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Department of Software Engineering

Bisma Saeed – 2280108

BSSE – 7A

Lab: 08

Administer Virtual Machines

+ Task 1: Deploy zone-resilient Azure virtual machines by using the Azure portal.
+ Task 2: Manage compute and storage scaling for virtual machines.
+ Task 3: Create and configure Azure Virtual Machine Scale Sets.
+ Task 4: Scale Azure Virtual Machine Scale Sets.
+ Task 5: Create a virtual machine using Azure PowerShell (optional 1).
+ Task 6: Create a virtual machine using the CLI (optional 2).

Task 1: Deploy zone-resilient Azure virtual machines by using the Azure portal

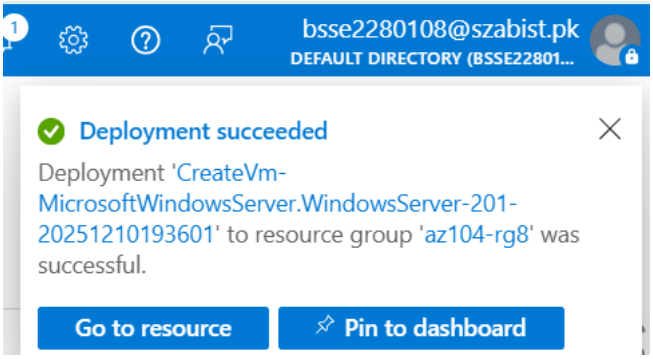
1. Sign in to the Azure portal - `https://portal.azure.com`.

2. Search for and select `Virtual machines`, on the **Virtual machines** blade, click **+ Create**, and then select in the drop-down **Azure virtual machine**. Notice your other choices.

3. Click **Next : Advanced >**, take the defaults, then click **Review + Create**.

4. After the validation, click **Create**.

5. Wait for the deployment to complete, then select **Go to resource**.

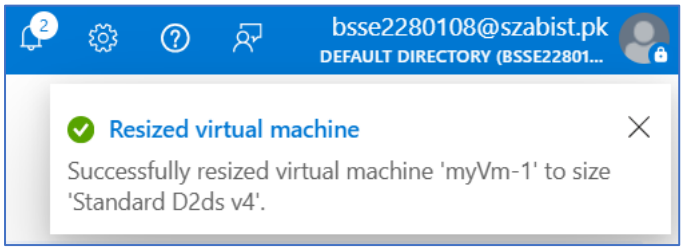


Task 2: Manage compute and storage scaling for virtual machines

In this task, you will scale a virtual machine by adjusting its size to a different SKU. Azure provides flexibility in VM size selection so that you can adjust a VM for periods of time if it needs more (or less) compute and memory allocated. This concept is extended to disks, where you can modify the performance of the disk, or increase the allocated capacity.

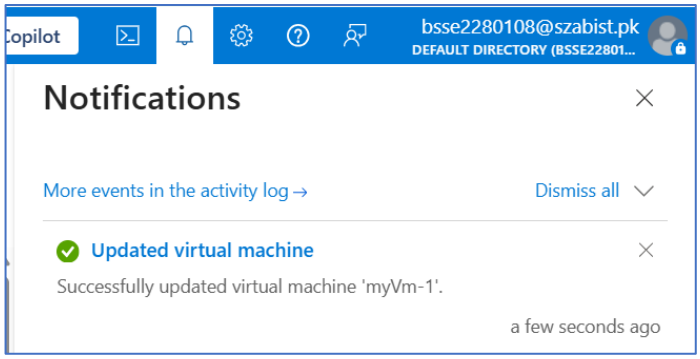
1. On the **az104-vm1** virtual machine, in the **Availability + scale** blade, select **Size**.

