



Demo: Create a virtual network

Author: Saurav Raghuvanshi

Aim: In this walkthrough, we will create a virtual network, deploy two virtual machines onto that virtual network and then configure them to allow one virtual machine to ping the other within that virtual network.

Some Useful Link:

- Azure free Tier account creation: <https://azure.microsoft.com/en-us/free/>
- Azure Portal: <https://portal.azure.com/#home>
- Service Categories: <https://azure.microsoft.com/services/>
- Designing a Solution: <https://docs.microsoft.com/azure/architecture/>
- Azure Quickstart Templates: <https://azure.microsoft.com/en-in/resources/templates/>

Introduction

What is Azure Virtual Machine?

- Azure Virtual Machines (VM) is a on-demand, scalable computing resource that Azure offers. Typically, you choose a VM when you need more control over the computing environment.
- Azure VM gives you the flexibility of virtualization without having to buy and maintain the physical hardware that runs it. However, you still need to maintain the VM by performing tasks, such as configuring, patching, and installing the software that runs on it.

What is Azure Virtual Network?

- Azure Virtual Network (VNet) is the fundamental building block for your private network in Azure.
- VNet enables many types of Azure resources, such as Azure Virtual Machines (VM), to securely communicate with each other, the internet, and on-premises networks.
- VNet is similar to a traditional network that you'd operate in your own data center, but brings with it additional benefits of Azure's infrastructure such as scale, availability, and isolation.

Instructions:

Task 1: Create a Virtual Network(VNet)

1. On the Azure portal menu or from the Home page, select **Create a resource**.



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2. Search for **Virtual Network** in the search bar and open it.

Create a resource ...



3. Click on Create



4. Fill out the **Create a Virtual Network** basic details form with the following information.
 - Resource group: Enter **testrg**
 - Name: Enter **vnet1**
 - Region: Select **East US**
5. Click on **Review + create** and then click on **Create**
6. Wait for few minutes for deployment to get complete

✓ Your deployment is complete

Deployment name: Microsoft.VirtualNetwork-202110211033... Start time: 10/21/2021, 10:39:09 AM
Subscription: Pay-As-You-Go Correlation ID: 52c5397c-c07c-4078-8be6-1aec7bcc80...
Resource group: task_339_connecting_vm_in_a_virtual_netw...

✓ Deployment details (Download)

^ Next steps

Go to resource

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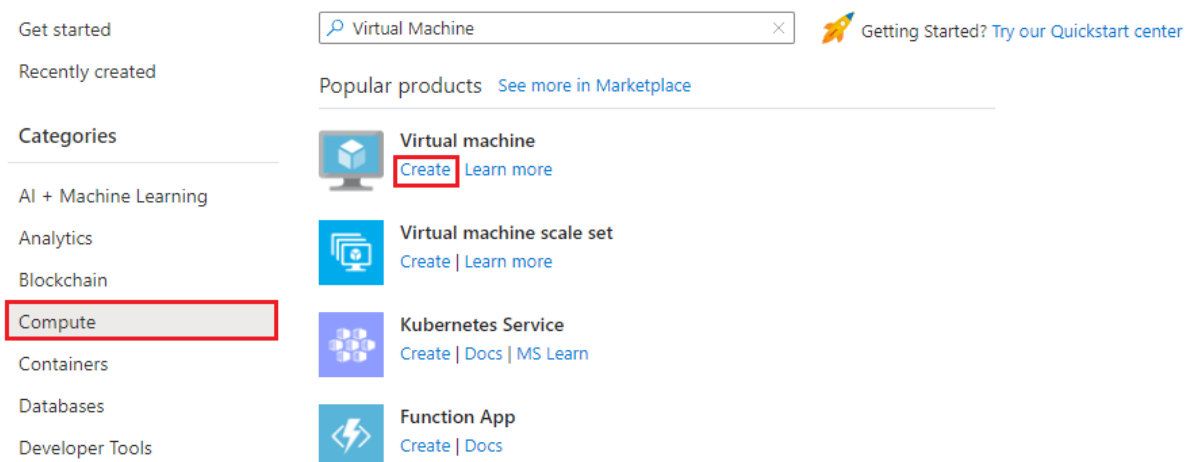
Task 2: Create two Virtual Machine in the same VNet

1. Go back to the home page and then click on **Create a resource**.



2. In the **Categories** select **Compute** and then Click on **Create** under **Virtual Machine**

Create a resource ...



