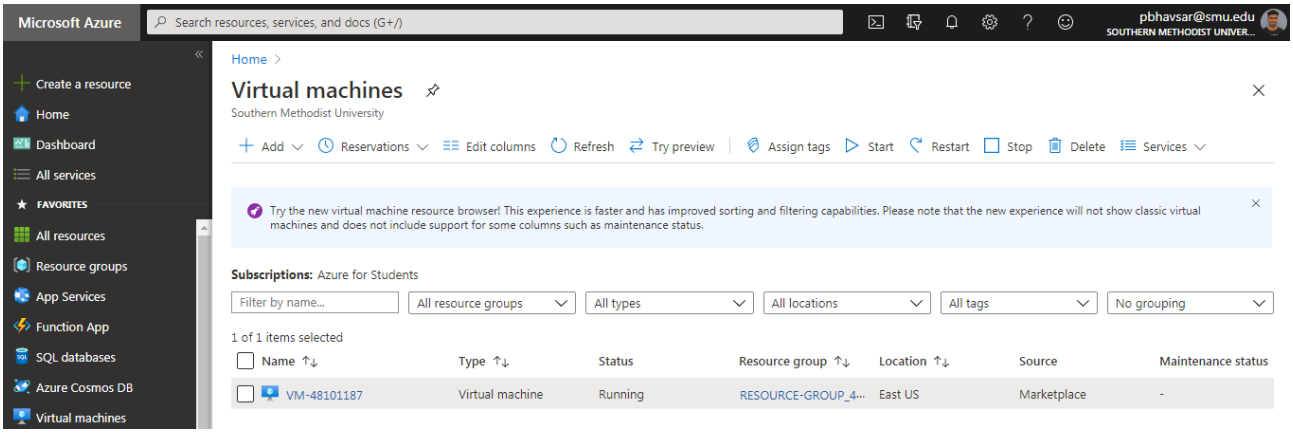
Lab: Working with Azure Managed Disks

In the previous Lab, we have seen how to configure Resource Groups along with the Virtual Networks, Subnets, Security Groups. We then deployed a Azure Virtual Machine (HTTP Web Server).

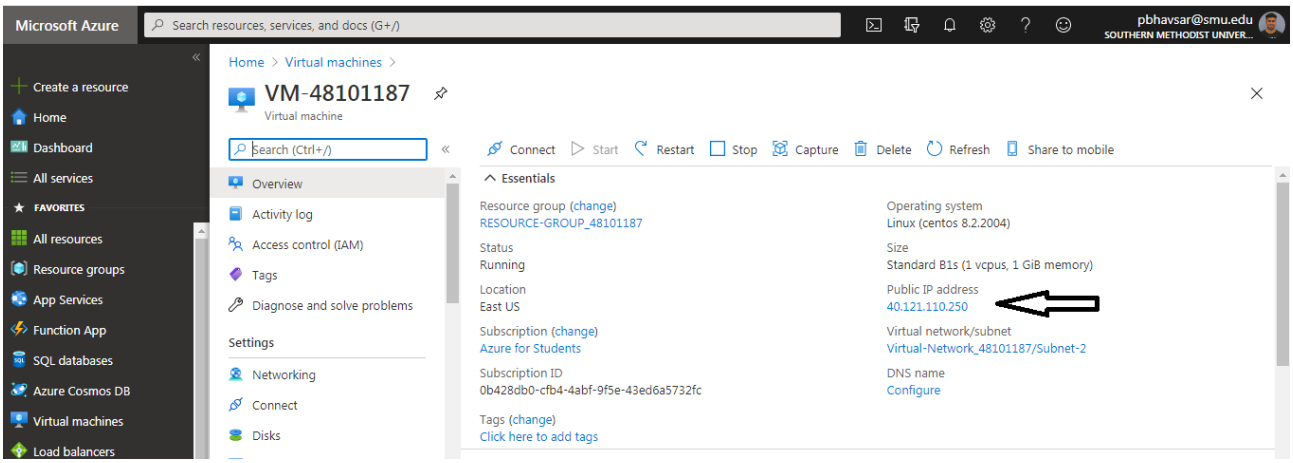
In this Lab, we'll focus on how to add additional Azure Managed Disks to an existing Virtual Machine (VM), Azure Managed Disk Snapshots and Restore processes.

Task 1: Inspect the Azure Environment.

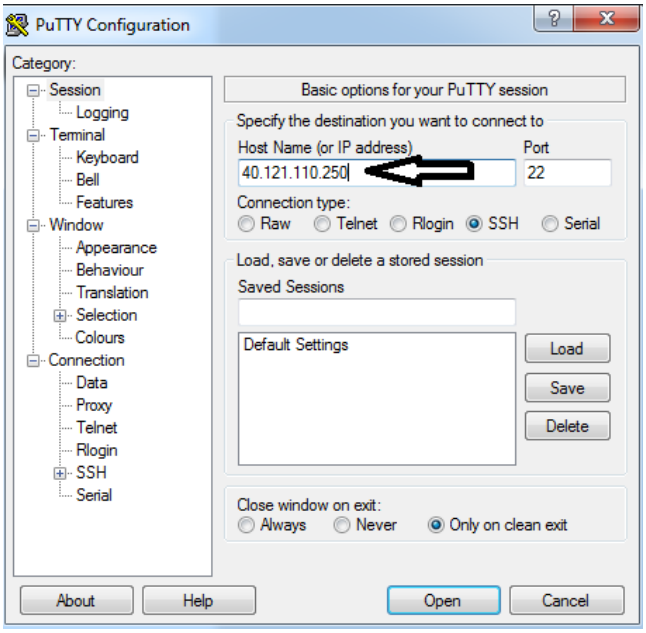
Below is the Virtual Machine (Web Server) which we deployed in the previous Lab.



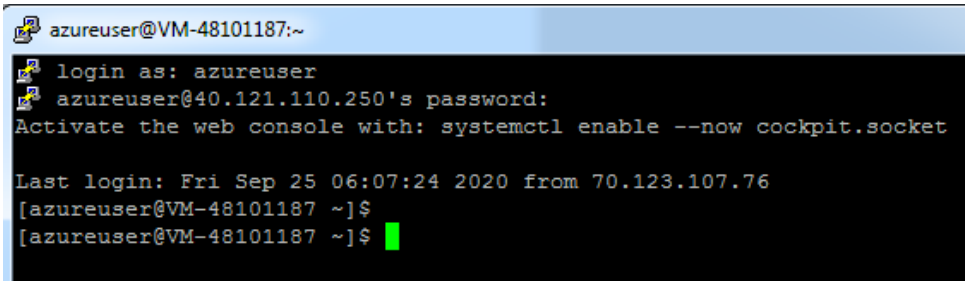
Copy the Public IP of the Virtual Machine (VM).



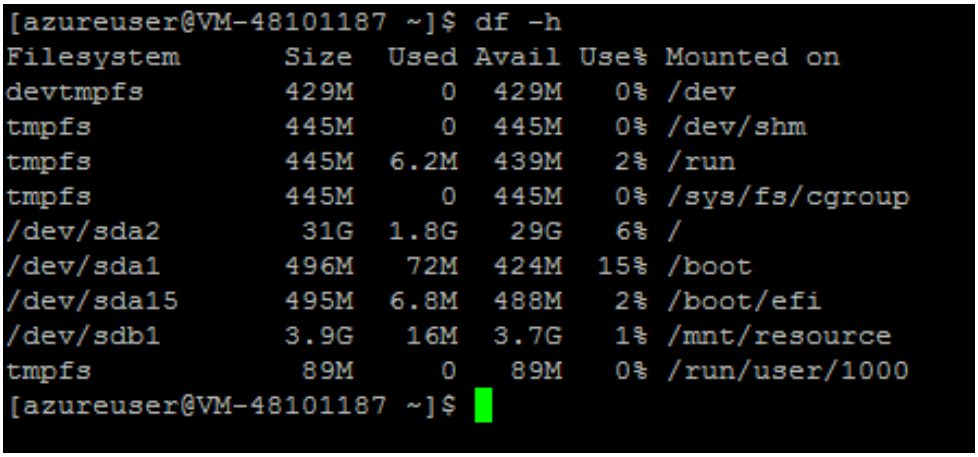
Open the PuTTY and Paste the Public IP of the Virtual Machine.



Login into the Linux Virtual Machine with your Credentials.



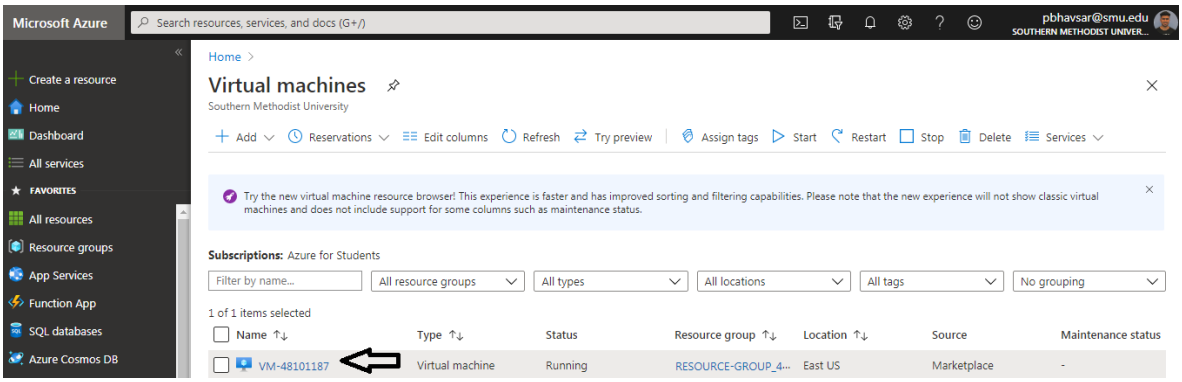
Run the below command to list mounted Disks and Mount Points.
Command: df -h