2. Set the virtual machine size to **D2ds_v4** and click **Resize**. When prompted, confirm the change.

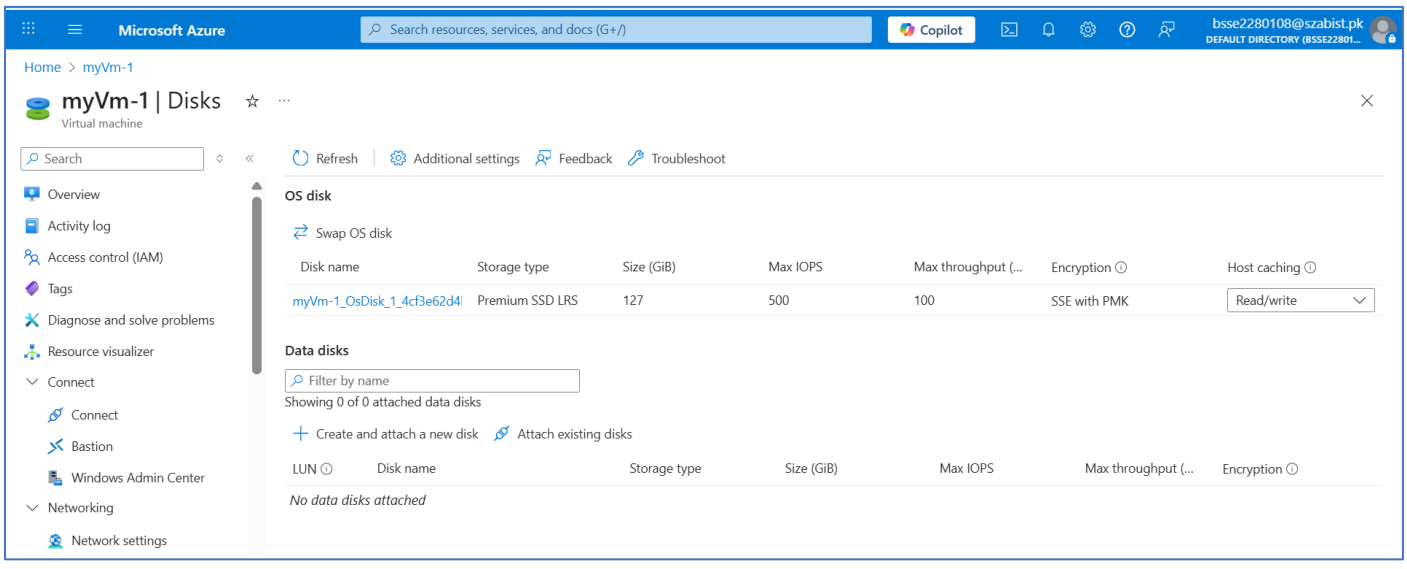


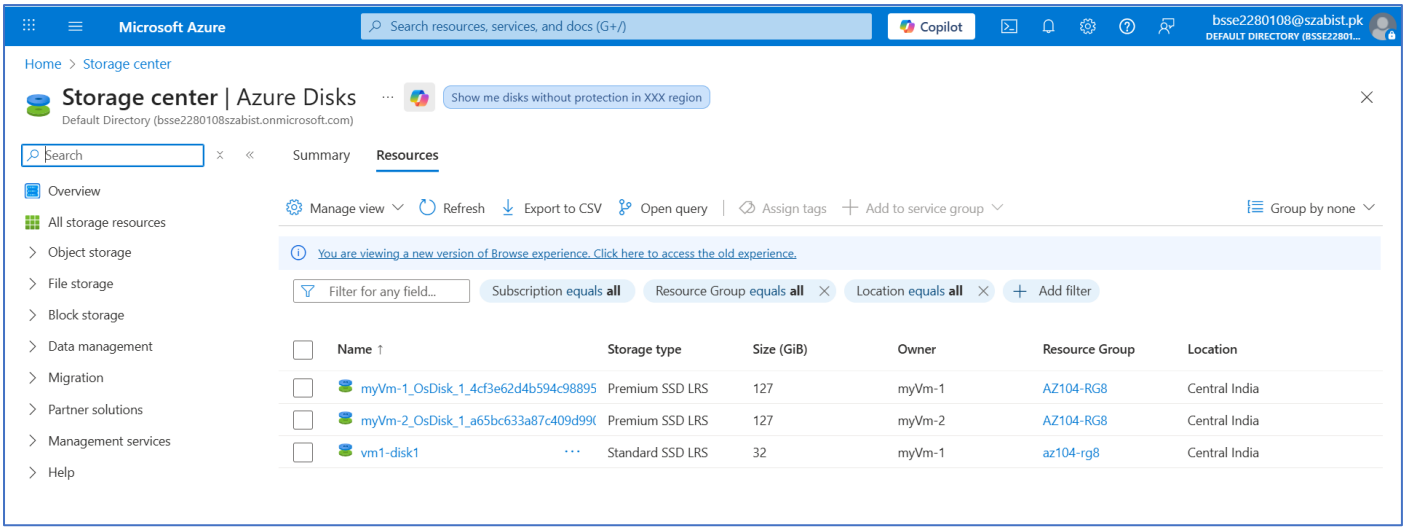
3. In the **Settings** area, select **Disks**.

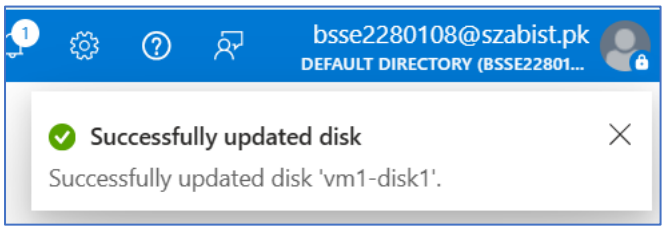
4. Under **Data disks** select **+ Create and attach a new disk**. Configure the settings (leave other settings at their default values). Click **Apply**.