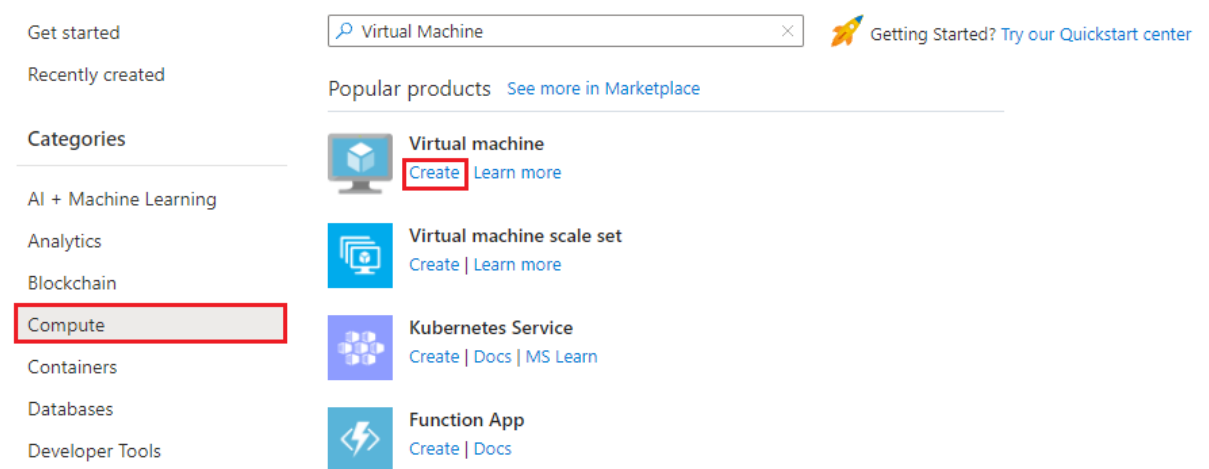
3. Fill out the **Create a Virtual Machine** basic details form with the following information
 - Resource group: Select **testrg**
 - Virtual Machine Name: Enter **vm1**
 - Image: Select **Windows Server 2019 Datacenter - Gen2**
 - Username: Enter **azureuser**
 - Password: Enter **Pa\$\$w0rd1234**
 - Confirm Password: Enter **Pa\$\$w0rd1234**
 - Leave the other option as default
4. Select the Networking tab. Make sure the virtual machine is placed in the **vnet1** virtual network. Review the default settings, but do not make any other changes.
5. Click on **Review + Create** and then click on **Create**
6. Go back to the home page and then click on **Create a resource**.



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7. In the **Categories** select **Compute** and then Click on **Create** under **Virtual Machine**

Create a resource ...



8. Fill out the **Create a Virtual Machine** basic details form with the following information
- Resource group: Select **testrg**
 - Virtual Machine Name: Enter **vm2**
 - Image: Select **Windows Server 2019 Datacenter - Gen2**
 - Username: Enter **azureuser**
 - Password: Enter **Pa\$\$w0rd1234**
 - Confirm Password: Enter **Pa\$\$w0rd1234**
 - Leave the other option as default

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- Click on the Networking tab and make sure it is in **vnet1** and Public IP is **vm2-ip**

Create a virtual machine

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution. [Learn more](#)

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network *	<div>vnet1</div> <div>Create new</div>
Subnet *	<div>default (10.0.0.0/24)</div> <div>Manage subnet configuration</div>
Public IP	<div>(new) vm2-ip</div> <div>Create new</div>
NIC network security group	<div><input type="radio"/> None</div> <div><input checked="" type="radio"/> Basic</div> <div><input type="radio"/> Advanced</div>

Review + create

< Previous

Next : Management >

- Click on **Review + create** and then click on **Create**
- Wait for the deployment to complete.

