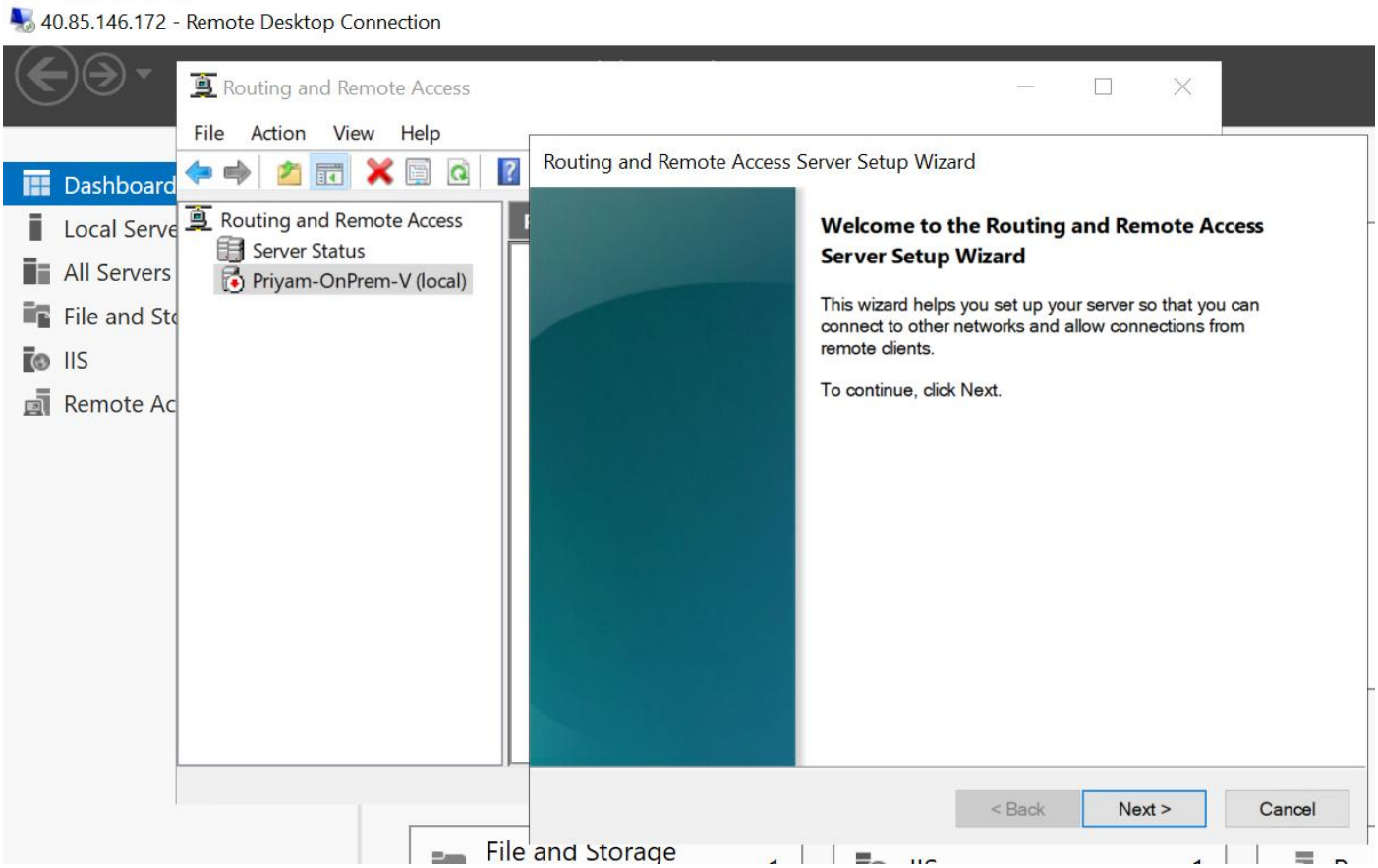


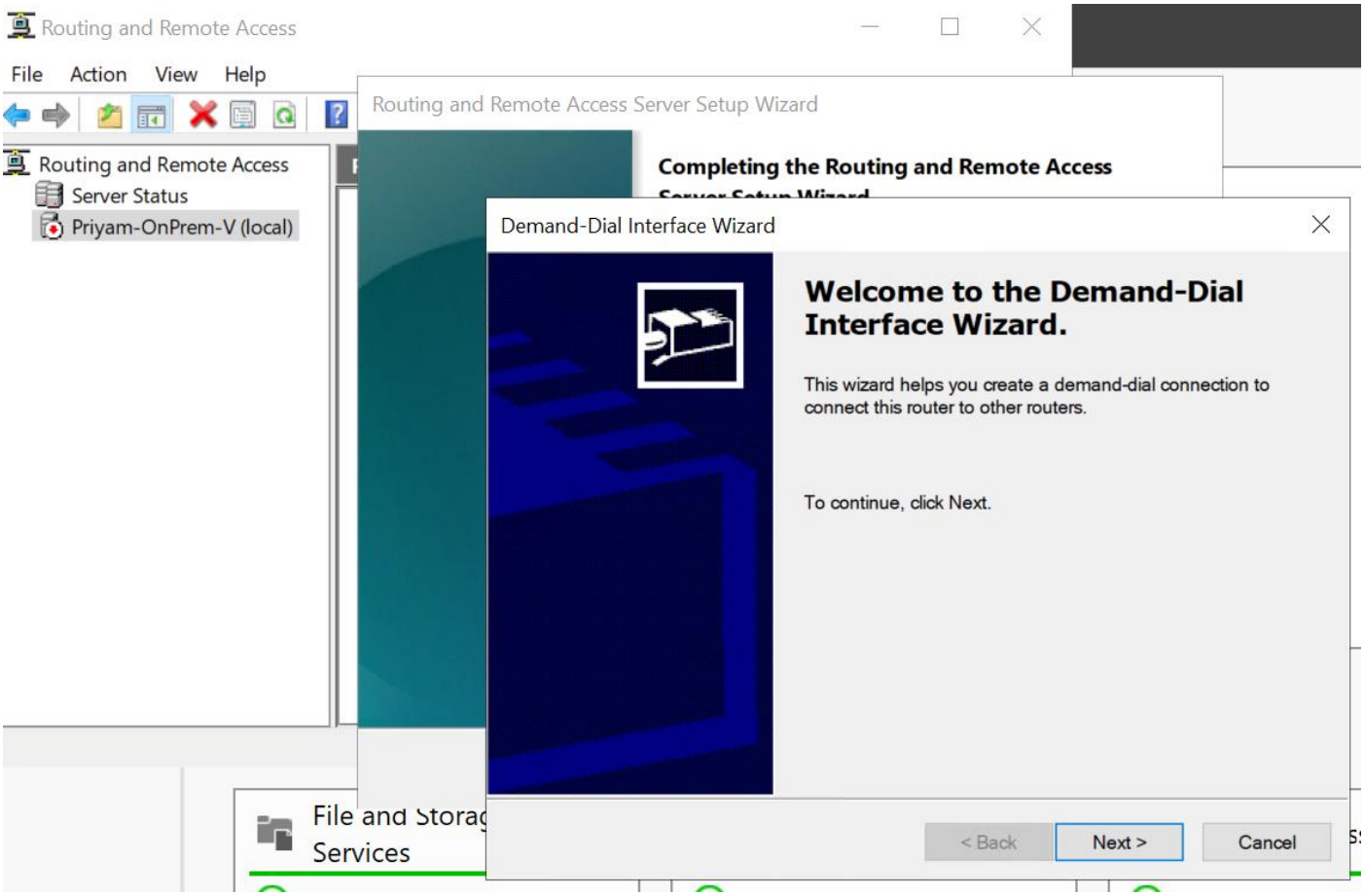
Step12: Now Create a S2S connection between on-premise VM and HUB VM