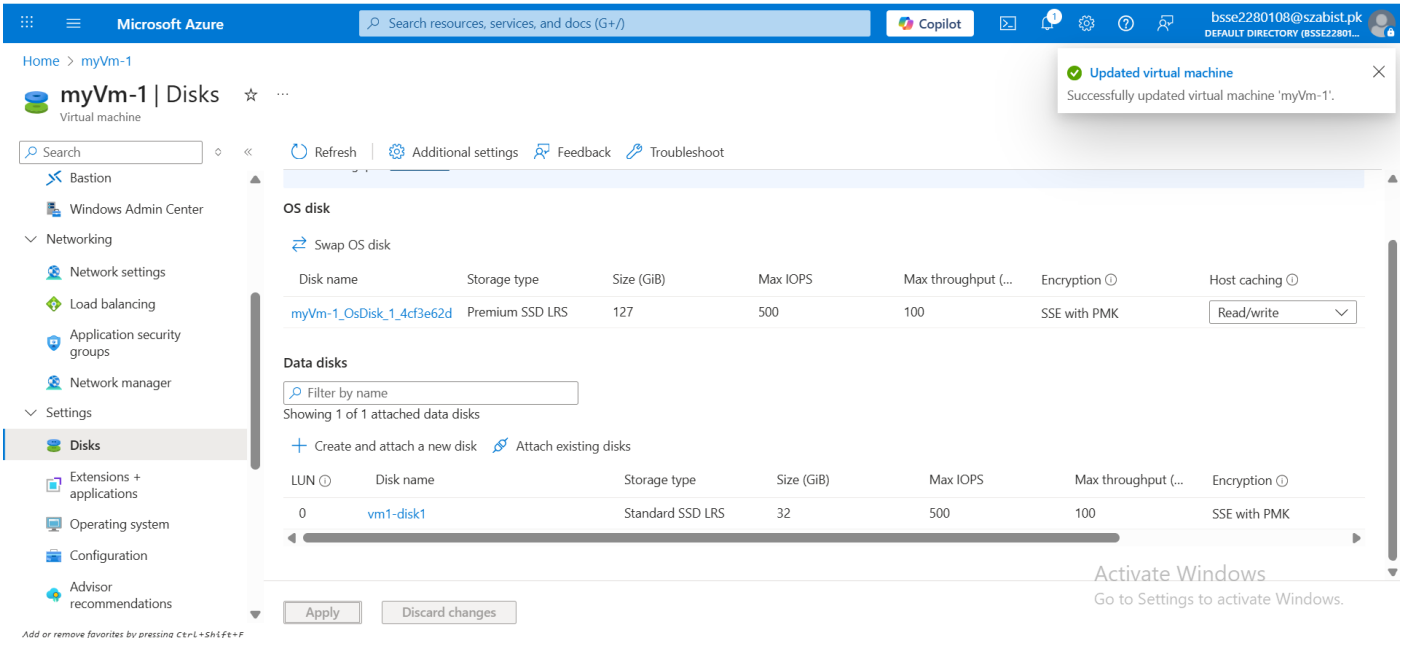


Detached

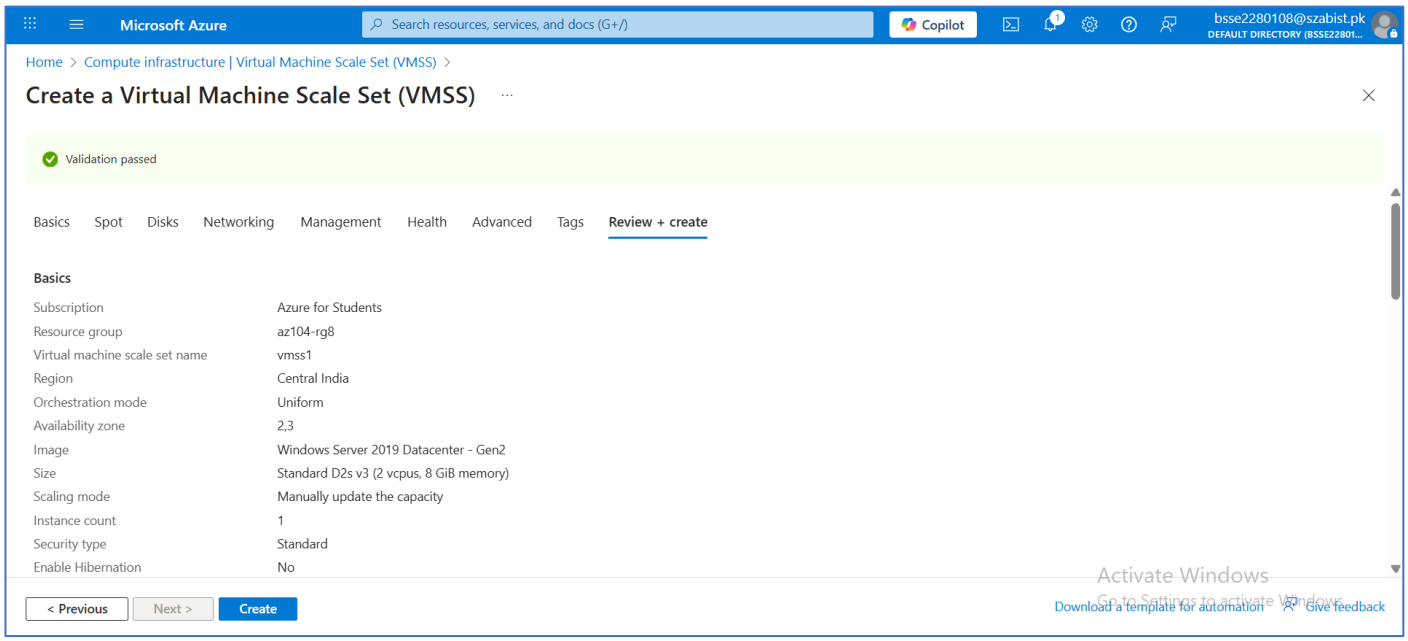


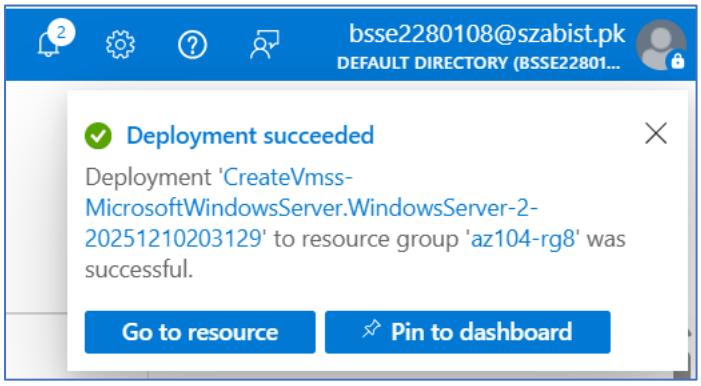

Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
bsse2280108@szabist.pk
DEFAULT DIRECTORY (BSSE22801...
Home > Storage center
Storage center | Azure Disks
Default Directory (bsse2280108szabist.onmicrosoft.com)
Show me disks without protection in XXX region
Search
Summary
Resources
Overview
All storage resources
Object storage
File storage
Block storage
Data management
Migration
Partner solutions
Management services
Help
Manage view
Refresh
Export to CSV
Open query
Assign tags
Add to service group
Group by none
You are viewing a new version of Browse experience. Click here to access the old experience.
Filter for any field...
Subscription equals all
Resource Group equals all
Location equals all
Add filter
Name
Storage type
Size (GiB)
Owner
Resource Group
Location
myVm-1_OsDisk_1_4cf3e62d4b594c98895
Premium SSD LRS
127
myVm-1
AZ104-RG8
Central India
myVm-2_OsDisk_1_a65bc633a87c409d99(
Premium SSD LRS
127
myVm-2
AZ104-RG8
Central India
vm1-disk1
Standard SSD LRS
32
myVm-1
az104-rg8
Central India