We'd love your feedback! →

Your deployment is complete



Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe...
Subscription: [Pay-As-You-Go](#)
Resource group: [task_339_connecting_vm_in_a_virtual_network](#)

Start time: 10/21/2021, 11:00:32 AM
Correlation ID: f5e6fec6-2de1-49b4-ae61-

Deployment details [\(Download\)](#)

Next steps

[Setup auto-shutdown](#) Recommended

[Monitor VM health, performance and network dependencies](#) Recommended

[Run a script inside the virtual machine](#) Recommended

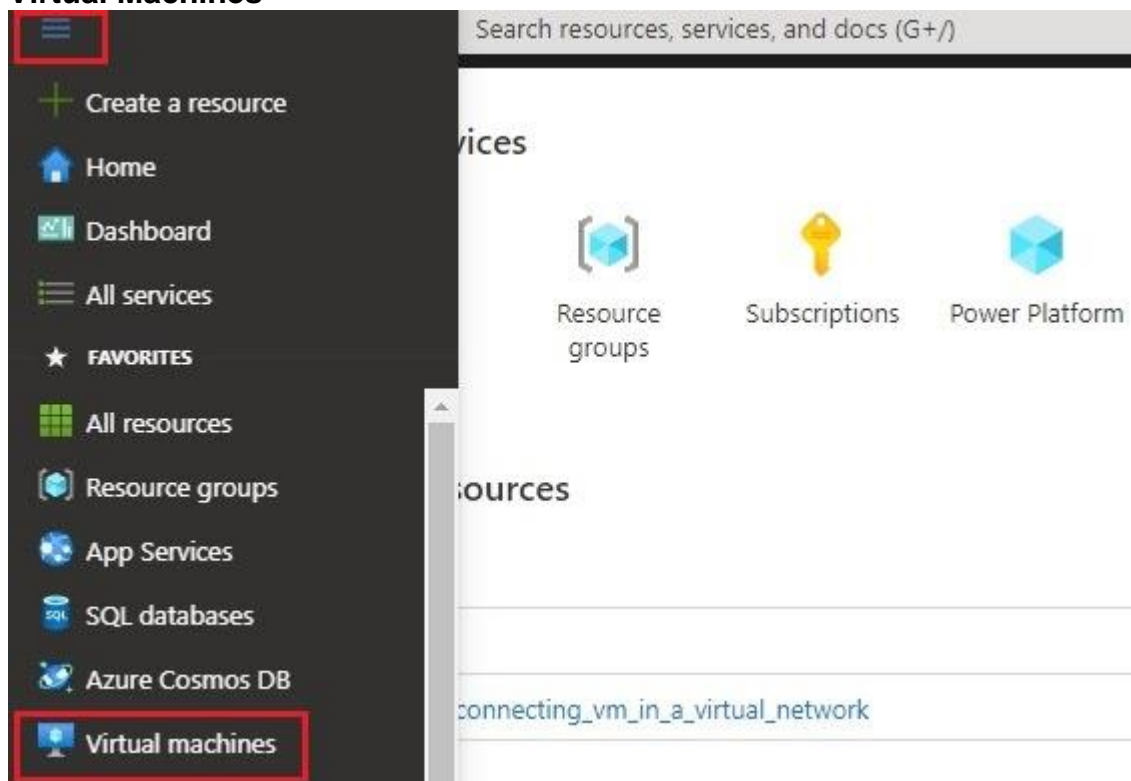
Go to resource

Create another VM



Task 3: Configure Network Security Group (NSG) to allow ICMP traffic

Author: Saurav Raghuvanshi








1. Go back to the home page and from the left hand menu bar open click on **Virtual Machines**



2. Open **vm1**



Virtual machines  

Default Directory

 Create  Switch to classic  Reservations  Manage view  Refresh  Export to CSV  Open query