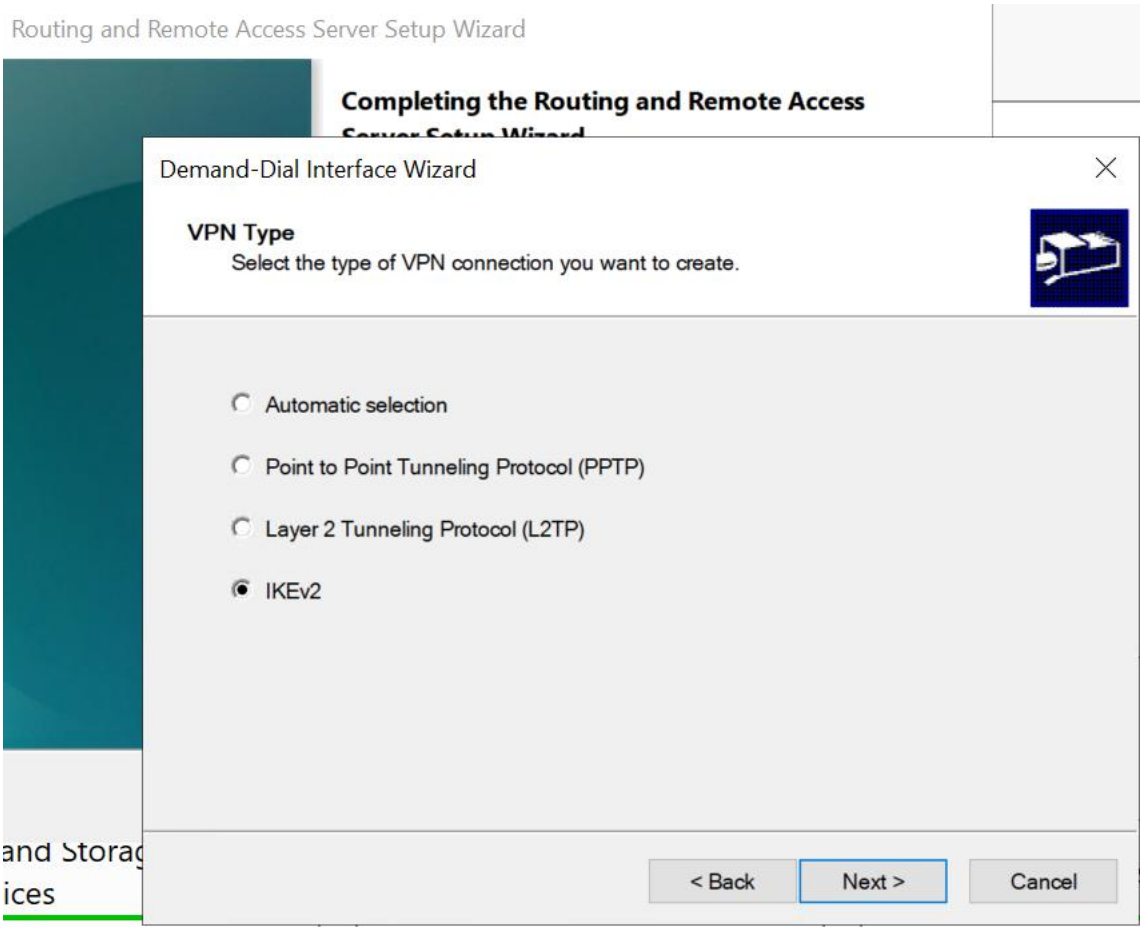


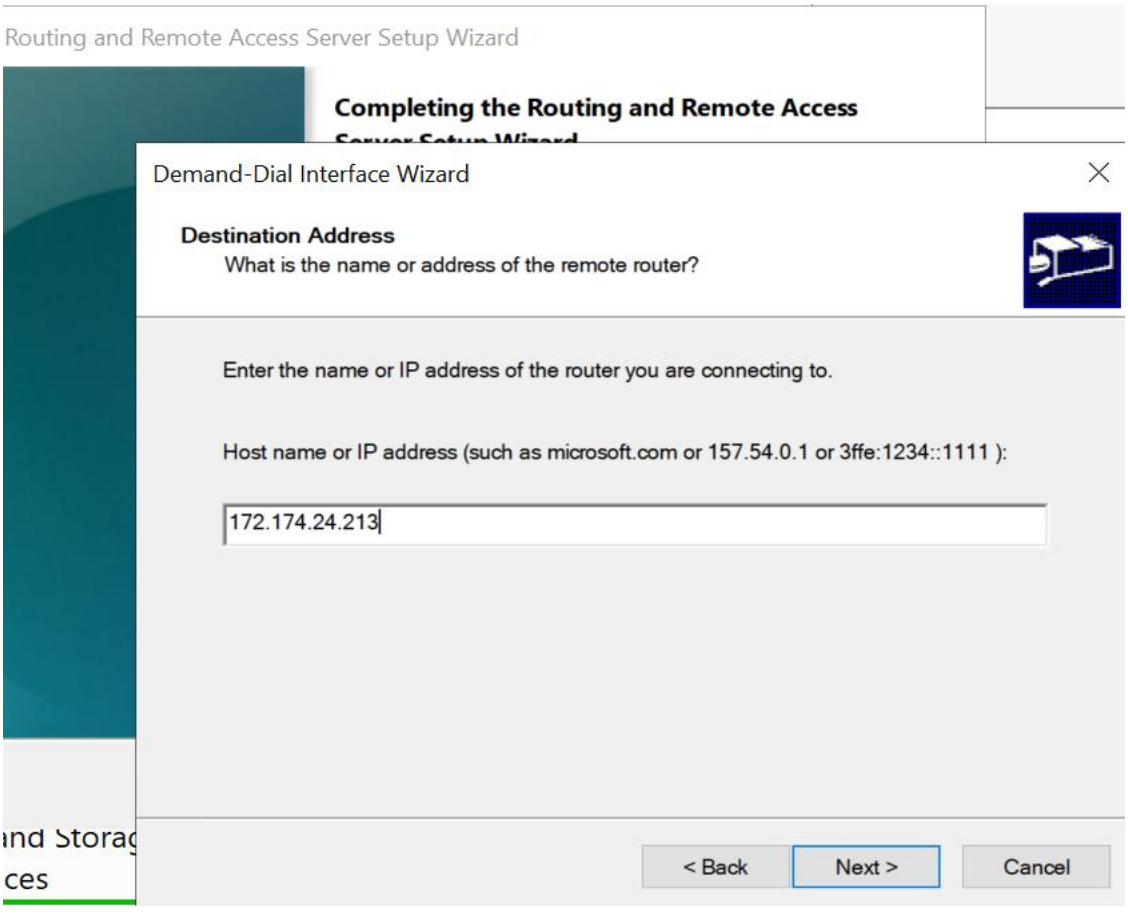


Step13: Configure the setting inside the on-premise ans establish the S2S connection.