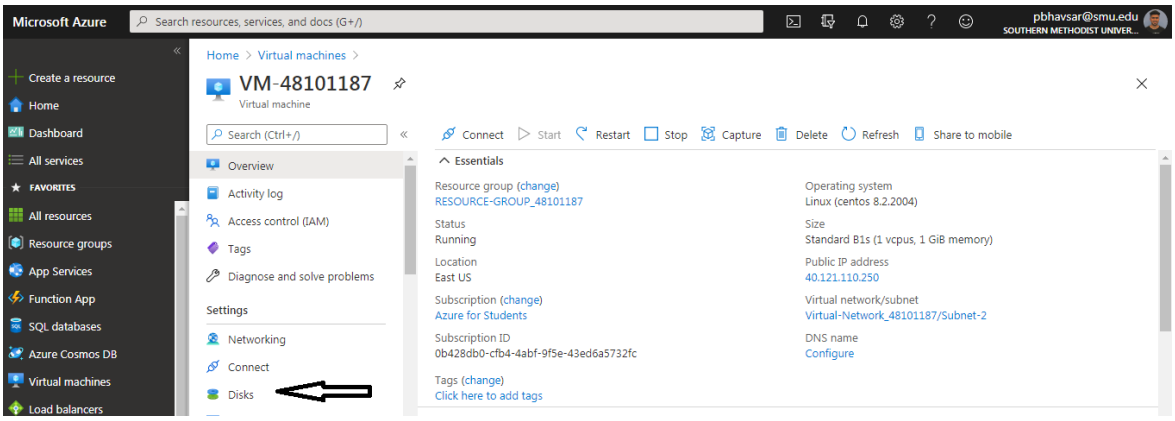
Task 2: Create a New Azure Managed Disk and Attach it to the Virtual Machine.

Let's add a new Azure Managed Disk to the existing Virtual Machine.

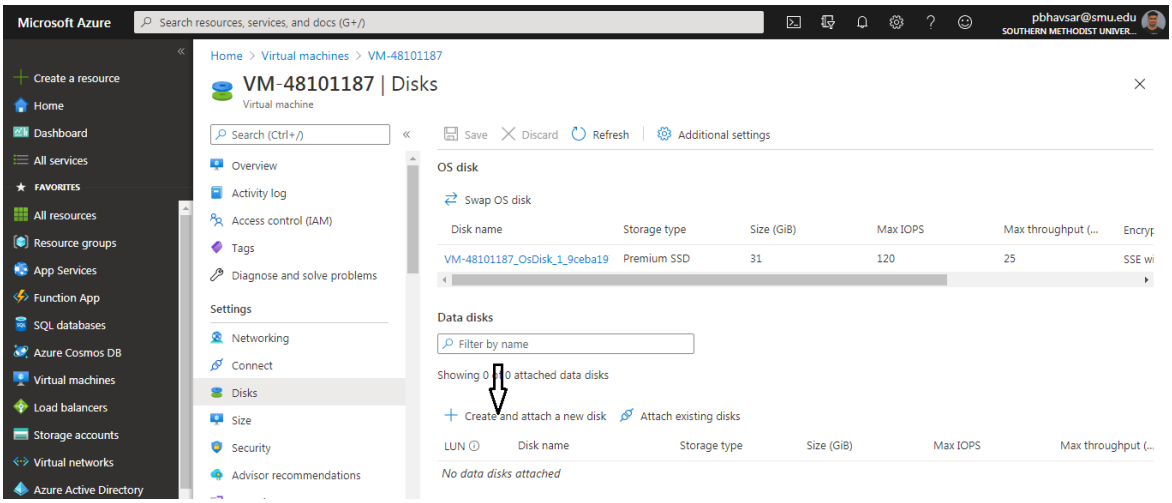
Navigate to the "Virtual Machine" Service and click on the Virtual Machine which you deployed earlier.



Click on Disks.

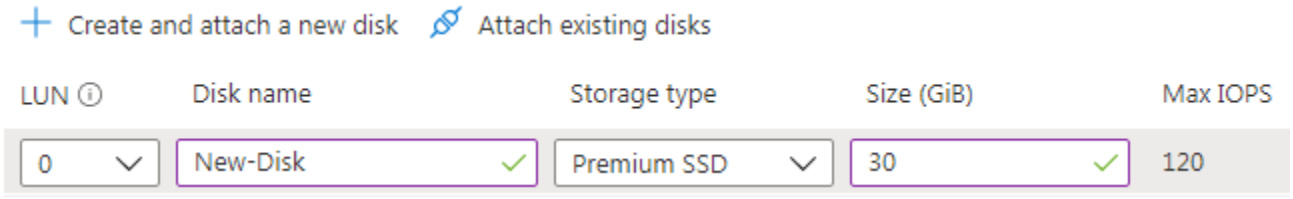


Click on **Create and Attach a new Disk**.



Specify the below Information.

- **Disk Name:** New-Disk
- **Storage Type:** Premium SSD
- **Size (GiB):** 30



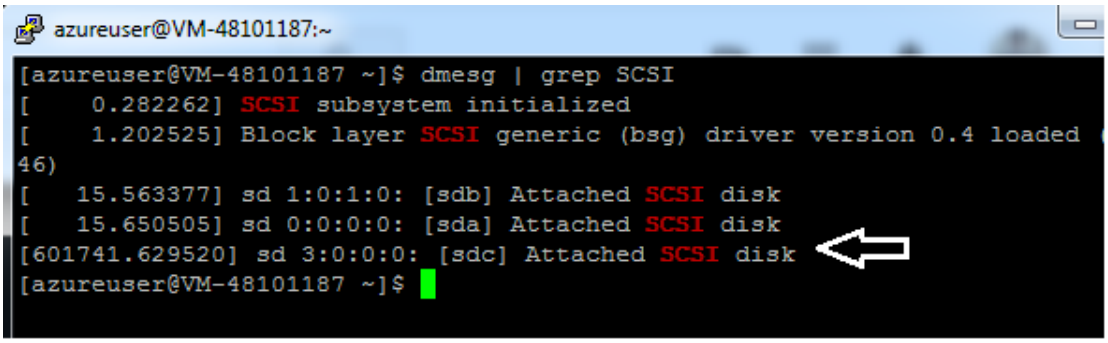
Click on Save.

Step 3: Create and Configure Your File System

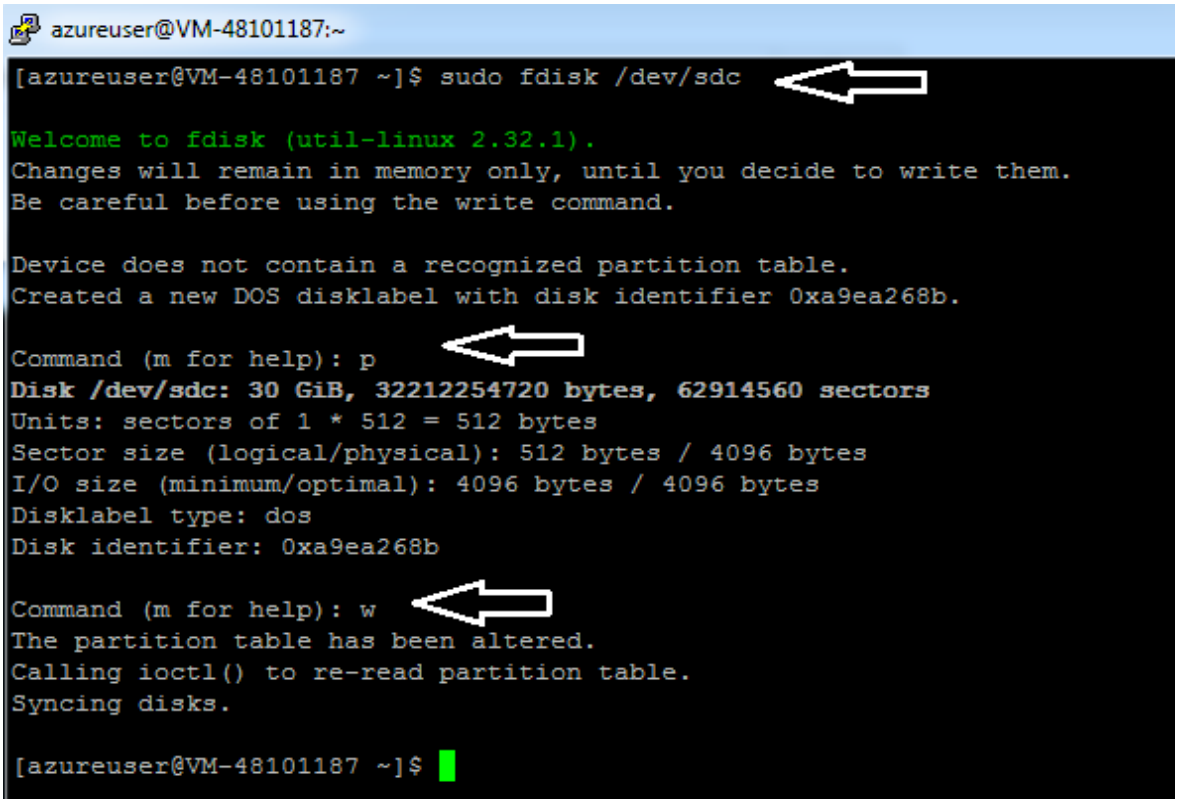
Run the below command again to list mounted Disks and Mount Points. Newly attached Disk is not listed yet.
Command: df -h

```
[azureuser@VM-48101187 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        429M     0  429M   0% /dev
tmpfs           445M     0  445M   0% /dev/shm
tmpfs           445M  6.2M  439M   2% /run
tmpfs           445M     0  445M   0% /sys/fs/cgroup
/dev/sda2        31G  1.8G   29G   6% /
/dev/sda1       496M   72M  424M  15% /boot
/dev/sda15      495M  6.8M  488M   2% /boot/efi
/dev/sdb1       3.9G   16M  3.7G   1% /mnt/resource
tmpfs            89M     0   89M   0% /run/user/1000
[azureuser@VM-48101187 ~]$
```

