

# Project: (Implement the Azure IaaS)

## Requirements: -

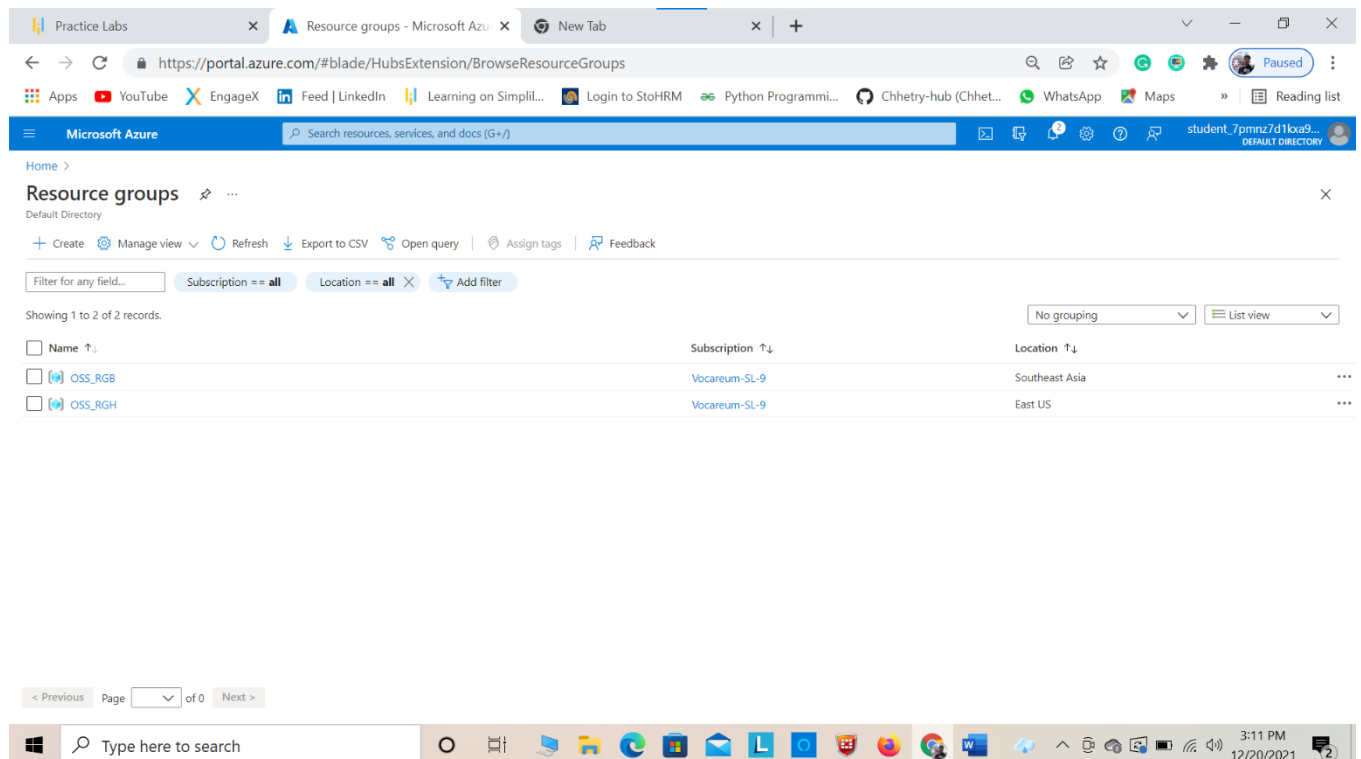
- Create virtual networks in the aforementioned region
- Create test virtual machines in both the virtual networks
- Establish the connectivity between both the networks via VNet peering
- Ensure connectivity is established properly

Lab screenshots and explanation: -

**Step – 1 ->** Created 2 resource groups.

Headquarters Resource group name - OSS\_RGH (Region - East US)

Branch Resource group name - OSS\_RGB (Region - Southeast Asia)