Routing and Remote Access Server Setup Wizard
Completing the Routing and Remote Access
Demand-Dial Interface Wizard
VPN Type
Select the type of VPN connection you want to create.
Automatic selection
Point to Point Tunneling Protocol (PPTP)
Layer 2 Tunneling Protocol (L2TP)
IKEv2
< Back
Next >
Cancel


Routing and Remote Access Server Setup Wizard
Completing the Routing and Remote Access
Demand-Dial Interface Wizard
Destination Address
What is the name or address of the remote router?
Enter the name or IP address of the router you are connecting to.
Host name or IP address (such as microsoft.com or 157.54.0.1 or 3ffe:1234::1111):
172.174.24.213
< Back
Next >
Cancel

Demand-Dial Interface Wizard

Static Routes for Remote Networks

A static route is a manually defined, permanent route between two networks.

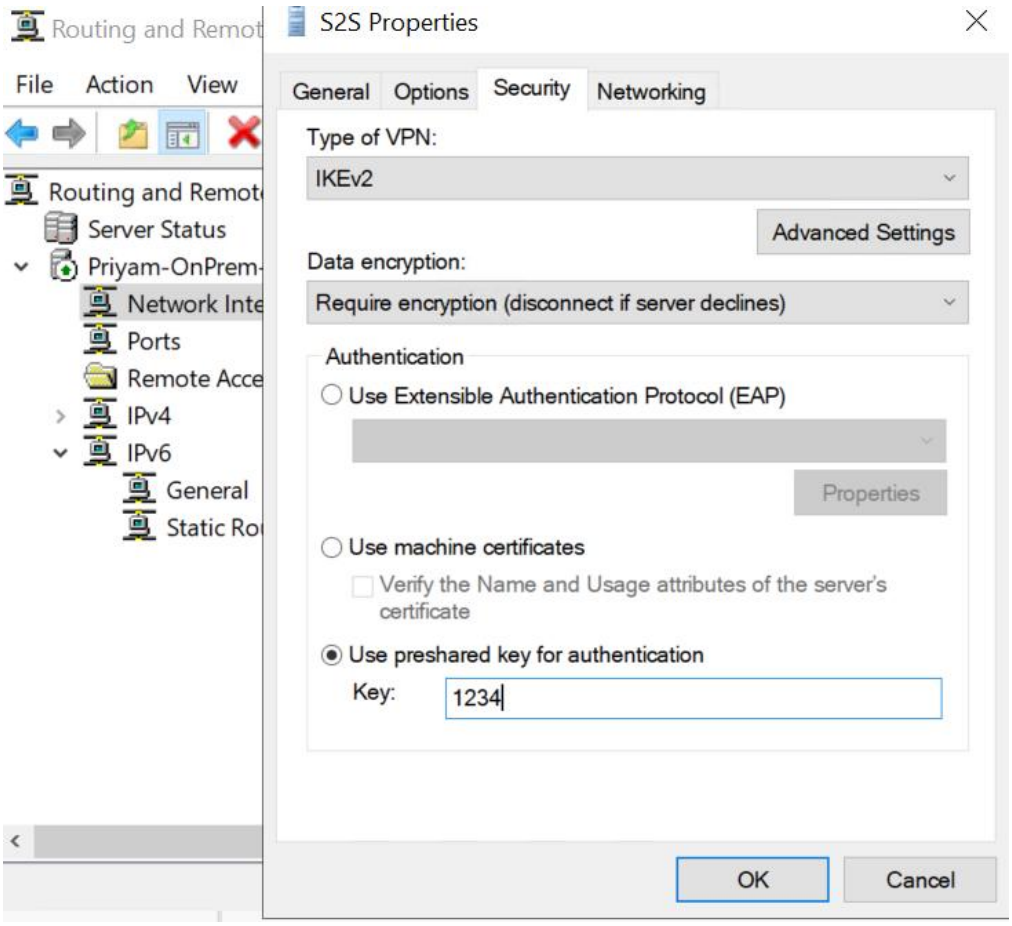
To activate this demand-dial connection, you must add a static route to the network. Specify the IP address of the remote networks this network will communicate with.