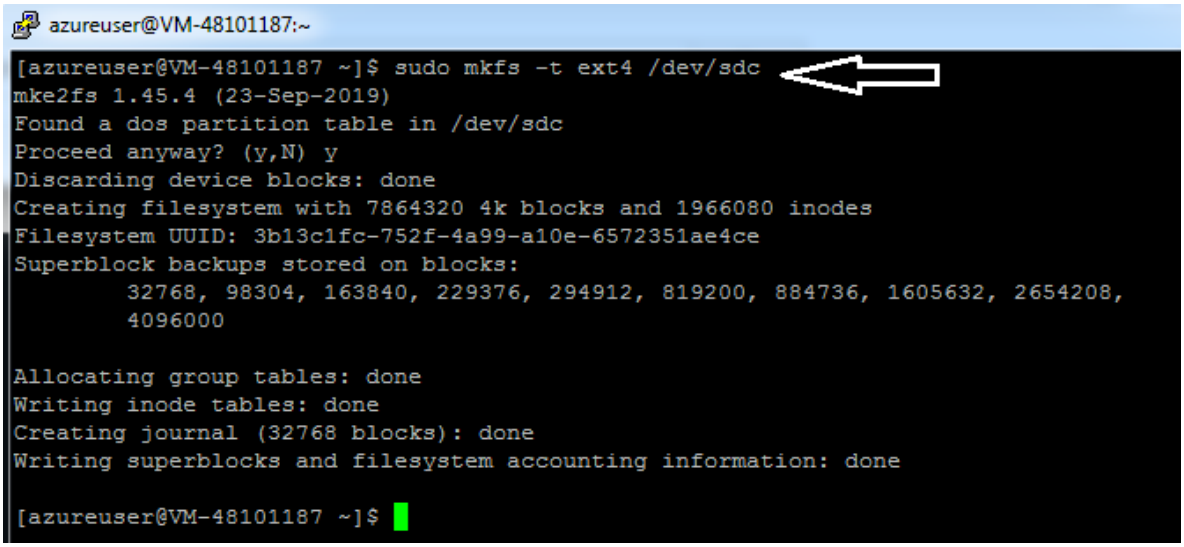
Run the below command to list the attached Disk.



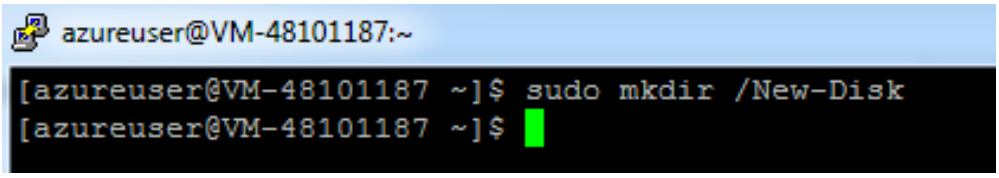
Let's create Disk label, Partition Table with the "fdisk" utility.
Command: sudo fdisk /dev/sdc and "p" and "w"



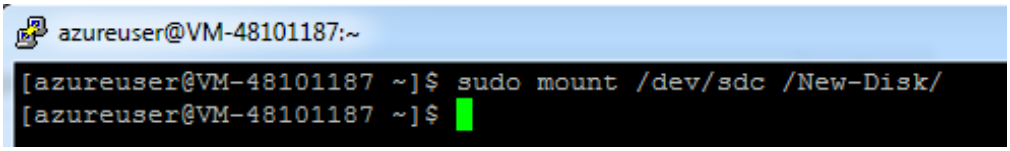
Run the below command to configure "ext4" file system on the new Disk.
Command: sudo mkfs -t ext4 /dev/sdc



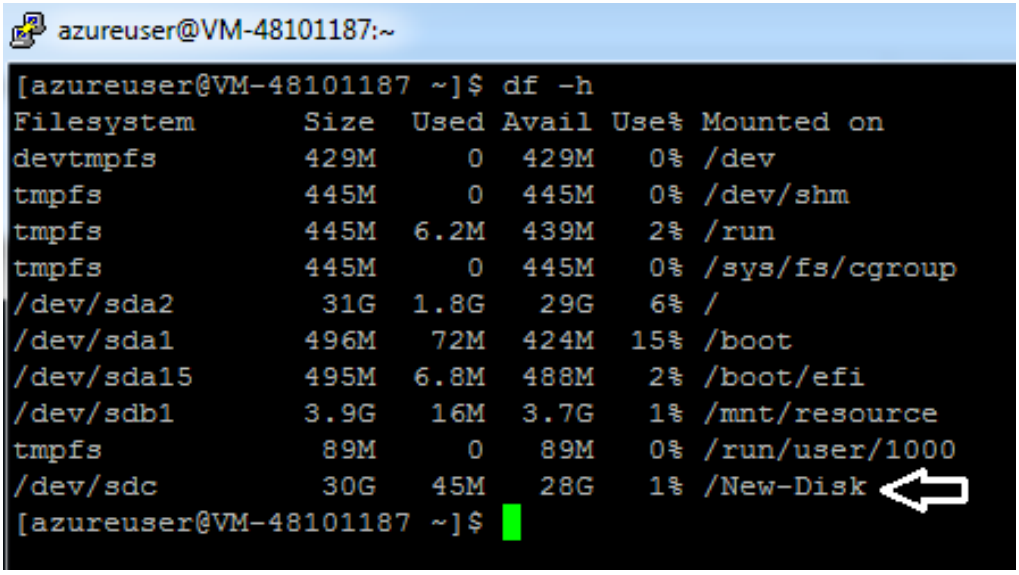
Now create a New Directory (New-Disk).
Command: sudo mkdir /New-Disk



Mount the new Disk on the newly created Directory.
Command: sudo mount /dev/sdc /New-Disk



Run the below command again to list mounted Disks and Mount Points. Newly attached Disk is now listed.
Command: df -h

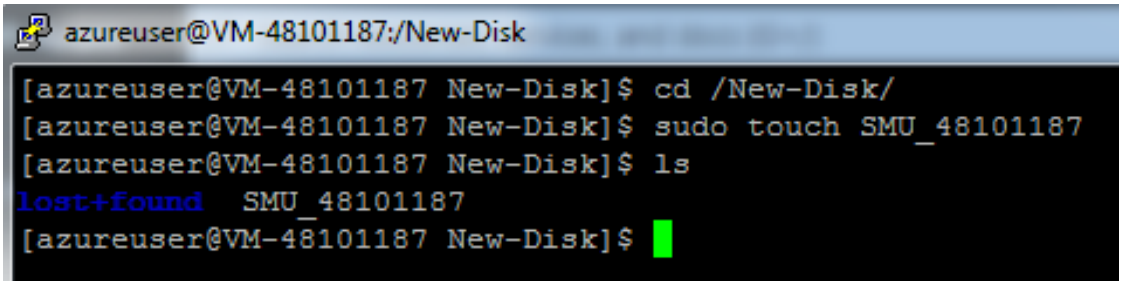


To configure the Linux VM to mount this Disk whenever the Virtual Machine (VM) is started, you will need to add a line to /etc/fstab.

Command: echo "/dev/sdC /New-Disk ext4 defaults,noatime 1 2" | sudo tee -a /etc/fstab
Command: cat /etc/fstab

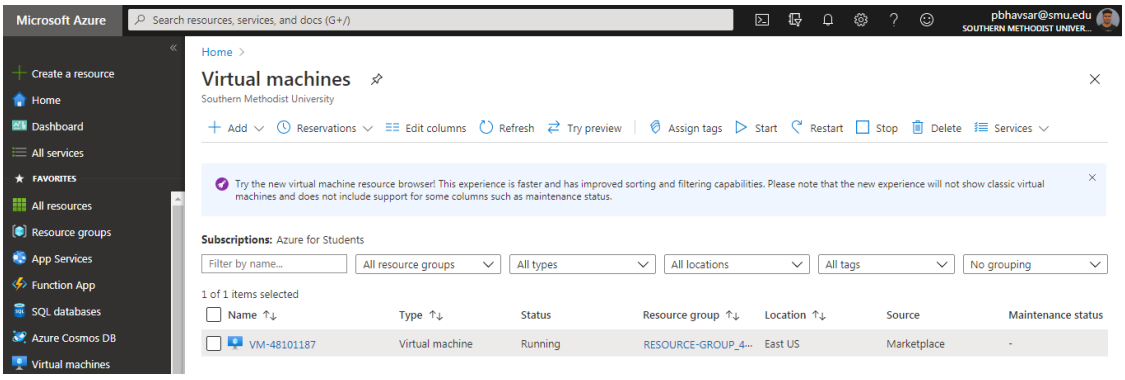
```
[azureuser@VM-48101187 ~]$ echo "/dev/sdc /New-Disk ext4 defaults,noatime 1 2" | sudo tee -a /et
c/fstab
/dev/sdc /New-Disk ext4 defaults,noatime 1 2
[azureuser@VM-48101187 ~]$ cat /etc/fstab

#
# /etc/fstab
# Created by anaconda on Wed Jun 24 18:31:30 2020
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
UUID=6785aa9a-3d19-43ba-a189-f73916b0c827 /                       xfs     defaults        0 0
UUID=fe210987-f9cb-41c9-a3d6-2778b9b65c61 /boot                   xfs     defaults        0 0
UUID=BFE4-8E9F          /boot/efi               vfat    defaults,uid=0,gid=0,umask=077,shortname=winnt 0 2
/dev/disk/cloud/azure_resource-part1    /mnt/resource   auto    defaults,nofail,x-systemd.requires=cloud-init.service,comment=cloudconfig      0       2
/dev/sdc /New-Disk ext4 defaults,noatime 1 2
[azureuser@VM-48101187 ~]$
```