Filter for any field... Subscription == all Resource group == all Location == all + Add filter

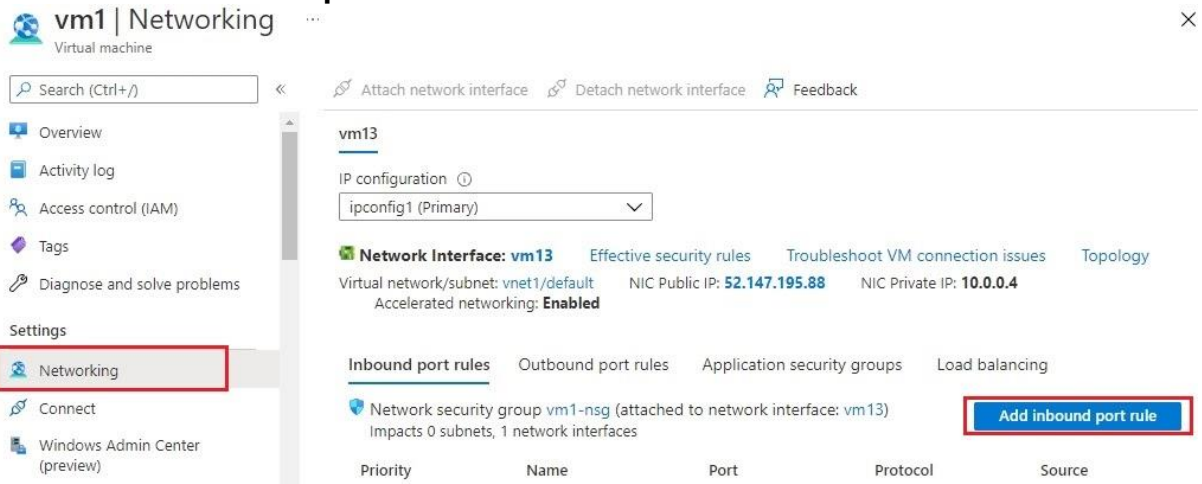
Showing 1 to 2 of 2 records.

<input type="checkbox"/> Name ↑↓	Subscription ↑↓	Resource group ↑↓	Location ↑↓	Status ↑↓
<input checked="" type="checkbox"/>  vm1	Pay-As-You-Go	task_339_connecting_...	East US	Running
<input type="checkbox"/>  vm2	Pay-As-You-Go	task_339_connecting_...	East US	Running

3. From the left hand menu click on **Networking** under **Settings**

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4. Click on **Add inbound port rule**



vm1 | Networking ...

Virtual machine

Search (Ctrl+/)

Attach network interface Detach network interface Feedback

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

Settings

Networking

Connect
Windows Admin Center (preview)

vm13

IP configuration ⓘ
ipconfig1 (Primary)

Network Interface: vm13 Effective security rules Troubleshoot VM connection issues Topology

Virtual network/subnet: vnet1/default NIC Public IP: 52.147.195.88 NIC Private IP: 10.0.0.4
Accelerated networking: Enabled