*Fig 0.1: Resource groups*

# Project: (Implement the Azure IaaS)

**Step – 2 ->** Created Storage group

Headquarters storage group name – osshs1

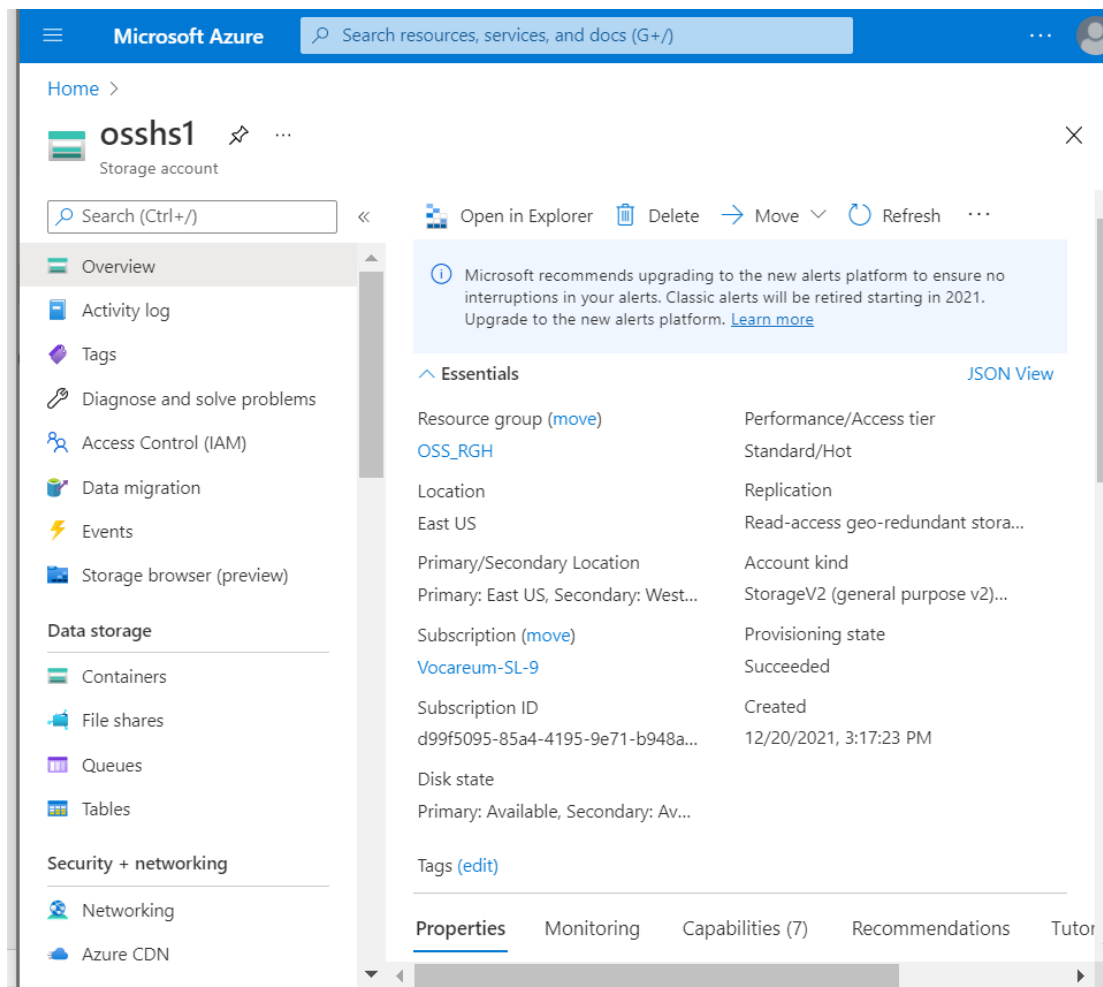
Branch storage group name - ossbs2

The screenshot displays the Microsoft Azure portal interface. At the top, the header shows 'Microsoft Azure' with a search bar and a user profile icon. Below the header, the left sidebar contains navigation options: 'Home >', 'Overview', 'Activity log', 'Tags', 'Diagnose and solve problems', 'Access Control (IAM)', 'Data migration', 'Events', 'Storage browser (preview)', 'Data storage', 'Containers', 'File shares', 'Queues', 'Tables', 'Security + networking', 'Networking', and 'Azure CDN'. The main content area shows the 'ossbs2' storage account details. A notification banner at the top of the main area states: 'Microsoft recommends upgrading to the new alerts platform to ensure no interruptions in your alerts. Classic alerts will be retired starting in 2021. Upgrade to the new alerts platform. [Learn more](#)'. Below this, the 'Essentials' section lists various properties of the storage account in a two-column table. At the bottom of the main area, there are tabs for 'Properties', 'Monitoring', 'Capabilities (7)', 'Recommendations', and 'Tutor'.