Change the Directory to newly created Directory and create a blank file (SMU_SMUID).
Command: cd /New-Disk/
Command: sudo touch SMU_SMUID

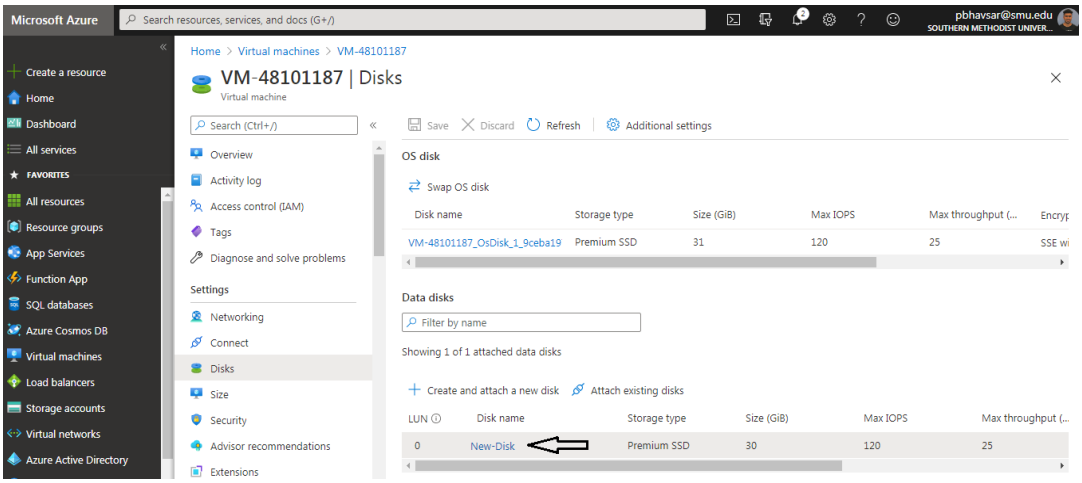


Task 3: Create an Azure Managed Disk Snapshot.

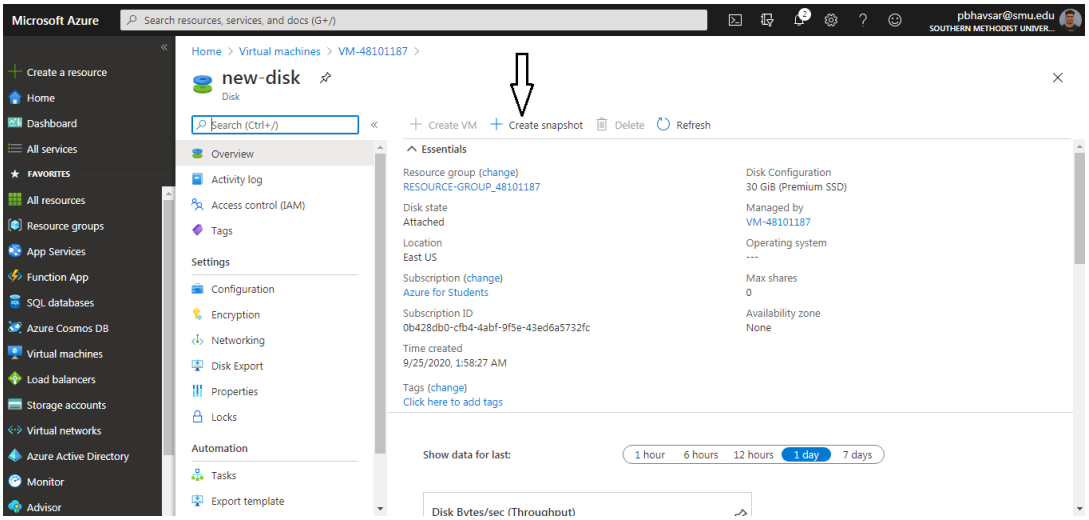
Now navigate to Azure Portal, click on your Virtual Machine (VM).



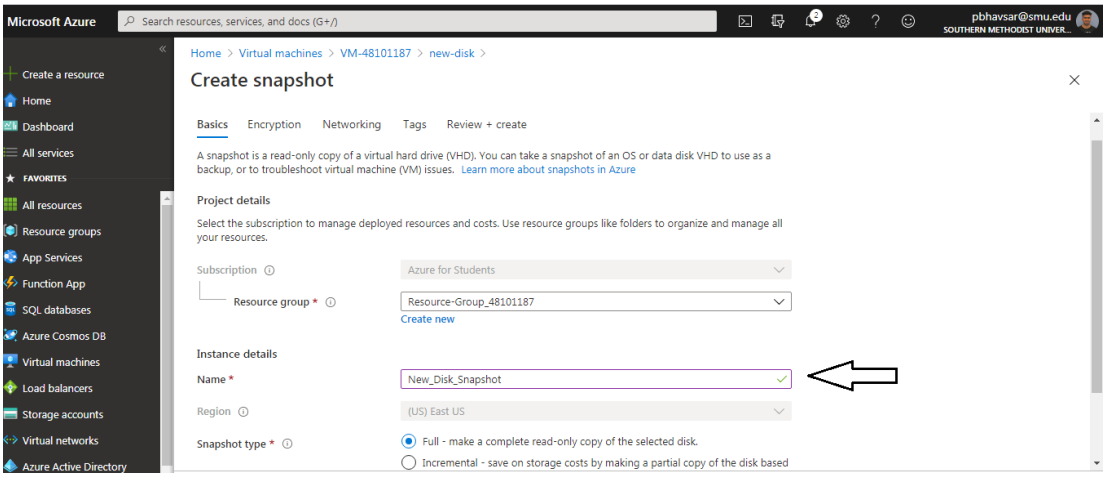
Click on New Disk which you just created.



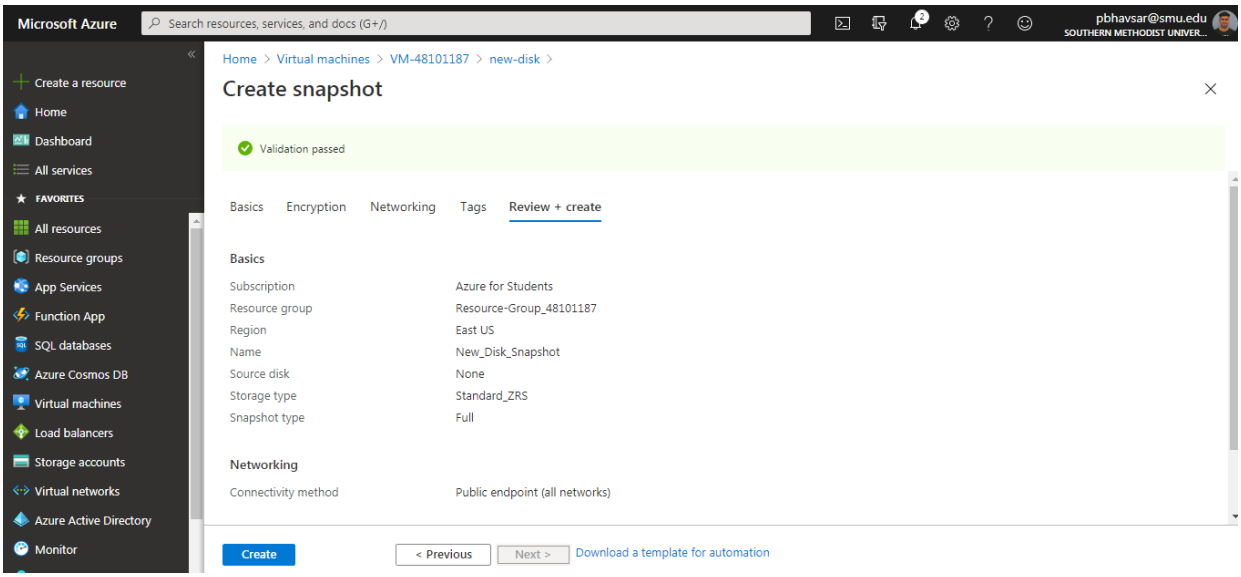
Click on “Create Snapshot”.

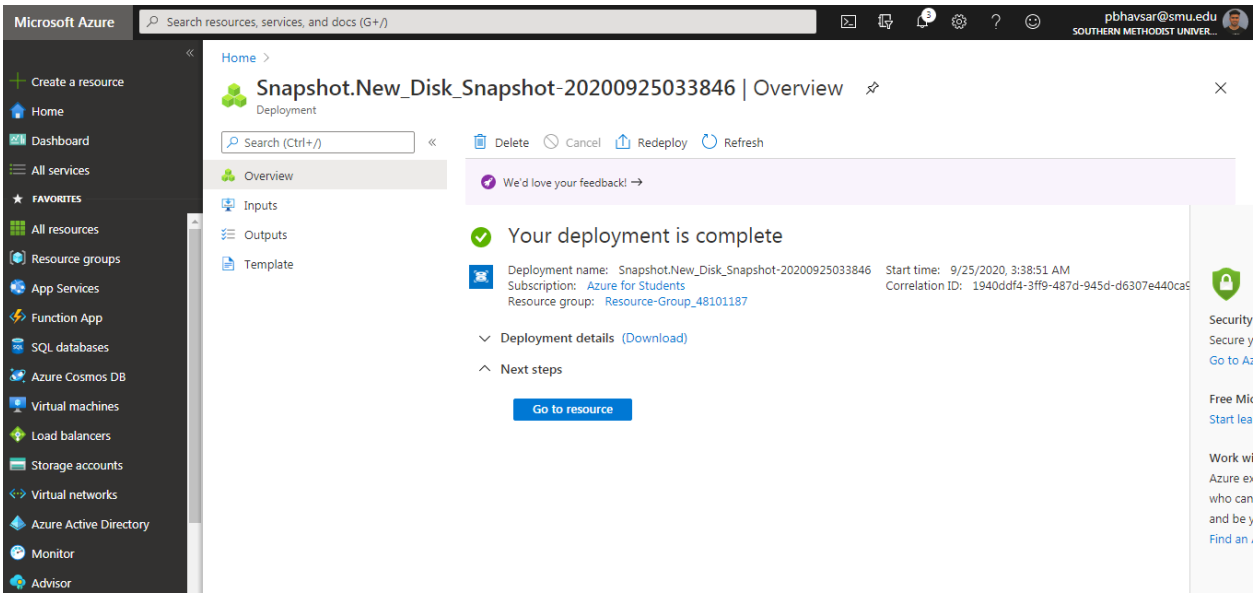


Give the Snapshot Name.