bsse2280108@szabist.pk
DEFAULT DIRECTORY (BSSE22801...
Successfully updated disk
Successfully updated disk 'vm1-disk1'.

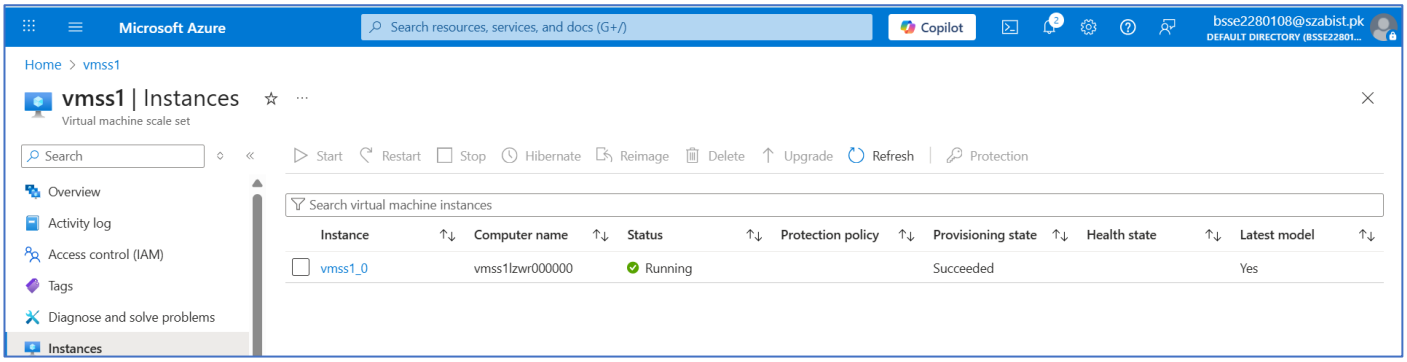

Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
bsse2280108@szabist.pk
DEFAULT DIRECTORY (BSSE22801...
Home > myVm-1
myVm-1 | Disks
Virtual machine
Updated virtual machine
Successfully updated virtual machine 'myVm-1'.
Search
Refresh
Additional settings
Feedback
Troubleshoot
Bastion
Windows Admin Center
Networking
Network settings
Load balancing
Application security groups
Network manager
Settings
Disks
Extensions + applications
Operating system
Configuration
Advisor recommendations
OS disk
Swap OS disk
Disk name
Storage type
Size (GiB)
Max IOPS
Max throughput (...
Encryption
Host caching
myVm-1_OsDisk_1_4cf3e62d
Premium SSD LRS
127
500
100
SSE with PMK
Read/write
Data disks
Filter by name
Showing 1 of 1 attached data disks
Create and attach a new disk
Attach existing disks
LUN
Disk name
Storage type
Size (GiB)
Max IOPS
Max throughput (...
Encryption
0
vm1-disk1
Standard SSD LRS
32
500
100
SSE with PMK
Apply
Discard changes
Activate Windows
Go to Settings to activate Windows.