Essentials	
Resource group ( <a href="#">move</a> )	Performance/Access tier
<a href="#">OSS_RGB</a>	Standard/Hot
Location	Replication
Southeast Asia	Read-access geo-redundant stora...
Primary/Secondary Location	Account kind
Primary: Southeast Asia, Secondar...	StorageV2 (general purpose v2)...
Subscription ( <a href="#">move</a> )	Provisioning state
<a href="#">Vocareum-SL-9</a>	Succeeded
Subscription ID	Created
d99f5095-85a4-4195-9e71-b948a...	12/20/2021, 3:20:41 PM
Disk state	
Primary: Available, Secondary: Av...	

*Fig: Storages account in branch sever*

# Project: (Implement the Azure IaaS)



*Fig: Storage account for Headquarter Server*

## Step – 3 -> Created Virtual Network & Subnet

<b>Headquarter Vnet details: -</b> Name - OSS_VNET1 IP Range - 10.0.0.0/16 Subnet name - OSS_VNET1_subnet Subnet Range - 10.0.1.0/24	<b>Branch Vnet details: -</b> Name - OSS_VNET2 IP Range - 192.168.0.0/16 Subnet name - OSS_VNET2_subnet Subnet Range - 192.168.1.0/24
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# Project: (Implement the Azure IaaS)

The screenshot displays the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information. The main content area shows the details for a Virtual Network named **OSS\_VNET2**. 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, DDoS protection, Firewall, Security, Network manager, DNS servers, Peerings, and Service endpoints. The main panel is divided into two sections: **Essentials** and **Connected devices**. The **Essentials** section provides key information about the VNet, including its Resource group (OSS\_RGB), Location (Southeast Asia), Subscription (Vocareum-SL-77), and Address space (192.168.0.0/16). The **Connected devices** section shows a table with columns for Device, Type, IP Address, and Subnet, currently displaying "No results."

Microsoft Azure

Search resources, services, and docs (G+)

Home > Microsoft.VirtualNetwork-20211223141029 >

**OSS\_VNET2**  
Virtual network

Search (Ctrl+/) Refresh Move Delete Give feedback

**Overview**

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

**Settings**

- Address space
- Connected devices
- Subnets
- DDoS protection
- Firewall
- Security
- Network manager
- DNS servers
- Peerings
- Service endpoints

**Essentials**

Resource group (Move) : OSS\_RGB Address space : 192.168.0.0/16

Location : Southeast Asia DNS servers : Azure provided DNS service

Subscription (Move) : Vocareum-SL-77

Subscription ID : d8726262-a161-49f3-9270-6b5697f51964

Tags (Edit) : Click here to add tags

**Connected devices**

Search connected devices

Device ↑↓	Type ↑↓	IP Address ↑↓	Subnet ↑↓
No results.			

JSON View

*Fig: Vnet for Branch*

The screenshot displays the Microsoft Azure portal interface for a Virtual Network named **OSS\_VNET1**. The layout is similar to the previous screenshot, showing the **Essentials** and **Connected devices** sections. The **Essentials** section for **OSS\_VNET1** shows it is located in the East US region with an address space of 10.0.0.0/16. The **Connected devices** section also shows "No results."

Microsoft Azure

Search resources, services, and docs (G+)

Home >

**OSS\_VNET1**  
Virtual network

Search (Ctrl+/) Refresh Move Delete Give feedback

**Overview**

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

**Settings**

- Address space
- Connected devices
- Subnets
- DDoS protection
- Firewall
- Security
- Network manager
- DNS servers
- Peerings
- Service endpoints

**Essentials**

Resource group (Move) : OSS\_RGH Address space : 10.0.0.0/16

Location : East US DNS servers : Azure provided DNS service

Subscription (Move) : Vocareum-SL-77

Subscription ID : d8726262-a161-49f3-9270-6b5697f51964

Tags (Edit) : Click here to add tags

**Connected devices**

Search connected devices

Device ↑↓	Type ↑↓	IP Address ↑↓	Subnet ↑↓
No results.			