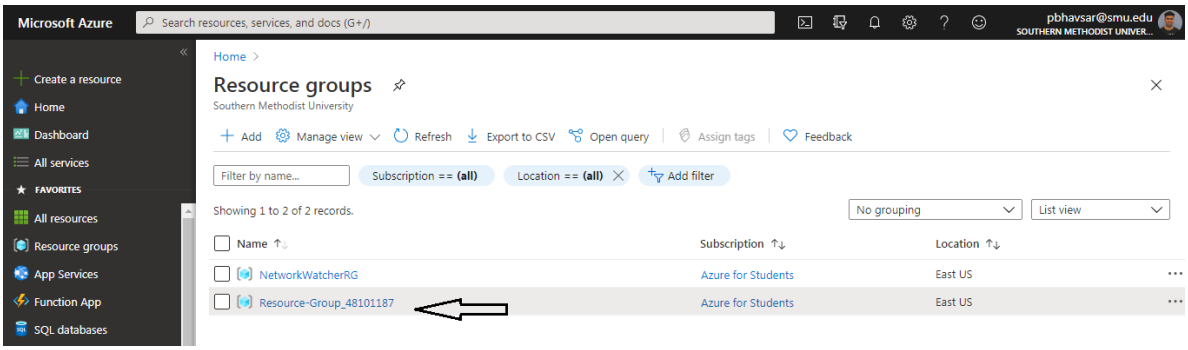
Keep the Default Settings for Encryption and Networking. Click on Create.



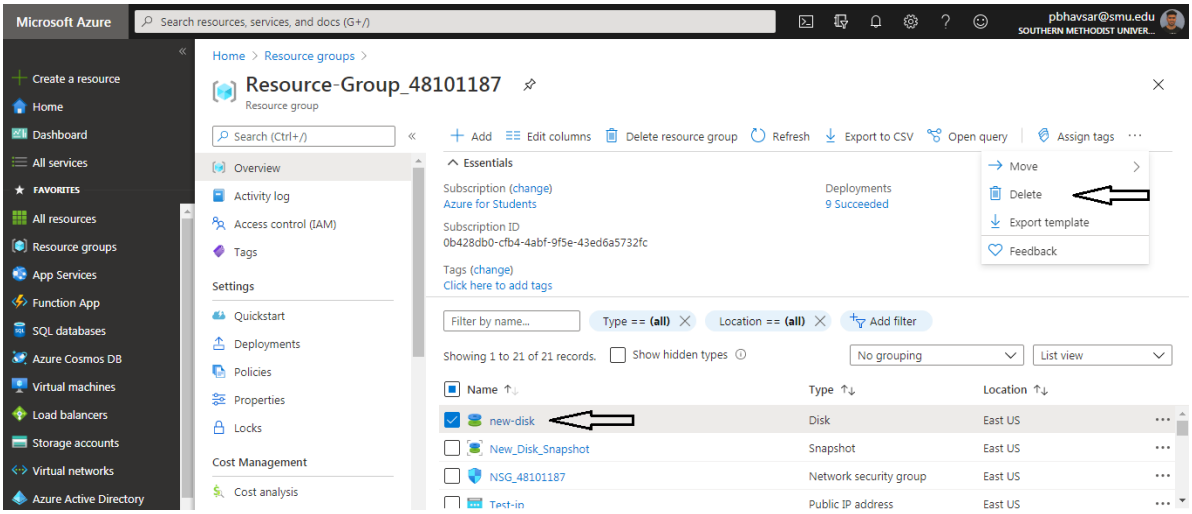


Task 4: Create Failover Scenarios.

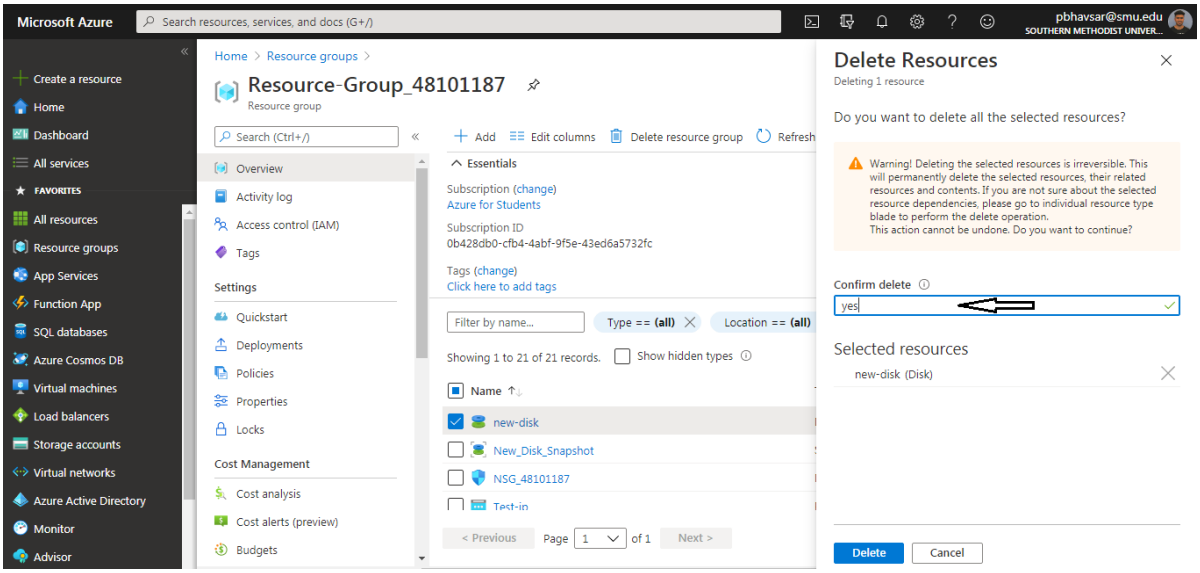
Now go to Resource Groups and select your Resource Group.



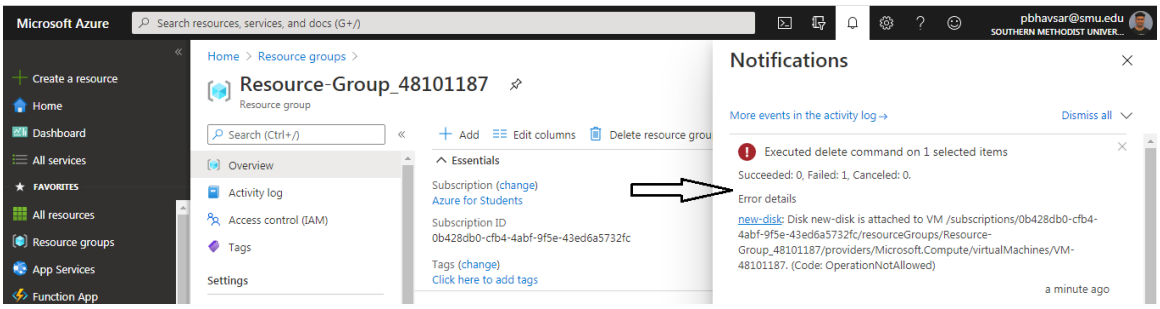
Select the Disk which we attached to the Virtual Machine earlier and click on Delete.



Type “Yes” to Confirm and Delete the Disk.

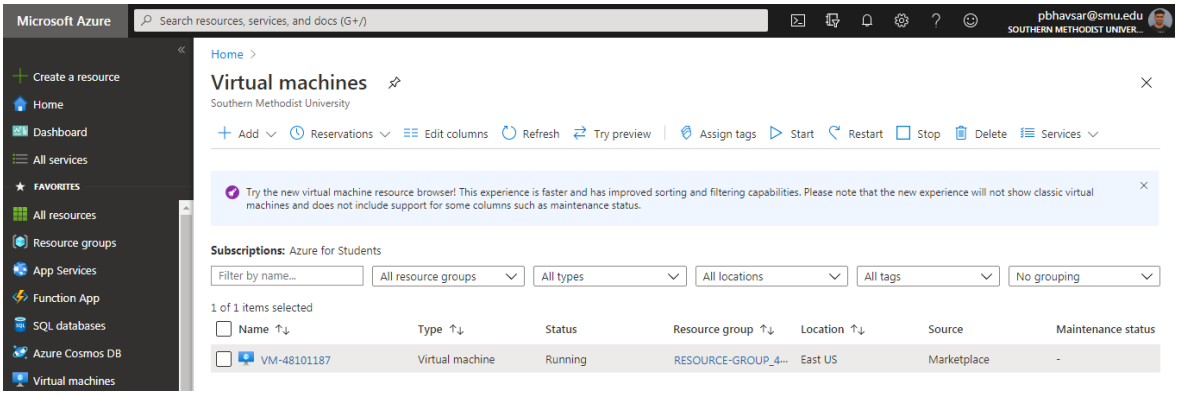


You'll get the ERROR Message as below.