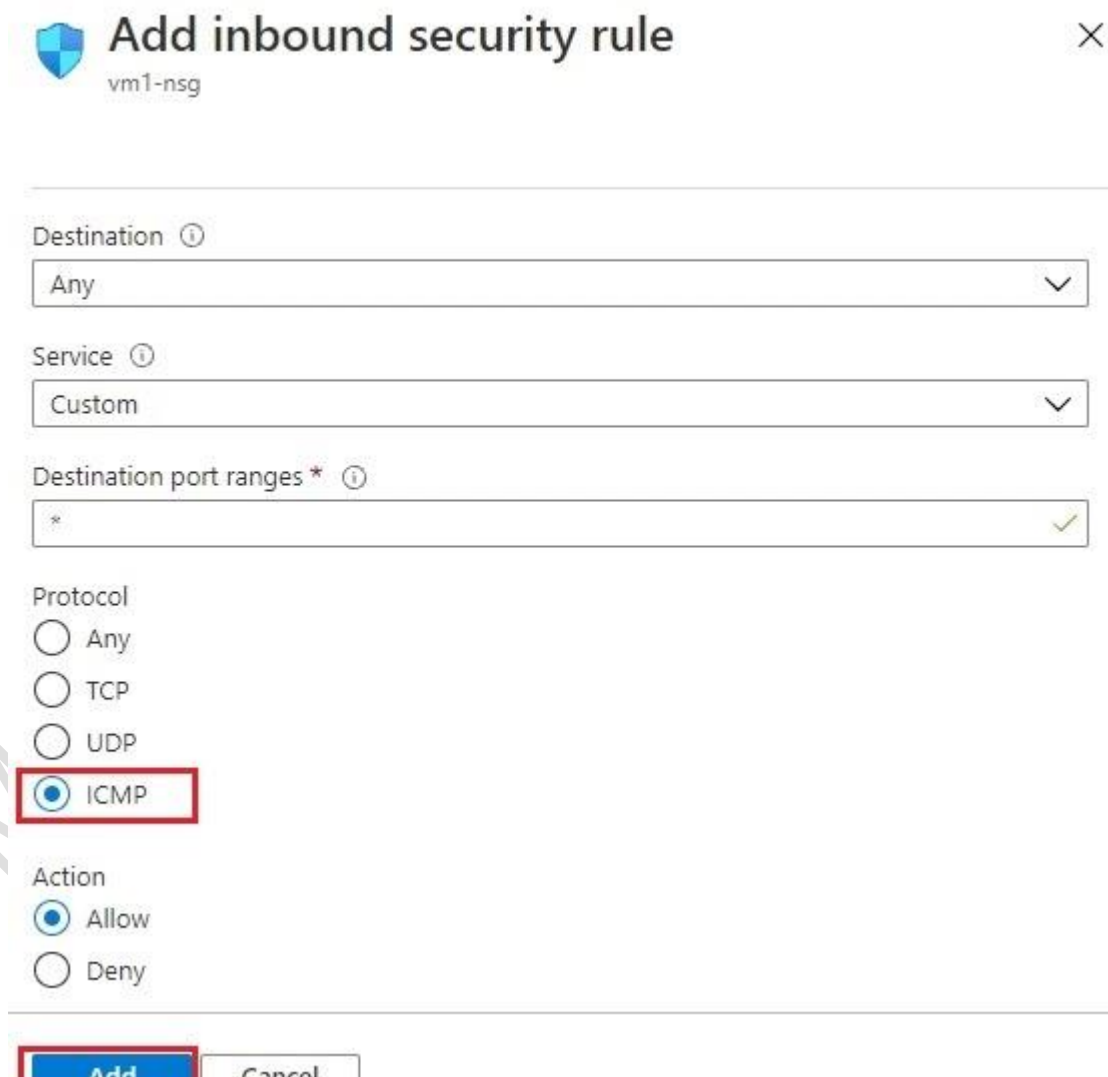
Inbound port rules Outbound port rules Application security groups Load balancing

Network security group vm1-nsg (attached to network interface: vm13)
Impacts 0 subnets, 1 network interfaces