*Fig: Vnet for Headquarter*

# Project: (Implement the Azure IaaS)

## Step – 4 -> Created virtual machine

Headquarters	Branch
VM Name - OSSDB Public IP - OSSDB-pubip	VM Name - OSSAP Public IP - OSSAPP-pubip

The screenshot displays the Microsoft Azure portal interface. At the top, there's a navigation bar with the Microsoft Azure logo, a search bar, and user information. Below this, the main content area shows the details of a virtual machine named 'OSSAP'. The left sidebar contains a navigation menu with options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings, Networking, Connect, Windows Admin Center (preview), Disks, Size, Security, Advisor recommendations, Extensions + applications, and Continuous delivery. The main content area is divided into sections: Essentials, Properties, Monitoring, Capabilities (8), Recommendations, and Tutorials. The Essentials section shows a warning about the virtual machine agent status. The Properties section lists various attributes of the VM, including Resource group, Status, Location, Subscription, Subscription ID, Availability zone, Tags, Operating system, Size, Public IP address, Virtual network/subnet, and DNS name. The Networking section provides details about the public and private IP addresses and the virtual network/subnet.

**Microsoft Azure** Search resources, services, and docs (G+/)

Home > OSSAP Virtual machine

Connect Start Restart Stop Capture Delete Refresh Open in mobile CLI / PS Feedback

OSSAP virtual machine agent status is not ready. Troubleshoot the issue →

**Essentials** JSON View

Resource group (Move) : OSS\_RGB

Status : Running

Location : Southeast Asia (Zone 1)

Subscription (Move) : Vocareum-SL-77

Subscription ID : d8726262-a161-49f3-9270-6b569751964

Availability zone : 1

Tags (Edit) : Click here to add tags

**Properties** Monitoring Capabilities (8) Recommendations Tutorials

**Virtual machine**

Computer name : OSSAP

Health state : -

Operating system : Windows

Publisher : MicrosoftWindowsServer

Offer : WindowsServer

**Networking**

Public IP address : 20.212.177.77

Public IP address (IPv6) : -

Private IP address : 192.168.1.4

Private IP address (IPv6) : -

Virtual network/subnet : OSS\_VNET2/OSS\_VNET2\_subnet

*Fig: Virtual Machine for Branch application*

# Project: (Implement the Azure IaaS)

The screenshot displays the Microsoft Azure portal interface. At the top, the header shows 'Microsoft Azure' with a search bar and user information. The left sidebar contains navigation options like 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Settings', 'Networking', 'Connect', 'Windows Admin Center (preview)', 'Disks', 'Size', 'Security', 'Advisor recommendations', 'Extensions + applications', 'Continuous delivery', and 'Availability + scaling'. The main content area shows the 'Overview' tab for a Virtual Machine named 'OSSDB'. The 'Essentials' section provides key information: Resource group (OSS\_RG1), Status (Running), Location (East US (Zone 1)), Subscription (Vocareum-SL-77), Subscription ID (d8726262-a161-49f3-9270-6b569751964), Availability zone (1), and Tags (Click here to add tags). The 'Properties' section lists details such as Computer name (OSSDB), Health state (-), Operating system (Windows (Windows Server 2019 Datacenter)), Publisher (MicrosoftWindowsServer), Offer (WindowsServer), Plan (2019-datacenter-gensecond), VM generation (V2), and Agent status (Ready). The 'Networking' section shows the Public IP address (138.91.107.233), Private IP address (10.0.0.4), and Virtual network/subnet (OSS\_VNET1/OSS\_VNET1\_subnet).

*Fig: Virtual Machine for HQ-Database*

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**Step – 5 ->** Setup VNET Peering between both the locations

Created the VNET peering settings in Headquarters VNET

# Project: (Implement the Azure IaaS)

Microsoft Azure

Search resources, services, and docs (G+)

[Home](#) > [OSS\\_VNET1](#) >

## Vnet1toVnet2

OSS\_VNET1

Peering status  
Fully Synchronized

Peering state  
Succeeded

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/d8726262-a161-49f3-9270-6b5697f51964/resourceGroups/OSS\_RGB/providers/Microsoft.Network/virtu...