Static Routes:

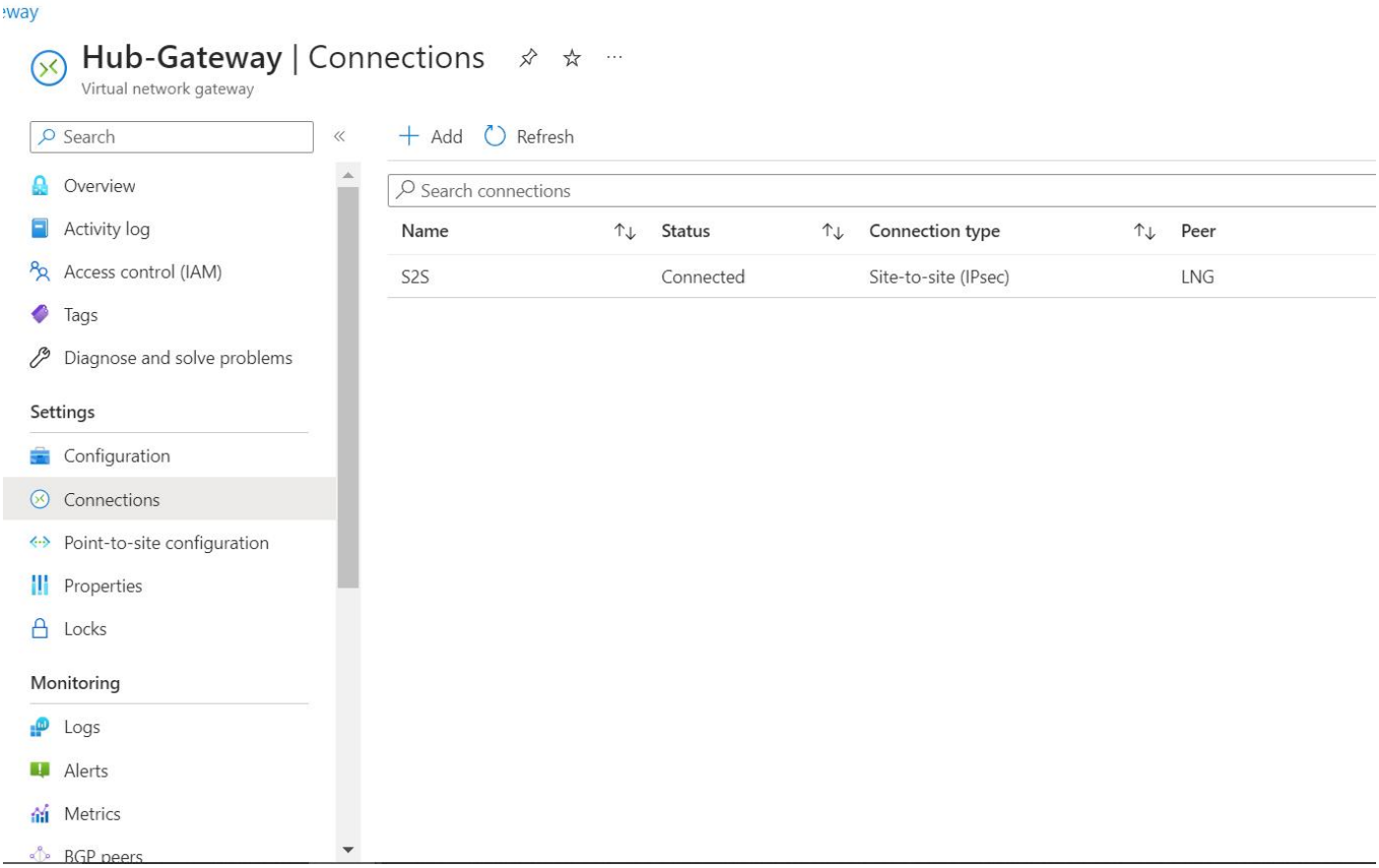
Destination	Network Mask/Prefix length	Metric
10.0.0.0	255.255.0.0	25