Add inbound port rule

Priority	Name	Port	Protocol	Source
----------	------	------	----------	--------

5. In the Protocol select **ICMP** and leave other option as default and then click on **Add**



Add inbound security rule

vm1-nsg

Destination ⓘ
Any

Service ⓘ
Custom

Destination port ranges * ⓘ
*

Protocol

☐ Any

☐ TCP

☐ UDP

☒ ICMP

Action

☒ Allow

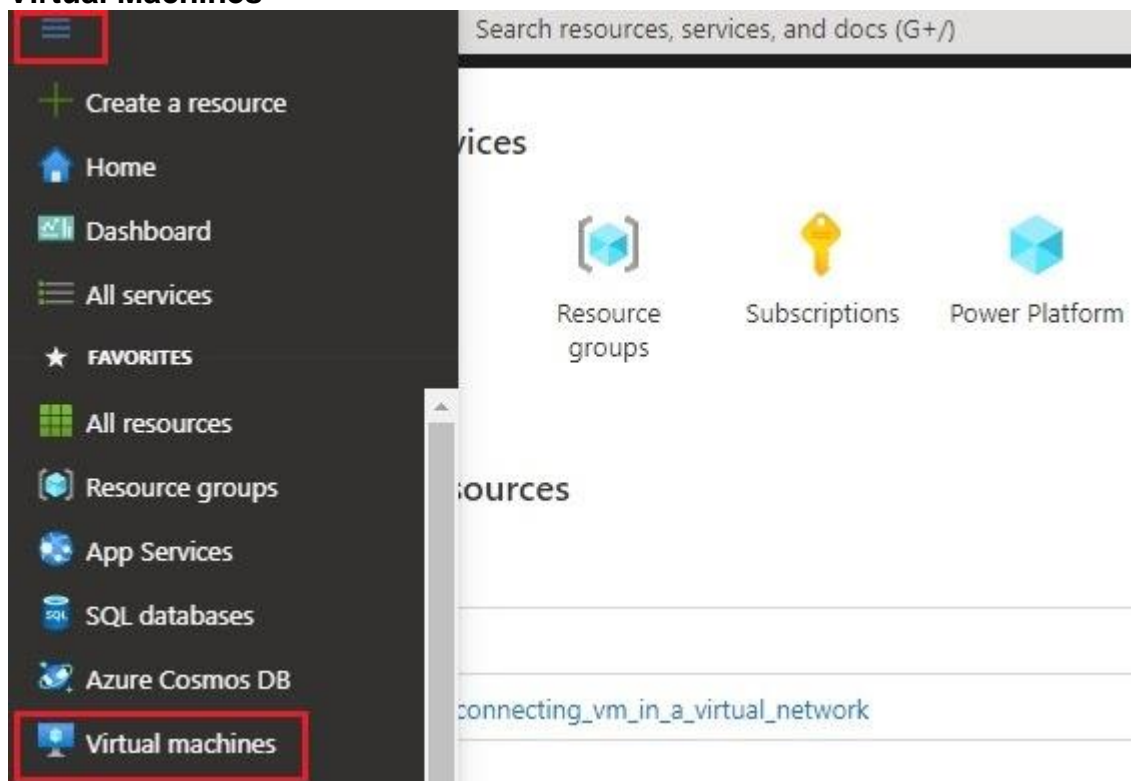
☐ Deny

Add Cancel



Task 4: Setup the operating system to answer to Ping/ICMP echo request

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1. Go back to the home page and from the left hand menu bar open click on **Virtual Machines**



2. Open **vm2**



Virtual machines  

Default Directory

[+ Create](#) [Switch to classic](#) [Reservations](#) [Manage view](#) [Refresh](#) [Export to CSV](#) [Open query](#)

Filter for any field... [Subscription == all](#) [Resource group == all](#) [Location == all](#) [Add filter](#)


Showing 1 to 2 of 2 records.

<input type="checkbox"/>	Name ↑↓	Subscription ↑↓	Resource group ↑↓	Location ↑↓	Status ↑↓
<input type="checkbox"/>	 vm1	Pay-As-You-Go	task_339_connecting_...	East US	Running
<input checked="" type="checkbox"/>	 vm2	Pay-As-You-Go	task_339_connecting_...	East US	Running

3. Click on **Connect** from the top and then select **RDP**

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- Click on **Download RDP File** and open once download is complete

 To improve security, enable just-in-time access on this VM. →

RDP SSH BASTION

Connect with RDP

To connect to your virtual machine via RDP, select an IP address, optionally change the port number, and download the RDP file.