Address space

Save

Cancel

Type here to search

*Fig: Vnet Peering Between Vnet1 & Vnet2*

**Step – 6 ->** Enable IP forwarding on VM located in headquarters.

Microsoft Azure

Search resources, services, and docs (G+)

[Home](#) > [OSS\\_RGBH](#) > [ossdb469](#)

## ossdb469 | IP configurations

Network interface

Search (Ctrl+)

[Add](#) [Save](#) [Discard](#) [Refresh](#)

Overview

Activity log

Access control (IAM)

Tags

Settings

IP configurations

DNS servers

Network security group

Properties

Locks

Monitoring

Insights

Alerts

IP forwarding settings

IP forwarding Disabled **Enabled**

Virtual network OSS\_VNET1

Gateway Load balancer ⓘ None

IP configurations

Subnet \* OSS\_VNET1\_subnet (10.0.0.0/24)

Search IP configurations

Name	IP Version	Type	Private IP address	Public IP address	
ipconfig1	IPv4	Primary	10.0.0.4 (Dynamic)	138.91.107.233 (OSSDB-ip)	...

# Project: (Implement the Azure IaaS)

## Step – 7-> Create Routing in the VM created at Branch location

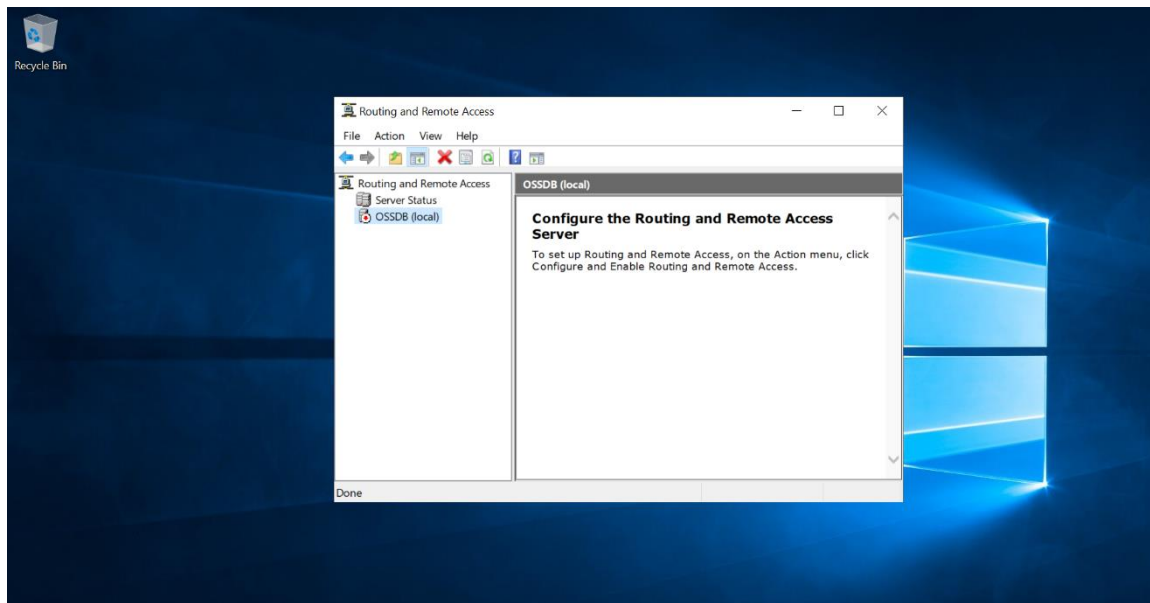
The screenshot displays the Microsoft Azure portal interface for a RouteConfig resource. The left sidebar contains navigation links for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings, Configuration, Routes, Subnets, Properties, Locks, Monitoring, Alerts, and Automation. The main content area shows the 'Route table' configuration for 'route-to-vnet1'. The 'Essentials' section lists the resource group (OSS\_RGB), location (Southeast Asia), subscription (Vocareum-SL-77), and subscription ID. The 'Routes' section shows a single route with the address prefix 10.0.1.0/24, next hop type 'Virtual appliance', and next hop IP address 10.0.0.4. The 'Subnets' section shows no results.