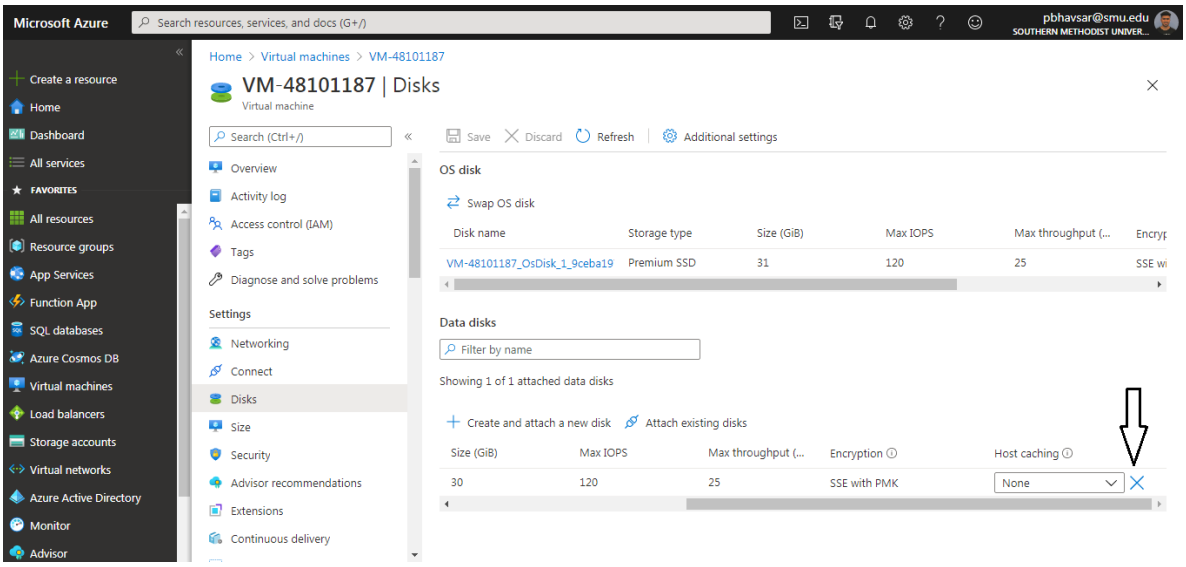


The reason for this Error is that the data disk "New_Disk" is still attached to the Virtual Machine.

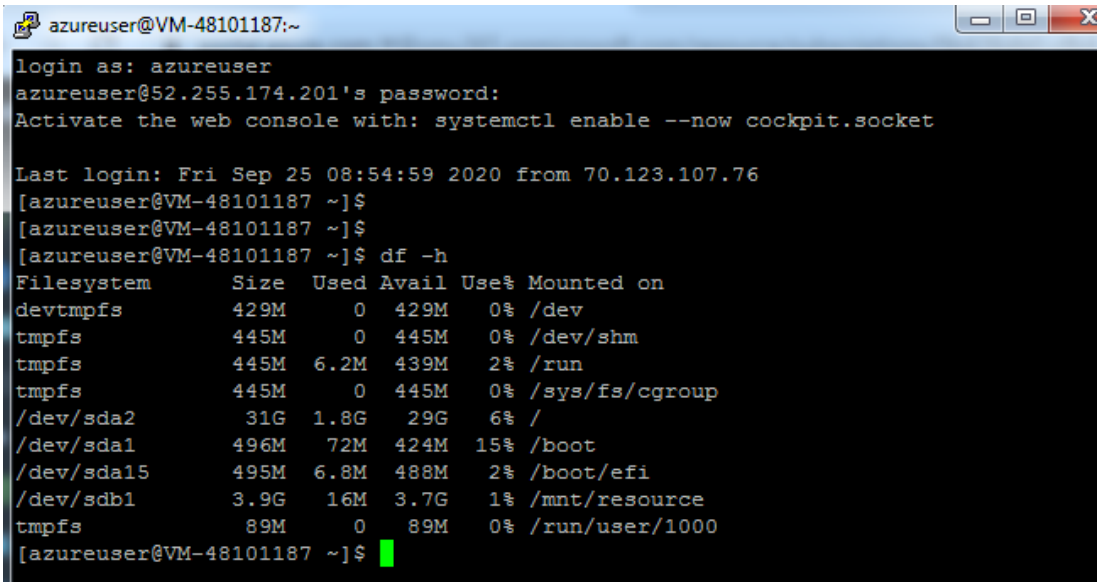
Navigate to Virtual Machine Service and select Virtual Machine (VM).



Select the data disk "New_Disk" and click on "X" and Click on Save.



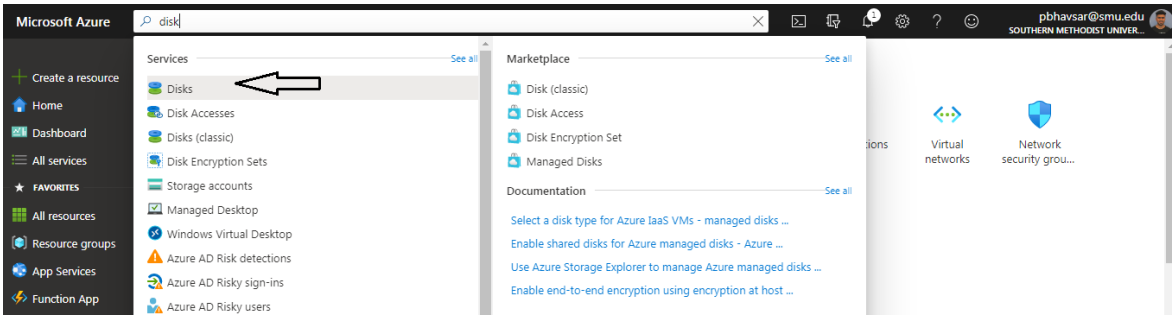
Now, on the Virtual Machine, you won't see the mounted Disks and Mount Point.



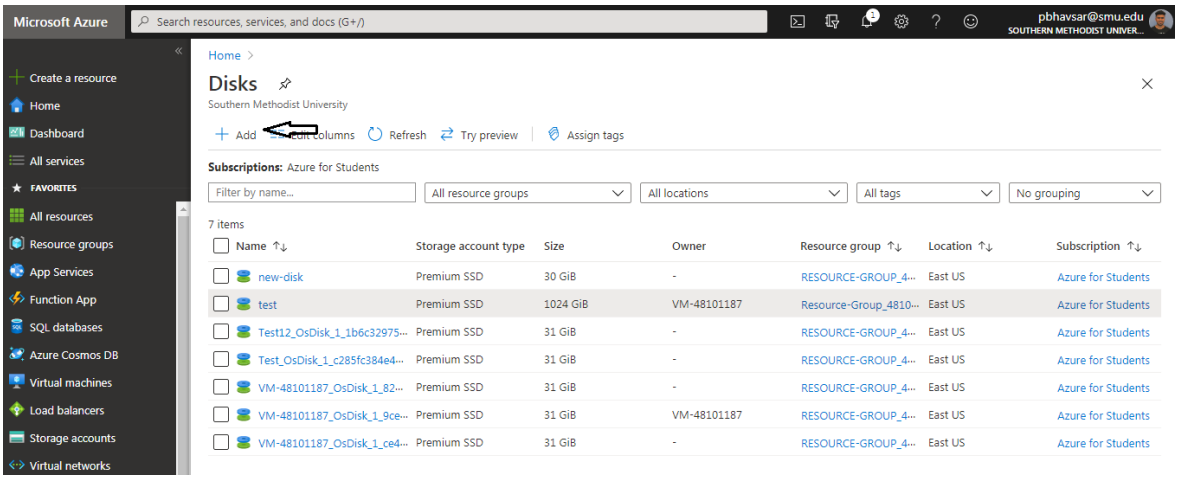
Task 5: Restore from the Azure Managed Disk Snapshot.

Time to restore the Initial Disk (New_Disk) from the Azure Managed Disk Snapshot.

Search for "Disks" in Search window.



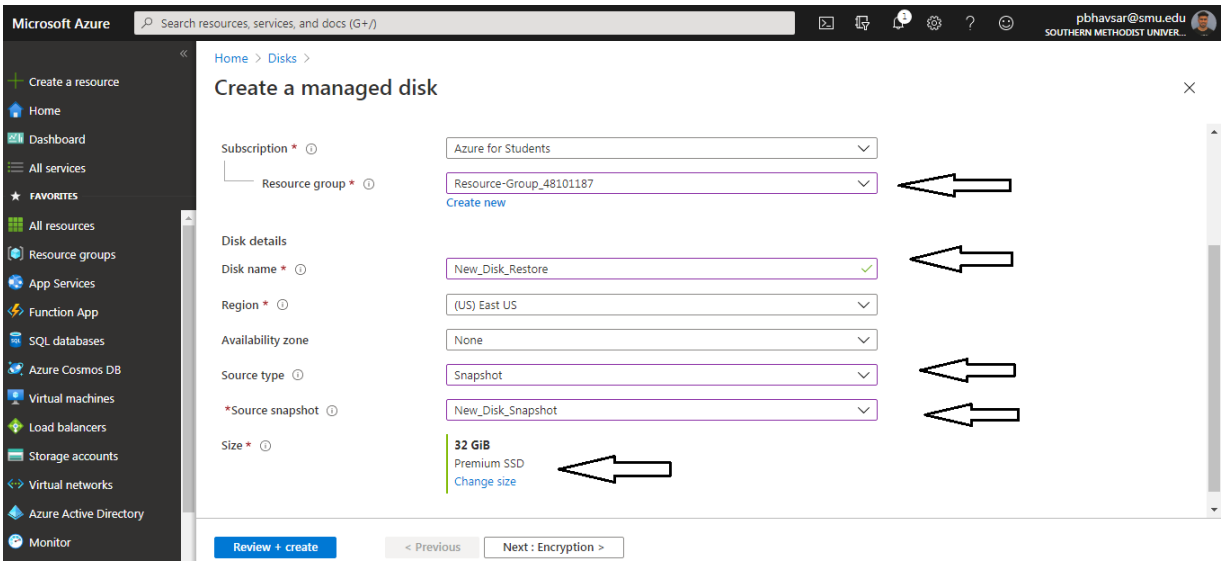
Click on "Add"