Task 3: Create and configure Azure Virtual Machine Scale Sets



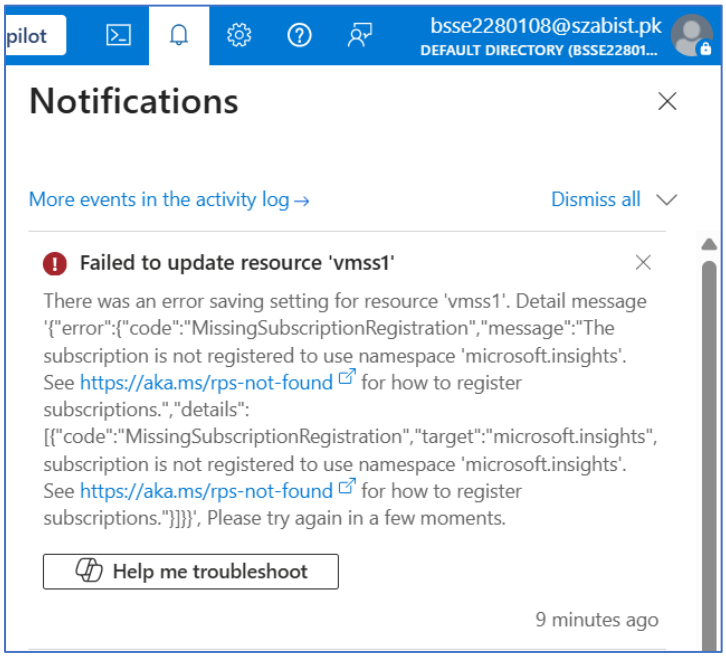


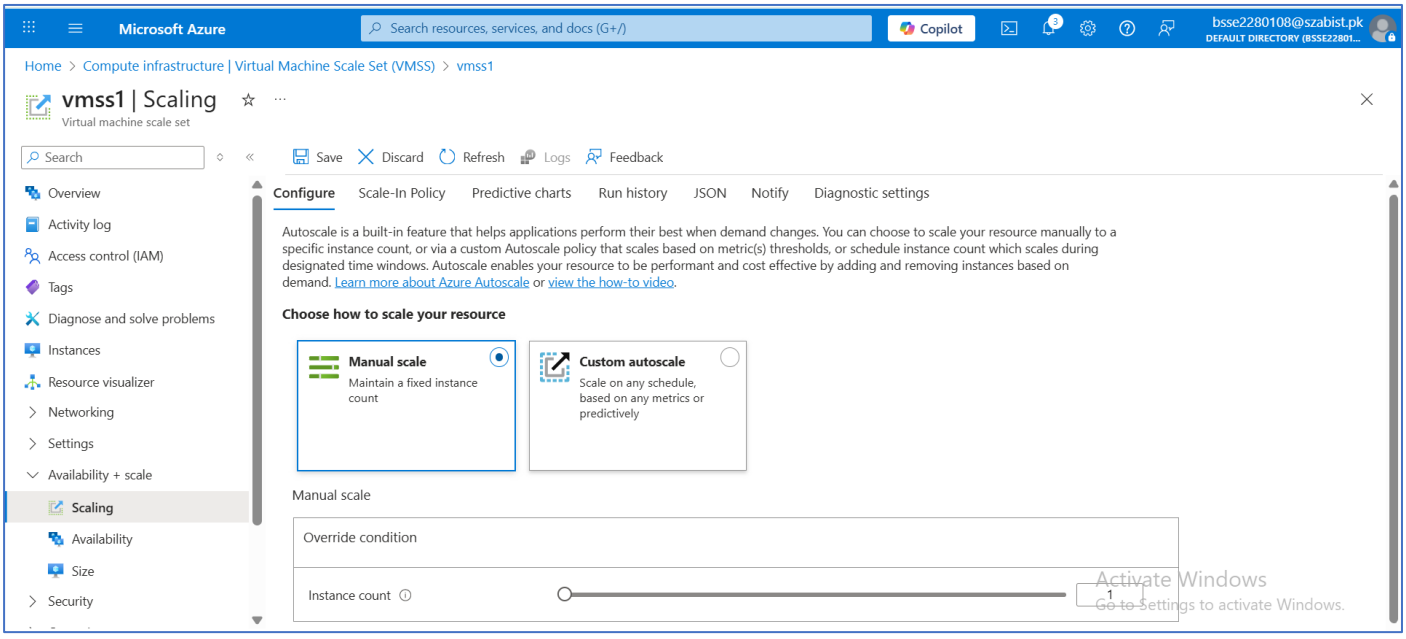
- I reduced the instance count to 1 to avoid the public IP quota issue.
- VMSS now only creates as many VM instances as the instance count you specified.
- In my case → 1 instance.