Name	Address prefix	Next hop type	Next hop IP address
route-to-vnet1	10.0.1.0/24	Virtual appliance	10.0.0.4

*Fig: Routing Table*

## Step – 8-> In DB VM (Headquarters) install Remote access & Routing features / Enable LAN routing

### Headquarter VM:

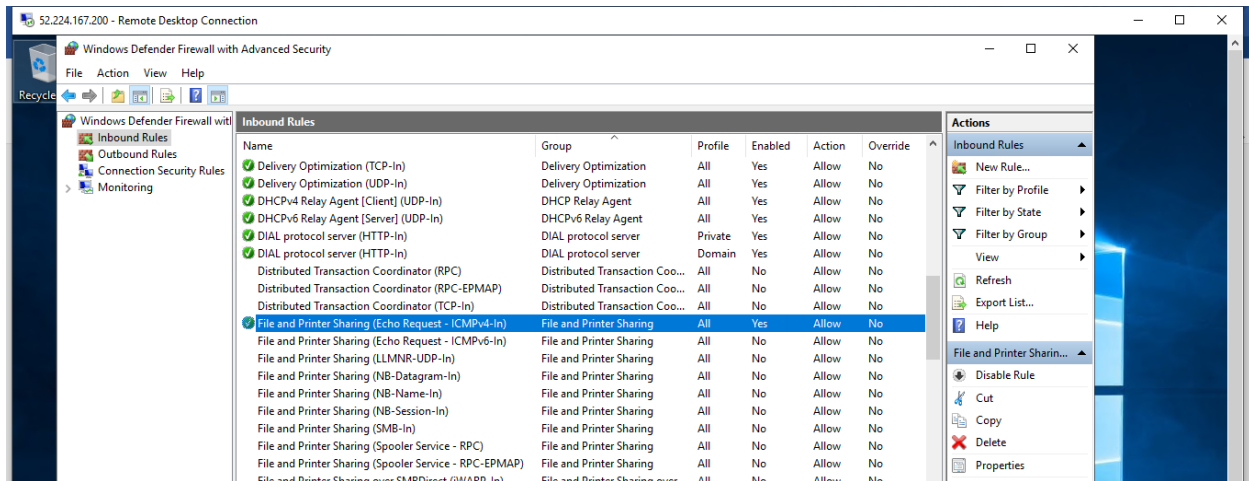


*Fig: Routing and Remote Access*



# Project: (Implement the Azure IaaS)

Enable Inbound rules for both the VM's: -



*Fig: Windows defender > Inbound rules > File and Printer Sharing > Enabled*

**Step – 9->** Pinging Branch APP\_VM from Headquarters DB\_VM

```
Microsoft Windows [Version 10.0.17763.2366]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\HQ>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : drqt5fy5geeuhlvxozgqtdgy0e.bx.internal.cloudapp.net
    Link-local IPv6 Address . . . . . : fe80::8cd4:a17c:b981:cc7e%6
    IPv4 Address. . . . . : 10.0.0.4
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.0.0.1

C:\Users\HQ>ping 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:
Reply from 192.168.1.4: bytes=32 time=218ms TTL=128
Reply from 192.168.1.4: bytes=32 time=217ms TTL=128
Reply from 192.168.1.4: bytes=32 time=217ms TTL=128
Reply from 192.168.1.4: bytes=32 time=217ms TTL=128

Ping statistics for 192.168.1.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 217ms, Maximum = 218ms, Average = 217ms

C:\Users\HQ>
```