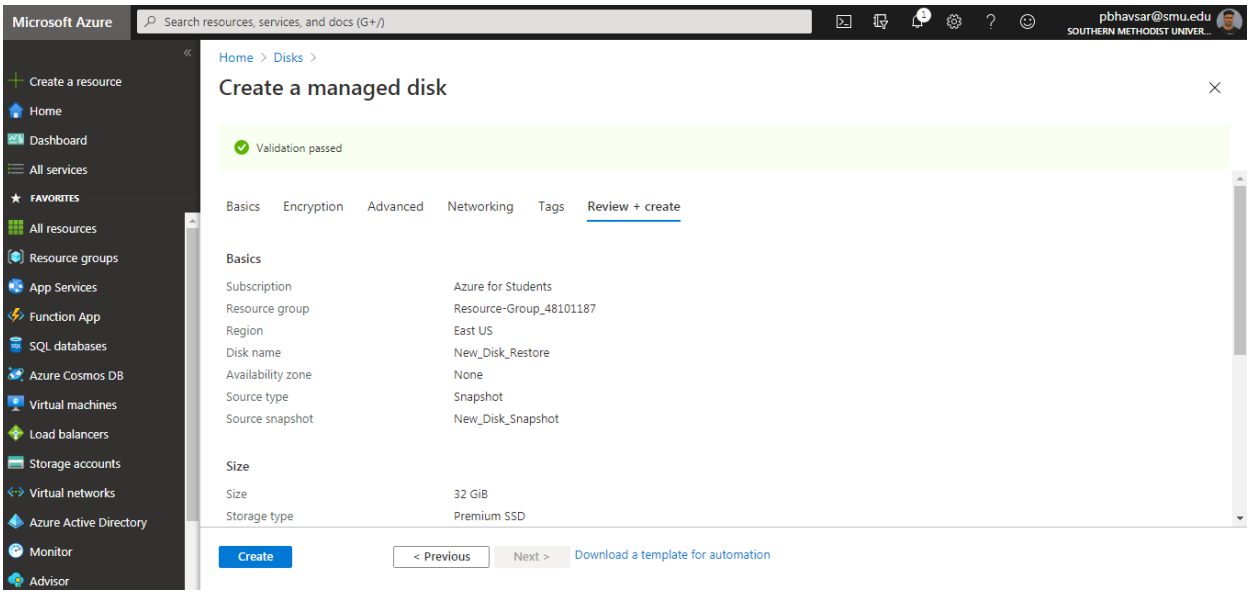
Select your Resource Group and Specify the Disk Name.

Select the Source Type as “Snapshot” and under “Source Snapshot” select the Snapshot which we’ve taken in the previous **Step-3**.

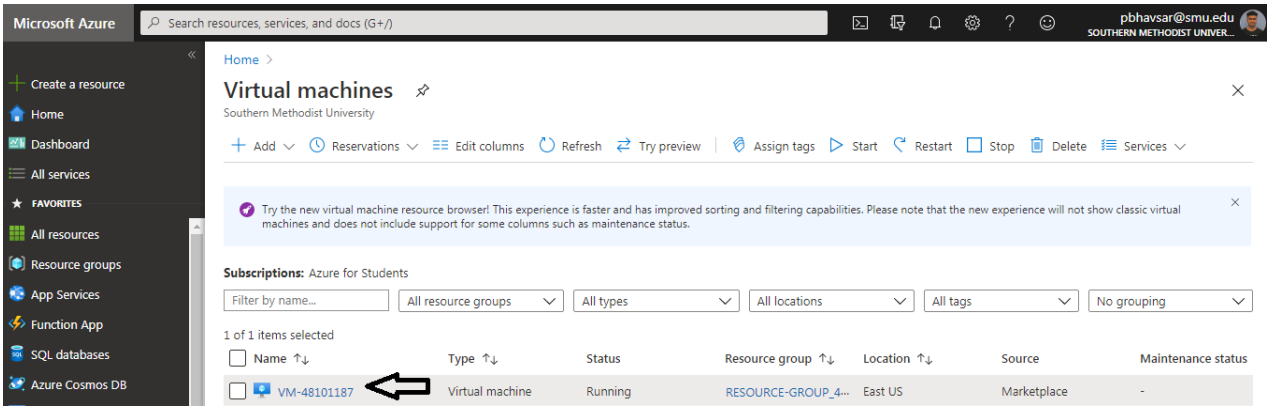
Set the Disk Size to 32 GB as Initial Disk Size was 30 GB.



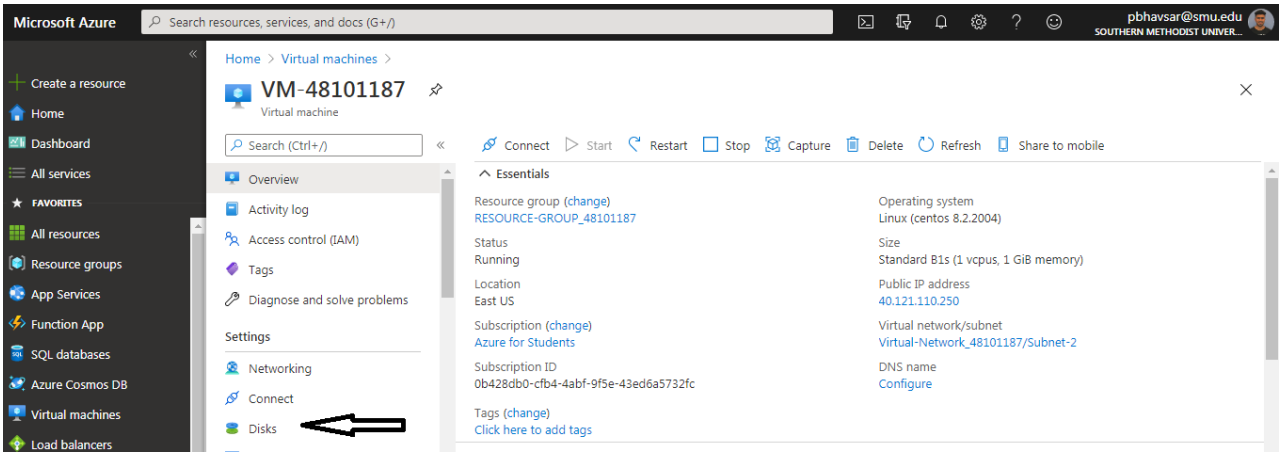
Use the Default Settings for Encryption, Advanced Settings and Networking. Click on Create.



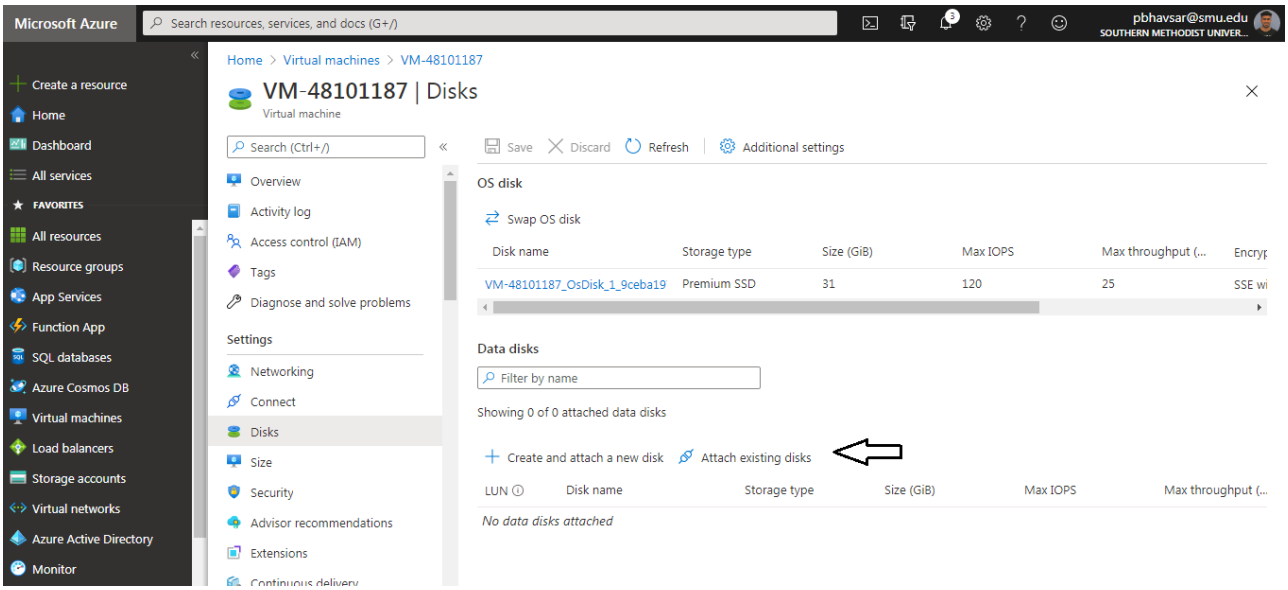
Navigate to the “Virtual Machine” Service and click on the Virtual Machine which you deployed earlier.