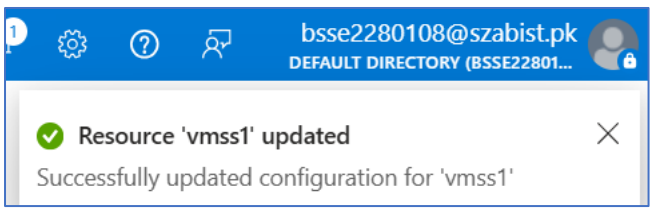


Task 4: Scale Azure Virtual Machine Scale Sets

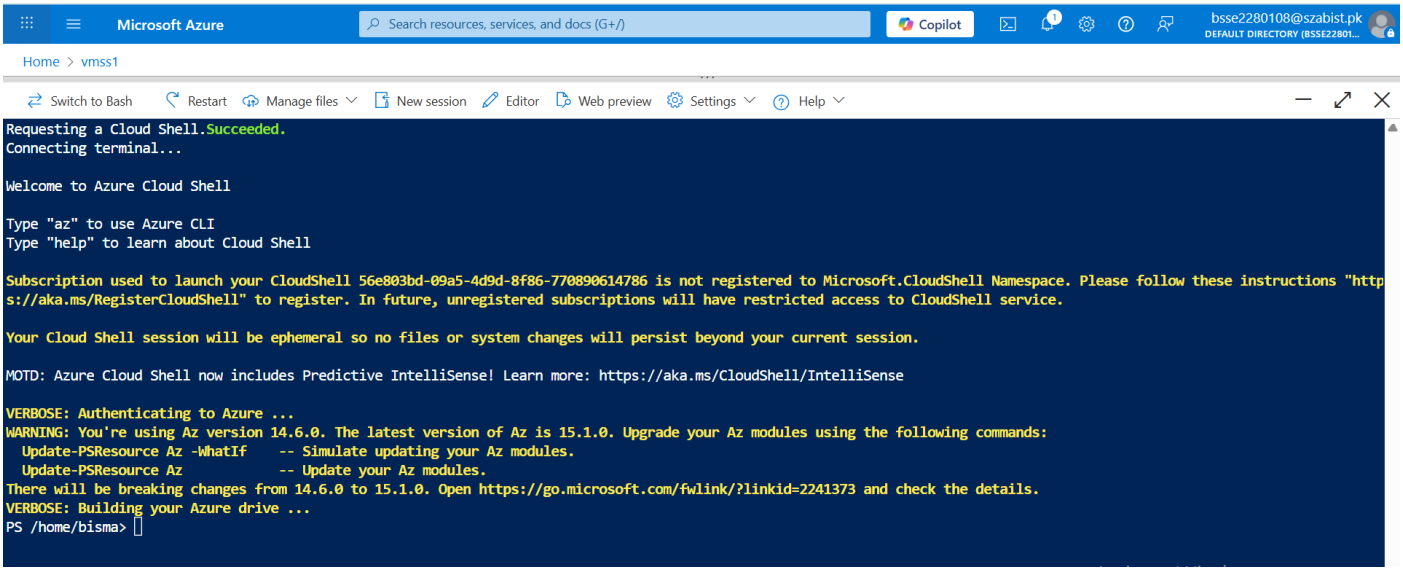
You got the error because your Azure for Students subscription cannot register the Microsoft.Insights provider, which is required for Custom Autoscale; using Manual scale avoids this limitation.