Add | Remove

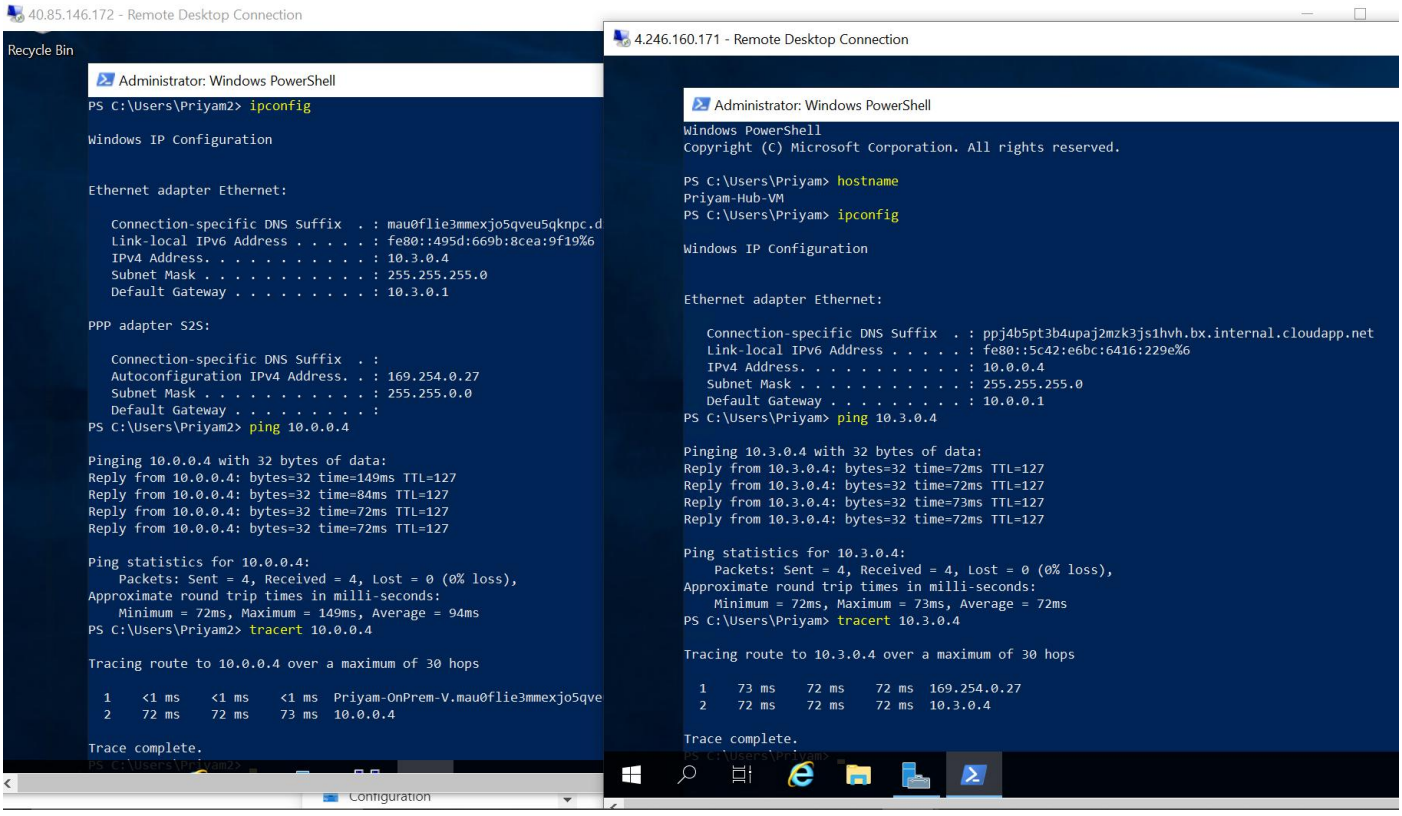
< Back | Next > | Cancel



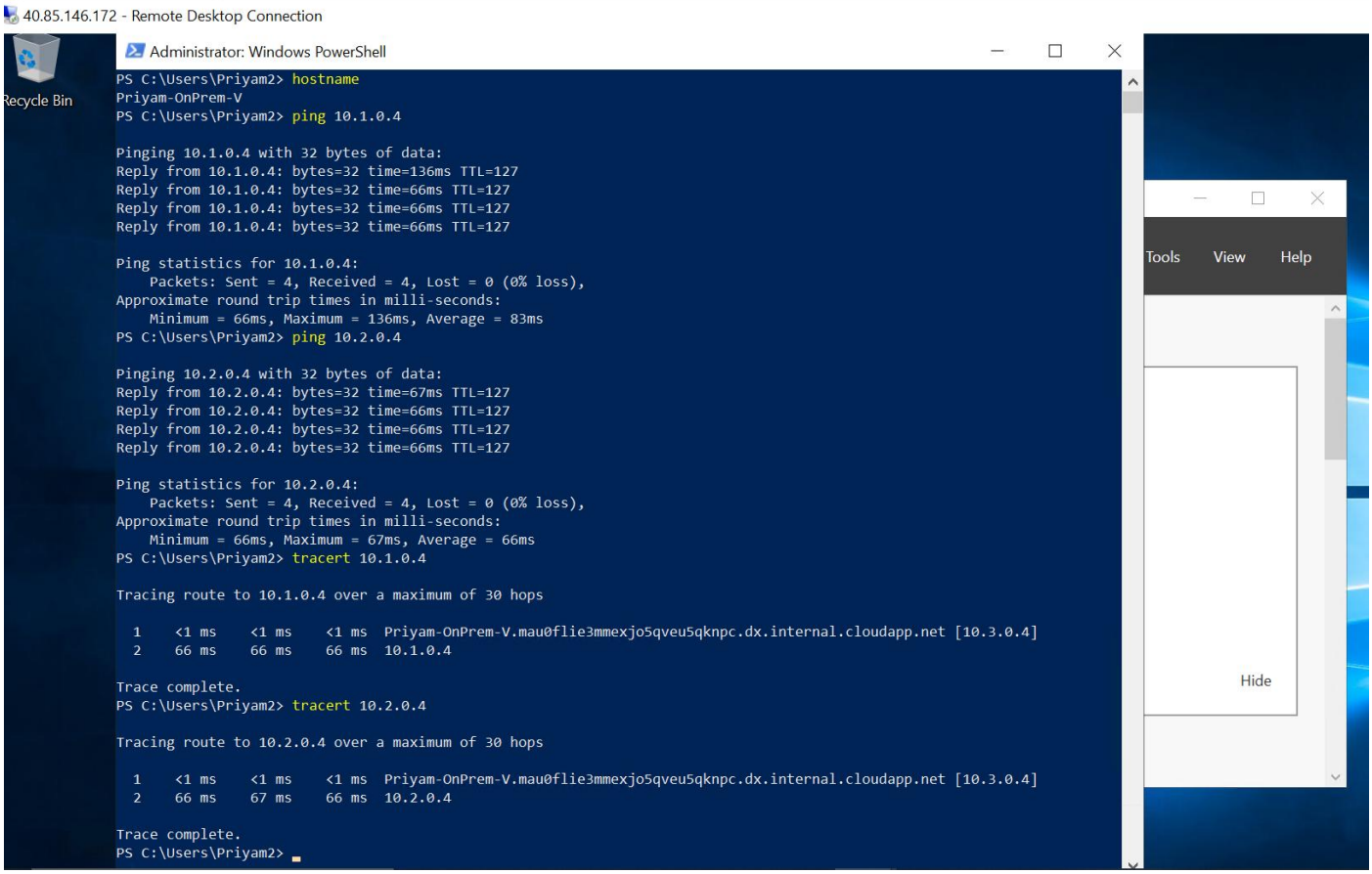
Step14: Check if the S2S connection has been connected in the HUB Gateway