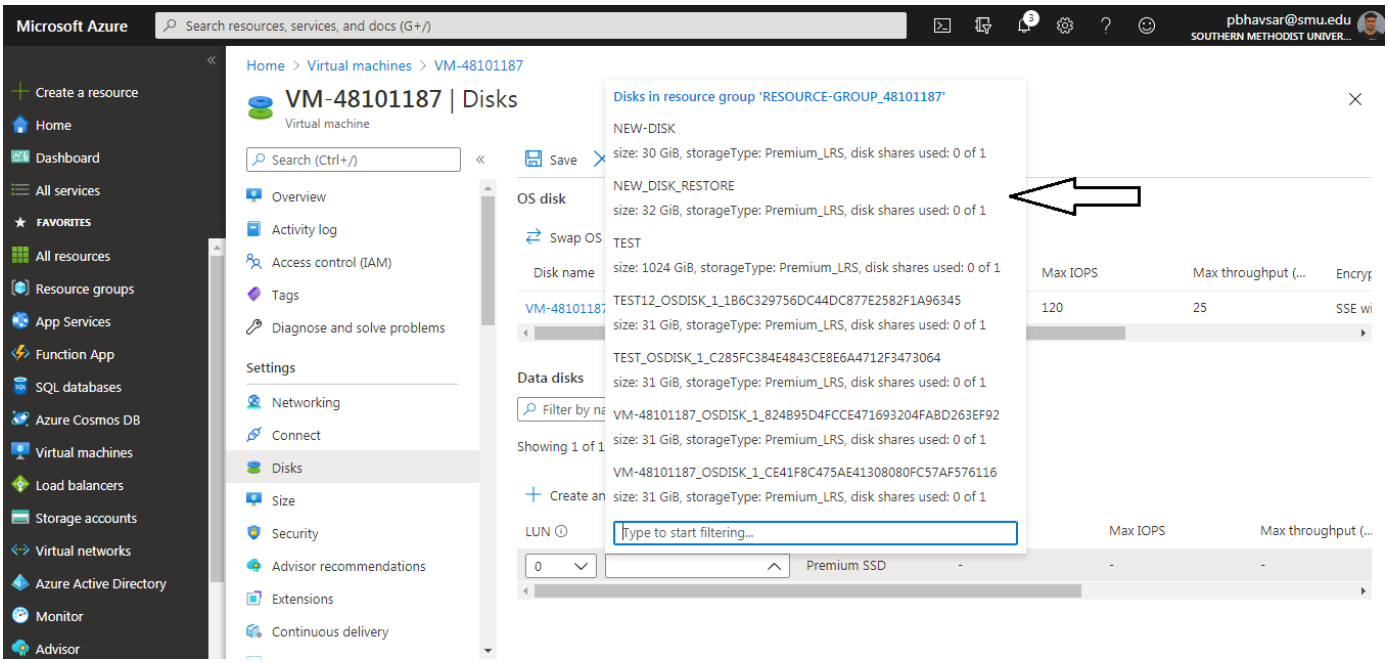
Click on Disks.

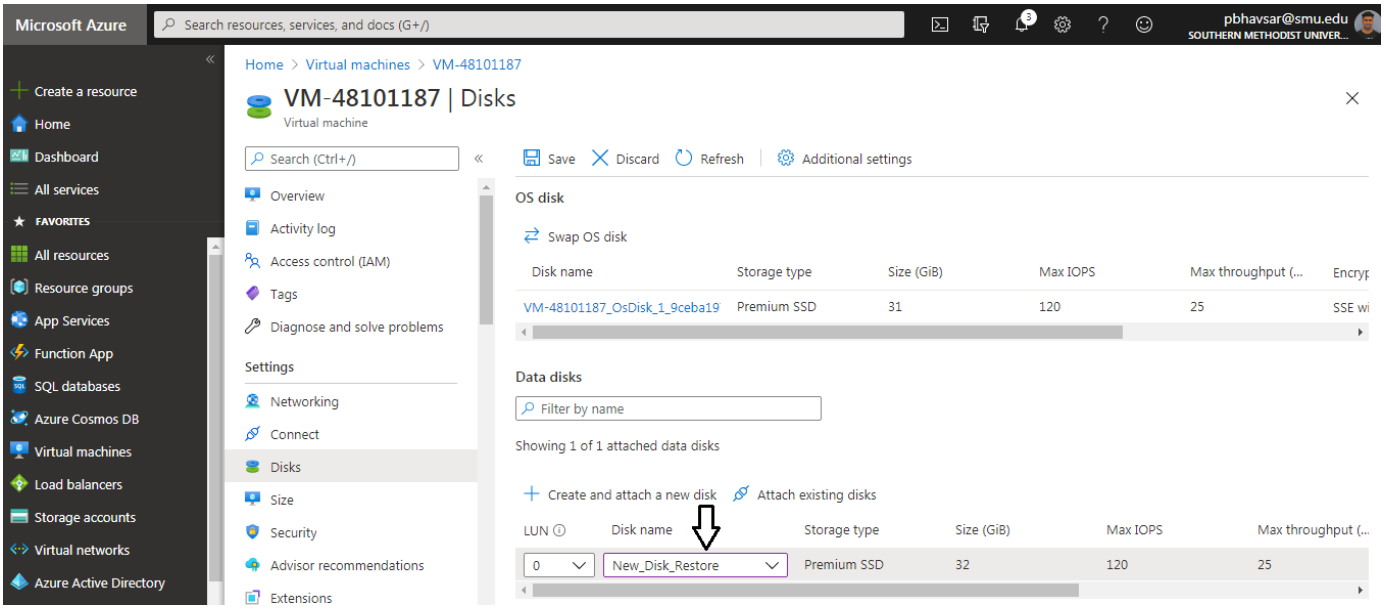


Click on **Attach Existing Disks**.



Under the Disk Name select the Disk which we created from the Disk Snapshot.





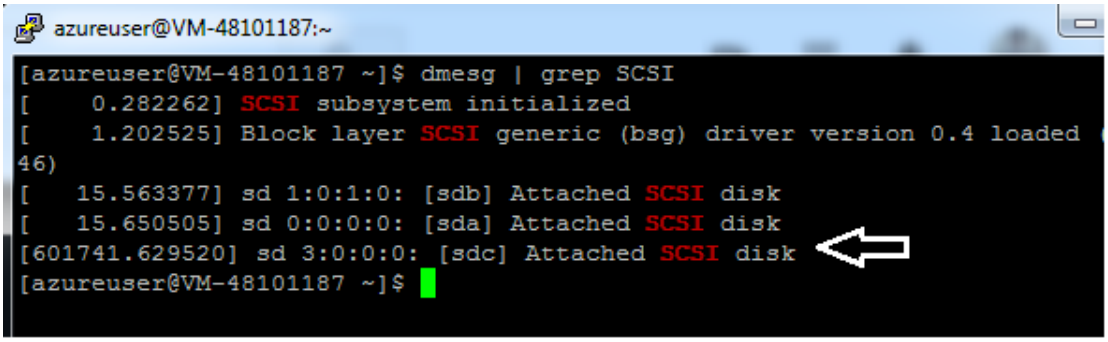
Once done click on Save.

Come back to VM's PuTTY Session.

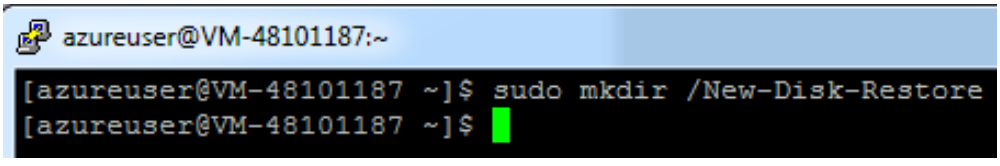
Run the below command again to list mounted Disks and Mount Points. New Disk is not listed yet.
Command: df -h

```
[azureuser@VM-48101187 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        429M     0  429M   0% /dev
tmpfs           445M     0  445M   0% /dev/shm
tmpfs           445M  6.2M  439M   2% /run
tmpfs           445M     0  445M   0% /sys/fs/cgroup
/dev/sda2        31G  1.8G   29G   6% /
/dev/sda1       496M   72M  424M  15% /boot
/dev/sda15      495M  6.8M  488M   2% /boot/efi
/dev/sdb1       3.9G   16M  3.7G   1% /mnt/resource
tmpfs            89M     0   89M   0% /run/user/1000
[azureuser@VM-48101187 ~]$
```

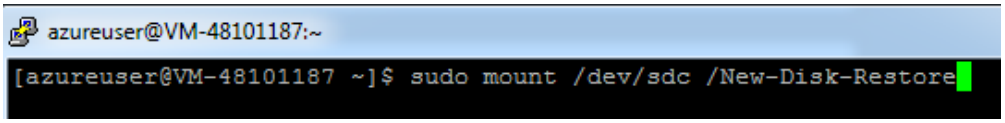
Run the below command to list the attached Disk.



Now create a New Directory for the data restore (New-Disk-Restore).
Command: sudo mkdir /New-Disk-Restore

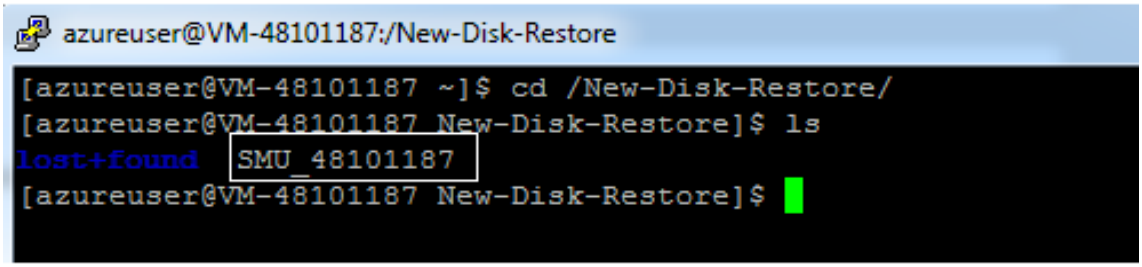


Mount the new Disk on the restored Disk.
Command: sudo mount /dev/sdc /New-Disk-Restore



Change the Directory to "/New-Disk-Restore" and list the files inside it.

It should display the file **(SMU_48101187)** which we created on our Initial Disk.



Data has been successfully restored from the Azure Managed Disk's Snapshot.

----- END -----

For questions, contact on below information.
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