IP address *

Public IP address (52.152.137.20) ▼

Port number *

3389

Download RDP File

- Click on **Connect** and then in the username enter **azureuser** and in password enter **Pa\$\$w0rd1234** and then click on **Ok**
- Click on **Yes** to allow certificate
- Click on **Start** button and then search for **Windows Defender Firewall with Advanced Security**

Apps


 Windows Defender Firewall with Advanced Security

 Windows PowerShell

 Windows PowerShell ISE

Settings

 Windows Update settings

 Check for updates

 Windows Defender settings

 Advanced Windows Update options

- Click on **Inbound Rules**

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9. Enable File and Printer Sharing(Echo Request – ICMPv4-In) and File and Printer Sharing(Echo Request ICMPv6-In)

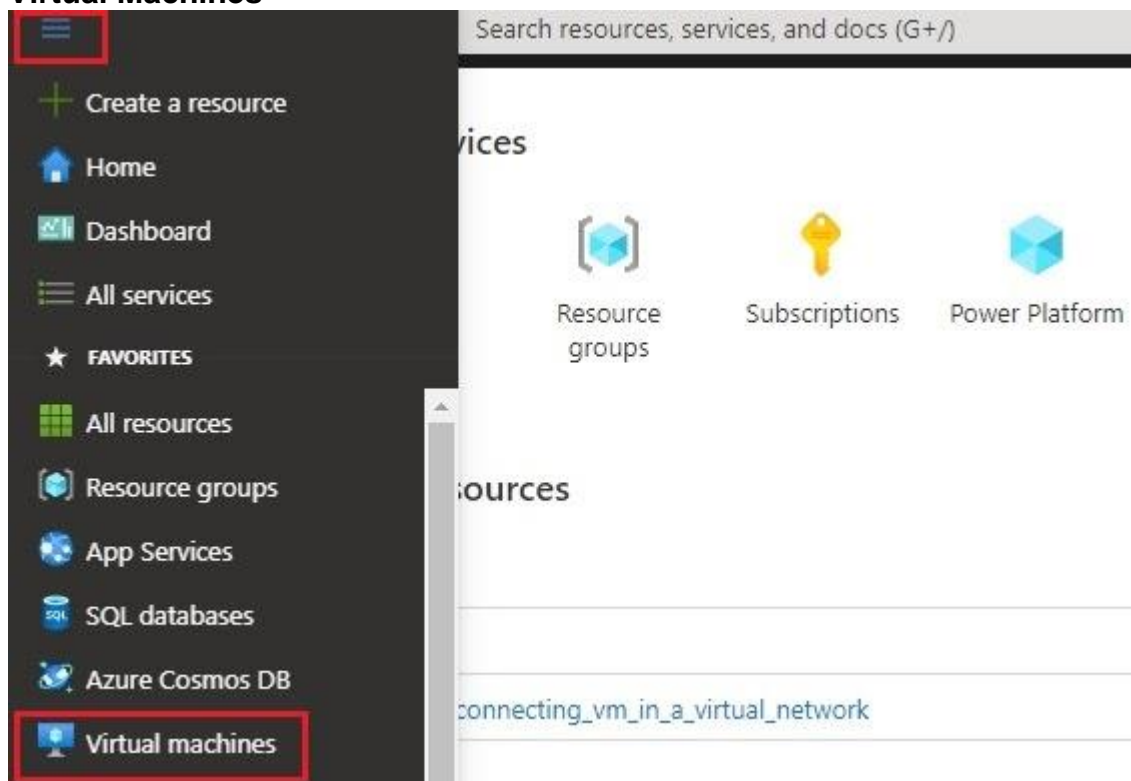
Connection Security Rules	✓ Core Networking - Multicast Listener Rep...	Core Networking	All	Yes	Allc
Monitoring	✓ Core Networking - Neighbor Discovery A...	Core Networking	All	Yes	Allc
	✓ Core Networking - Neighbor Discovery S...	Core Networking	All	Yes	Allc
	✓ Core Networking - Packet Too Big (ICMP...	Core Networking	All	Yes	Allc
	✓ Core Networking - Parameter Problem (I...	Core Networking	All	Yes	Allc
	✓ Core Networking - Router Advertisement...	Core Networking	All	Yes	Allc
	✓ Core Networking - Router Solicitation (IC...	Core Networking	All	Yes	Allc
	✓ Core Networking - Teredo (UDP-In)	Core Networking	All	Yes	Allc
	✓ Core Networking - Time Exceeded (ICMP...	Core Networking	All	Yes	Allc
	✓ Cortana	Cortana	Domai...	Yes	Allc
	✓ Cortana	Cortana	Domai...	Yes	Allc
	✓ Delivery Optimization (TCP-In)	Delivery Optimization	All	Yes	Allc
	✓ Delivery Optimization (UDP-In)	Delivery Optimization	All	Yes	Allc
	✓ Desktop App Web Viewer	Desktop App Web Viewer	All	Yes	Allc
	✓ Desktop App Web Viewer	Desktop App Web Viewer	All	Yes	Allc
	✓ DIAL protocol server (HTTP-In)	DIAL protocol server	Domain	Yes	Allc
	✓ DIAL protocol server (HTTP-In)	DIAL protocol server	Private	Yes	Allc
	Distributed Transaction Coordinator (RPC)	Distributed Transaction Coo...	All	No	Allc
	Distributed Transaction Coordinator (RP...	Distributed Transaction Coo...	All	No	Allc
	Distributed Transaction Coordinator (TCP...	Distributed Transaction Coo...	All	No	Allc
	✓ File and Printer Sharing (Echo Request - I...	File and Printer Sharing	All	Yes	Allc
	✓ File and Printer Sharing (Echo Request - I...	File and Printer Sharing	All	Yes	Allc
	File and Printer Sharing (LLMNR-UDP-In)	File and Printer Sharing	All	No	Allc
	File and Printer Sharing (NB-Datagram-In)	File and Printer Sharing	All	No	Allc
	File and Printer Sharing (NB-Name-In)	File and Printer Sharing	All	No	Allc
	File and Printer Sharing (NB-Session-In)	File and Printer Sharing	All	No	Allc
	File and Printer Sharing (SMB-In)	File and Printer Sharing	All	No	Allc
	File and Printer Sharing (Spooler Service -...	File and Printer Sharing	All	No	Allc