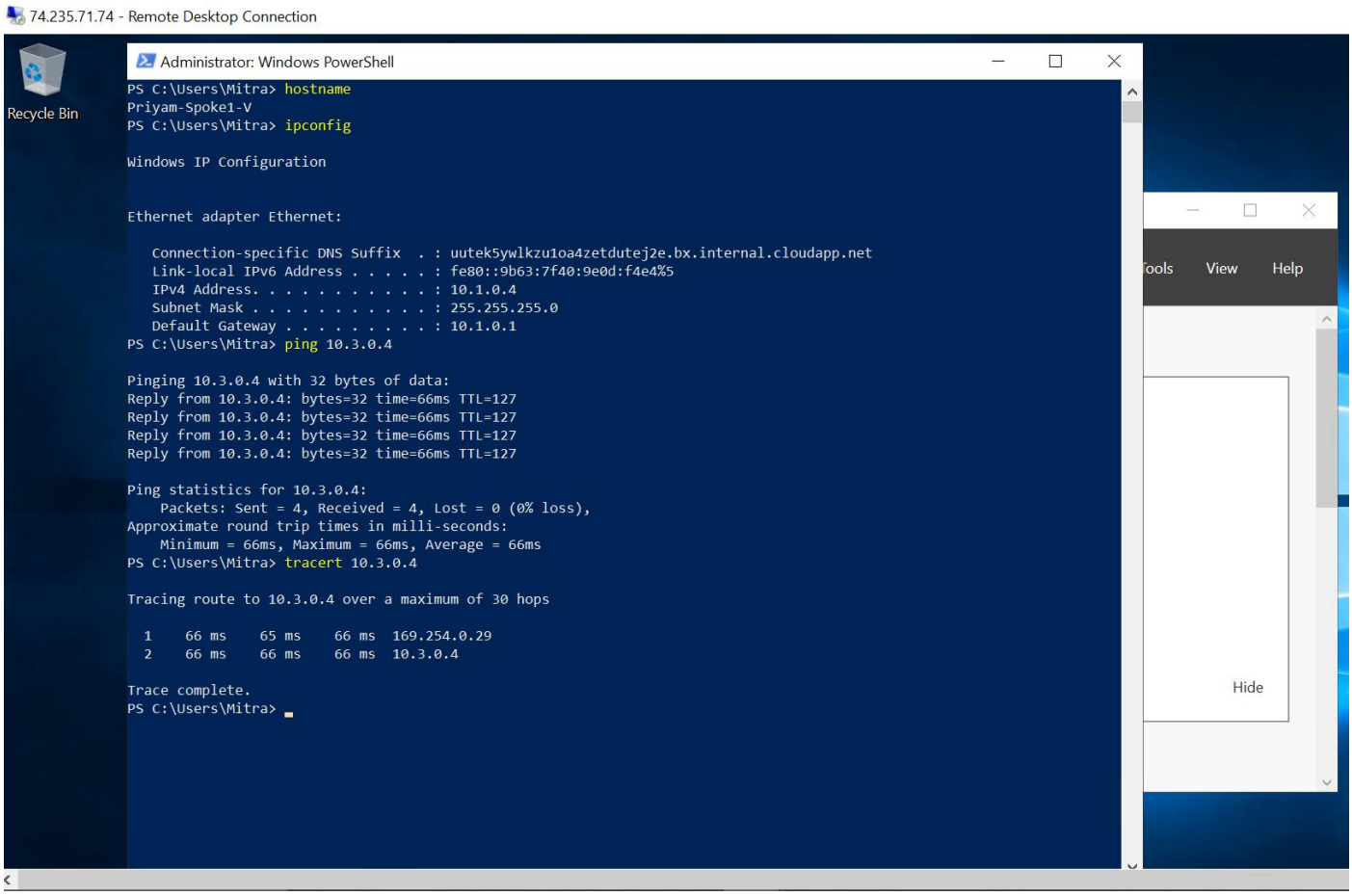
Step15: Open on-prem Vm and Hub Vm and ping to test the connection between them.