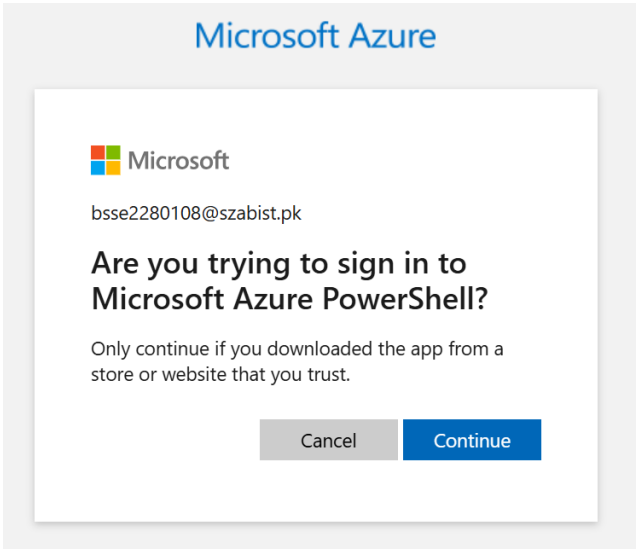


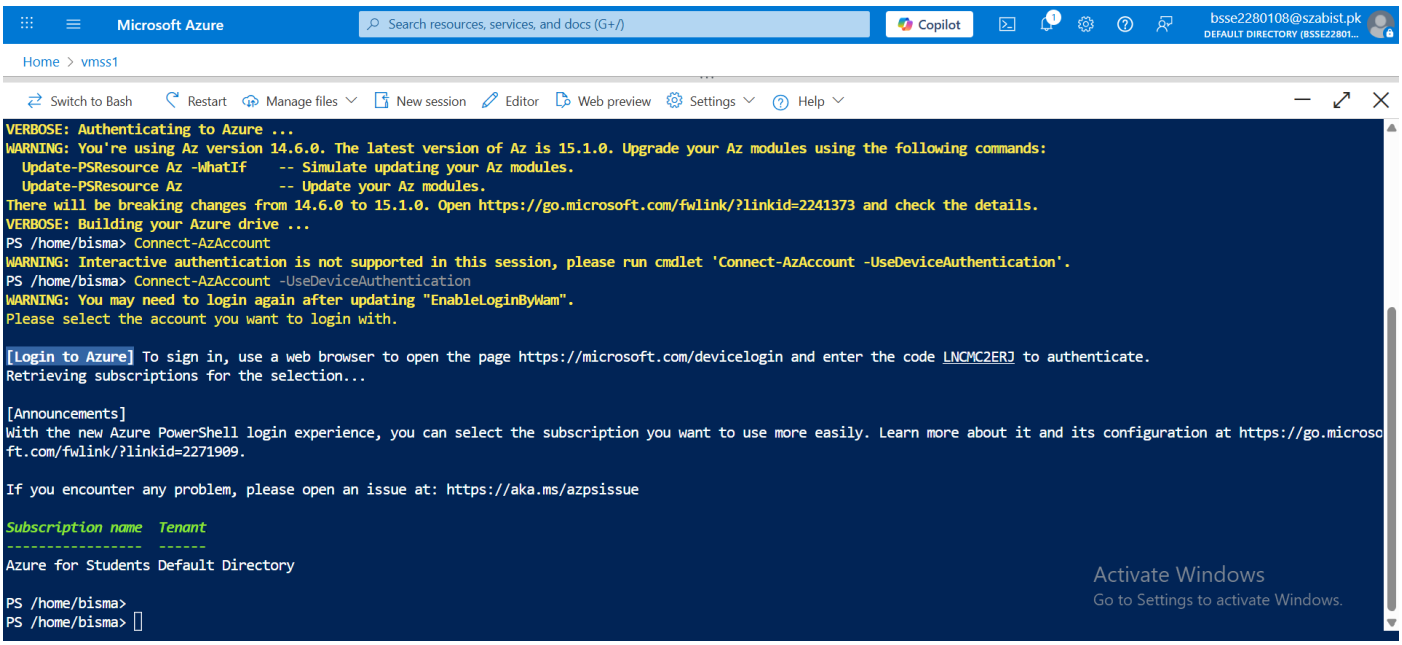




Task 5: Create a virtual machine using Azure PowerShell (option1)







```
PS /home/bisma> New-AzResourceGroup -Name "az104-rg-new" -Location "Central India"

ResourceGroupName : az104-rg-new
Location          : centralindia
ProvisioningState : Succeeded
Tags              :
ResourceId        : /subscriptions/56e803bd-09a5-4d9d-8f86-770890614786/resourceGroups/az104-rg-new

PS /home/bisma>
```

```
PS /home/bisma> New-AzVm `
>> -ResourceGroupName "az104-rg8" `
>> -Name "myPSVM" `
>> -Location "Central India" `
>> -Image "Win2019Datacenter" `
>> -Zone "2" `
>> -Size "Standard_D2s_v3" `
>> -Credential (Get-Credential)

PowerShell credential request
Enter your credentials.
User: bisma
Password for user bisma: *********
```