10. Now close the vm2 connect

Task 6: Test the Connection

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2. Open **vm1**

Virtual machines 🔗 ...

Default Directory

+ Create ▾ ↺ Switch to classic ⌚ Reservations ▾ ⚙ Manage view ▾ ↻ Refresh ⬇ Export to CSV 🔗 Open query |

Filter for any field... Subscription == all Resource group == all × Location == all × + Add filter


Showing 1 to 2 of 2 records.

<input type="checkbox"/> Name ↑↓	Subscription ↑↓	Resource group ↑↓	Location ↑↓	Status ↑↓
<input checked="" type="checkbox"/> vm1	Pay-As-You-Go	task_339_connecting_...	East US	Running
<input type="checkbox"/> vm2	Pay-As-You-Go	task_339_connecting_...	East US	Running

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IP address *

Public IP address (52.147.195.88) ✓

Port number *

3389

Download RDP File

- Click on **Connect** and then in the username enter **azureuser** and in password enter **Pa\$\$w0rd1234** and then click on **Ok**
- Click on **Yes** to allow certificate
- Click on **Start** button and open **Powershell**
- In the powershell enter the below command
 - ping vm2**
- You can see that all the packet is send by vm1 and received by vm2

```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\azureuser> ping vm2

Pinging vm2.u1be5lhyvf0upng3i5qvs1himd.bx.internal.cloudapp.net [10.0.0.5] with 32 bytes of data:
Reply from 10.0.0.5: bytes=32 time=2ms TTL=128
Reply from 10.0.0.5: bytes=32 time=1ms TTL=128
Reply from 10.0.0.5: bytes=32 time=1ms TTL=128
Reply from 10.0.0.5: bytes=32 time=1ms TTL=128

Ping statistics for 10.0.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms
PS C:\Users\azureuser>
```

Congratulation you just pinged vm2 from vm1 😊😊