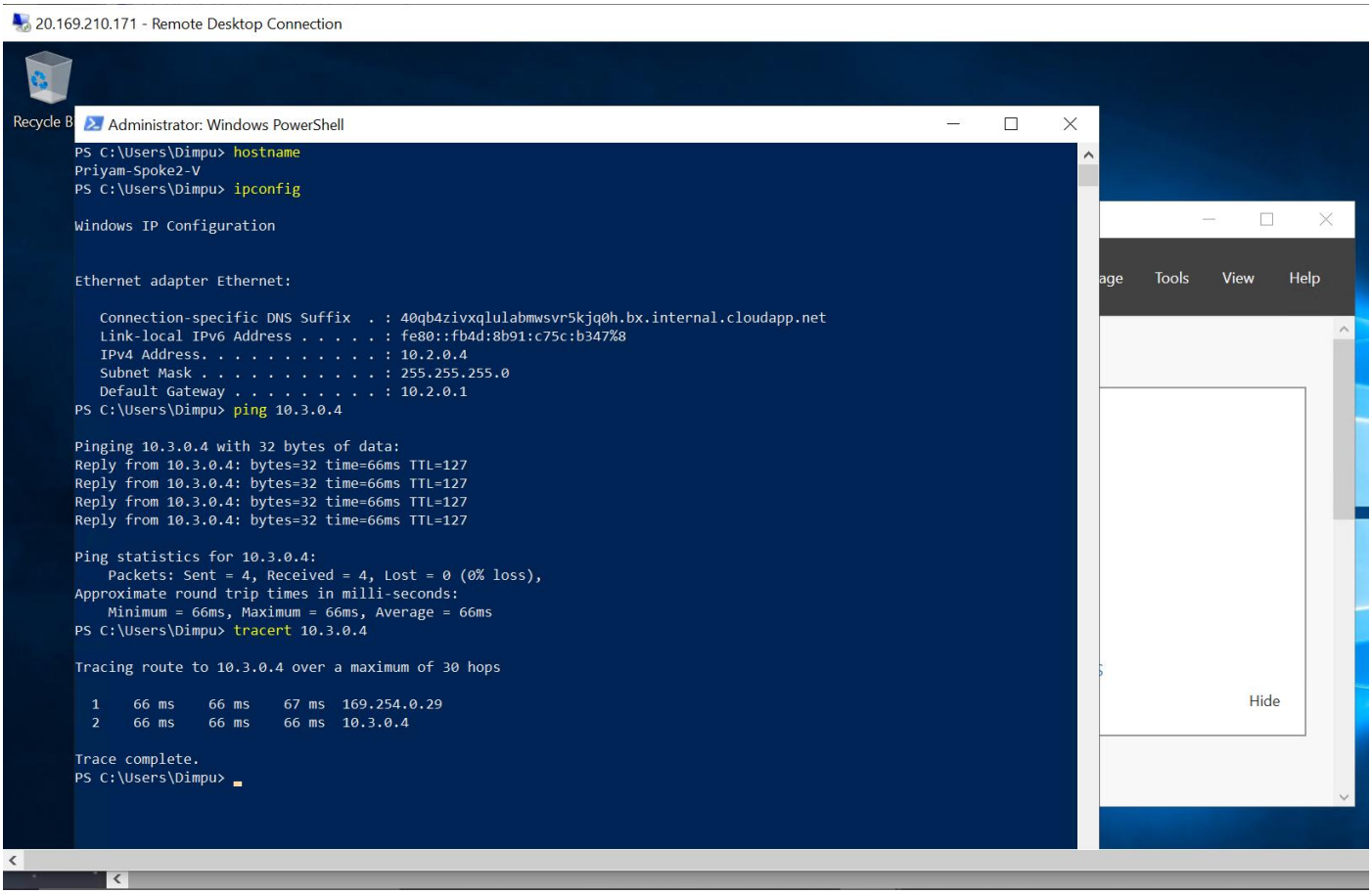
Step16: On on-prem Vm test the connection if the traffic is flowing to spoke1&spoke2 through the Hub.



Step17: Open Spoke1 Vm and check the connection by pinging to on-premise VM



Step18: Finally open the spoke2 Vm and check the connection by pinging to on-premise connection.



CONCLUSION:

For organizations looking to integrate their current infrastructure with the cloud, the link between an on-premise VM and a Spoke VM through an Azure Hub offers a reliable and adaptable option. It makes it possible for enterprises to profit from cloud computing while maintaining a stable network environment by enabling seamless connectivity, improved security, and optimal performance.