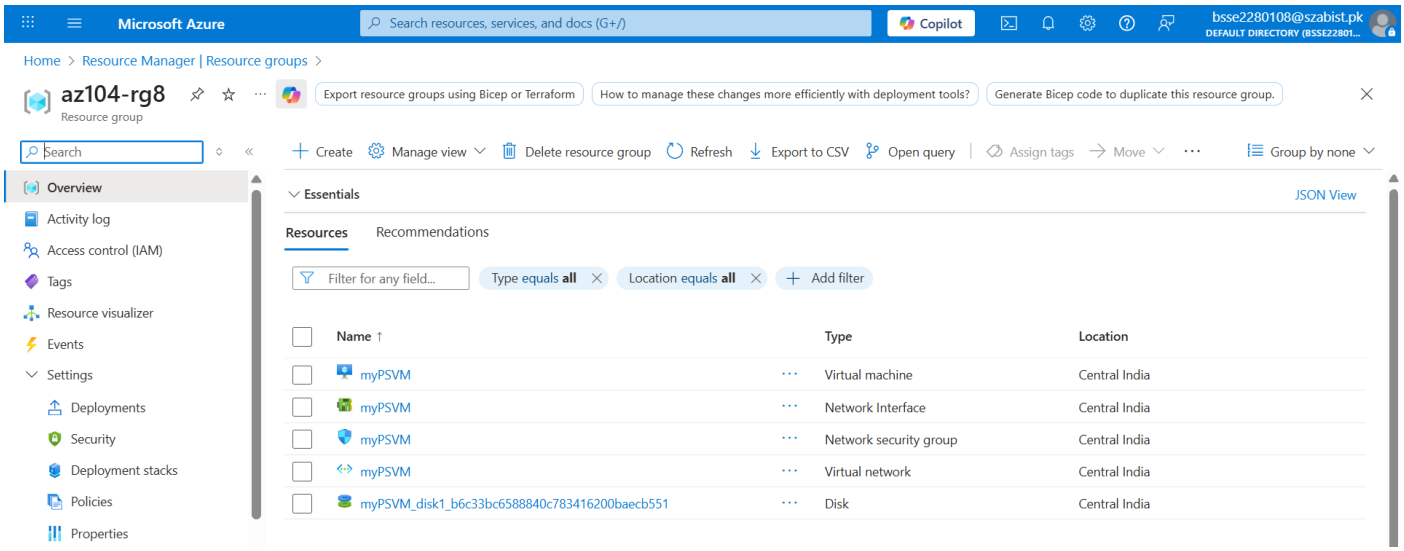
```
PS /home/bisma>
PS /home/bisma>
PS /home/bisma> New-AzVm `
>> -ResourceGroupName 'az104-rg8' `
>> -Name 'myPSVM' `
>> -Location 'Central India' `
>> -Image 'Win2019Datacenter' `
>> -Zone '1' `
>> -Size 'Standard_D2s_v3' `
>> -Credential (Get-Credential)

PowerShell credential request
Enter your credentials.
User: bisma
Password for user bisma: **********
```

```
WARNING: Upcoming breaking changes in the cmdlet 'New-AzVM' :
The default VM size will change from 'Standard_D2s_v3' to 'Standard_D2s_v5'.
- This change will take effect on '11/1/2025'
- The change is expected to take effect in Az version : '15.0.0'
- The change is expected to take effect in Az.Compute version : '11.0.0'
Note : Go to https://aka.ms/azps-changewarnings for steps to suppress this breaking change warning, and other
hell.
You can reference https://aka.ms/findImagePS on how to find VM Images using PowerShell.


ResourceGroupName        : az104-rg8
Id                       : /subscriptions/56e803bd-09a5-4d9d-8f86-770890614786/resourceGroups/az104-rg8/provi
VmId                     : 3ced90f4-4f8d-4540-86eb-7f50cca4e7a1
Name                     : myPSVM
Type                     : Microsoft.Compute/virtualMachines
Location                 : centralindia
Tags                     : {}
HardwareProfile          : {VmSize}
NetworkProfile           : {NetworkInterfaces}
OSProfile                : {ComputerName, AdminUsername, WindowsConfiguration, Secrets, AllowExtensionOperati
ProvisioningState        : Succeeded
StorageProfile           : {ImageReference, OsDisk, DataDisks, AlignRegionalDisksToVMZone}
Zones                    : {2}
FullyQualifiedDomainName : mypsvm-a00923.Central India.cloudapp.azure.com
TimeCreated              : 12/10/2025 4:54:40 PM
Etag                     : "2"


PS /home/bisma>
```

```
PS /home/bisma> Get-AzVM -ResourceGroupName "az104-rg8" -Status

ResourceGroupName   Name     Location          VmSize  OsType    NIC Provisioning Zone PowerState MaintenanceAllowed
-----------------   ----     --------          ------  ------    --- ------------ ---- ---------- ------------------
az104-rg8         myPSVM centralindia Standard_D2s_v3 Windows myPSVM    Succeeded    2 VM running

PS /home/bisma>
```

```
PS /home/bisma> Stop-AzVM -ResourceGroupName "az104-rg8" -Name "myPSVM" -Force

OperationId : 16f124a0-8c14-4e37-927b-7f8ff4393d69
Status      : Succeeded
StartTime   : 12/10/2025 4:56:23 PM
EndTime     : 12/10/2025 4:57:05 PM
Error       :
```

```
PS /home/bisma>
PS /home/bisma> Get-AzVM -ResourceGroupName "az104-rg8" -Status

ResourceGroupName   Name     Location          VmSize  OsType    NIC Provisioning Zone     PowerState MaintenanceAllowed
-----------------   ----     --------          ------  ------    --- ------------ ----     ---------- ------------------
az104-rg8         myPSVM centralindia Standard_D2s_v3 Windows myPSVM    Succeeded    2 VM deallocated
```



Key takeaways

Congratulations on completing the lab. Here are the main takeaways for this lab.

+ Azure virtual machines are on-demand, scalable computing resources.
+ Azure virtual machines provide both vertical and horizontal scaling options.
+ Configuring Azure virtual machines includes choosing an operating system, size, storage and networking settings.
+ Azure Virtual Machine Scale Sets let you create and manage a group of load balanced VMs.
+ The virtual machines in a Virtual Machine Scale Set are created from the same image and configuration.
+ In a Virtual Machine Scale Set the number of VM instances can automatically increase or decrease in response to demand or a defined schedule.