## Project: (Implement the Azure IaaS)

```
C:\Users\HQ>tracert 192.168.1.4

Tracing route to 192.168.1.4 over a maximum of 30 hops

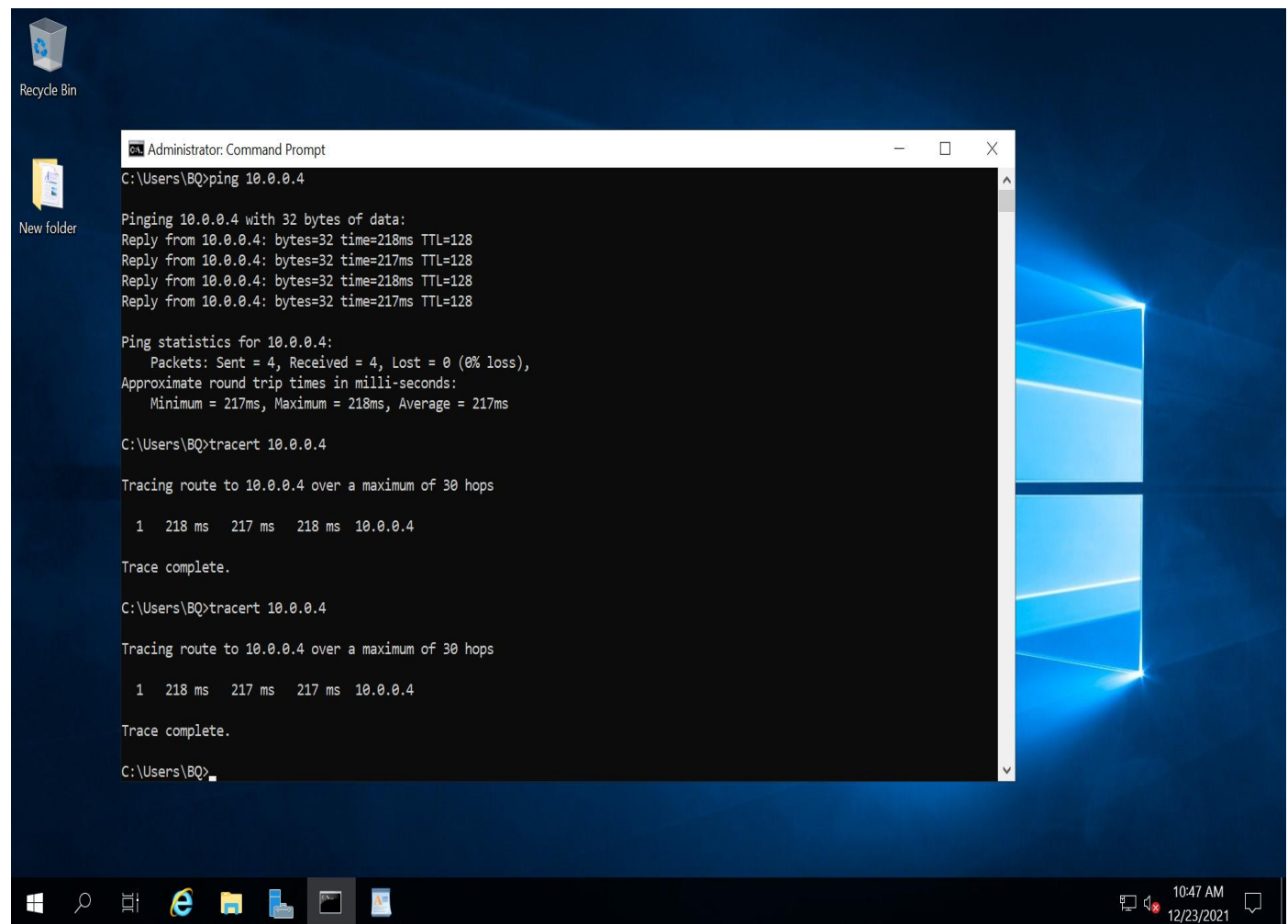
  1    218 ms    217 ms    217 ms    192.168.1.4

Trace complete.

C:\Users\HQ>
```

*Fig: Pinging & Trace complete HQ to Branch VM*

Pinging Headquarters DB\_VM from Branch APP\_VM:



```
Administrator: Command Prompt
C:\Users\BQ>ping 10.0.0.4

Pinging 10.0.0.4 with 32 bytes of data:
Reply from 10.0.0.4: bytes=32 time=218ms TTL=128
Reply from 10.0.0.4: bytes=32 time=217ms TTL=128
Reply from 10.0.0.4: bytes=32 time=218ms TTL=128
Reply from 10.0.0.4: bytes=32 time=217ms TTL=128

Ping statistics for 10.0.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 217ms, Maximum = 218ms, Average = 217ms

C:\Users\BQ>tracert 10.0.0.4

Tracing route to 10.0.0.4 over a maximum of 30 hops

  1    218 ms    217 ms    218 ms    10.0.0.4

Trace complete.

C:\Users\BQ>tracert 10.0.0.4

Tracing route to 10.0.0.4 over a maximum of 30 hops

  1    218 ms    217 ms    217 ms    10.0.0.4

Trace complete.

C:\Users\BQ>
```

## Project: (Implement the Azure IaaS)

Successfully done