Implementing IaaS & PaaS in Azure

POC for Nilavembu Herbs

~Jaydeep Hirani

Contents

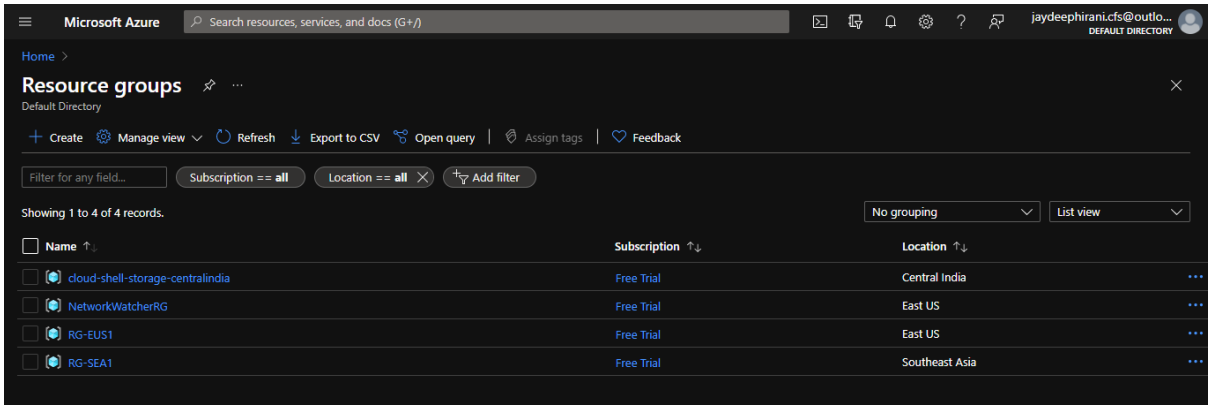
SEA Region

Resource Group

- Created a resource group *RG-SEA1* using PowerShell command

```
$rg1 = @{
   Name = 'RG-SEA1'
   Location = ' SoutheastAsia'
}
New-AzResourceGroup @rg1
```

```
PS /home/jaydeep> $rg1 = @{
>>     Name = 'RG-SEA1'
>>     Location = ' SoutheastAsia'
>> }
PS /home/jaydeep> New-AzResourceGroup @rg1

ResourceGroupName : RG-SEA1
Location          : southeastasia
ProvisioningState : Succeeded
Tags              :
ResourceId        : /subscriptions/ee59a5c9-9de7-42a0-b4f4-264e2f362e58/resourceGroups/RG-SEA1
```

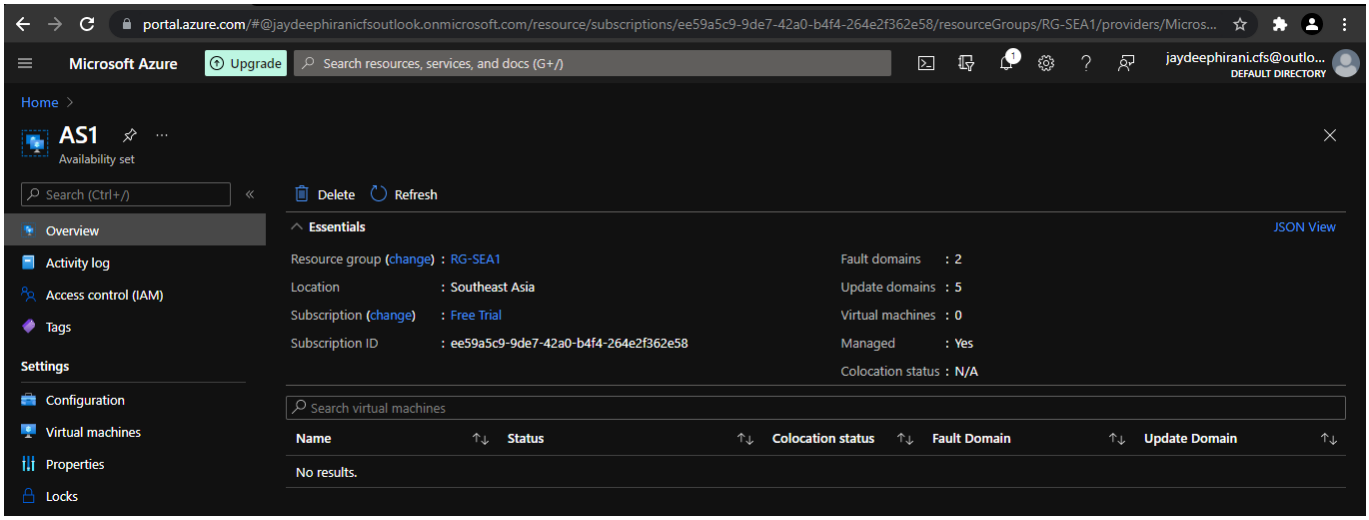


Availability Set

- The requirement was to have the servers with 99.95% availability.
- Hence created an Availability Set *AS1* using PowerShell command

```
New-AzAvailabilitySet `
  -Location "SoutheastAsia" `
  -Name "AS1" `
  -ResourceGroupName "RG-SEA1" `
  -Sku aligned `
  -PlatformFaultDomainCount 2 `
  -PlatformUpdateDomainCount 5
```

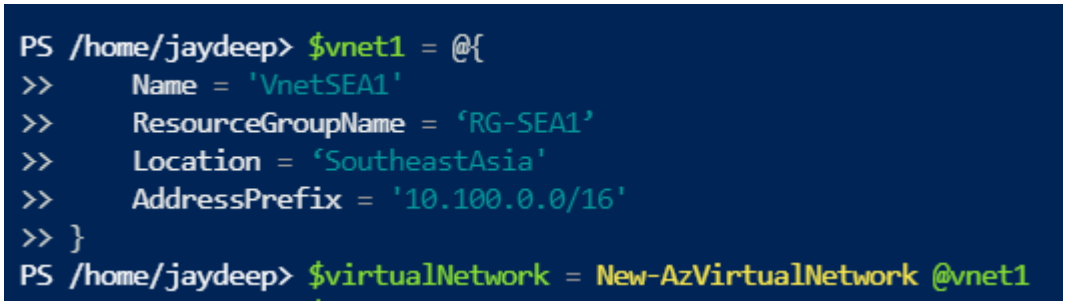
```
PS /home/jaydeep> New-AzAvailabilitySet `
>>    -Location "SoutheastAsia" `
>>    -Name "AS1" `
>>    -ResourceGroupName "RG-SEA1" `
>>    -Sku aligned `
>>    -PlatformFaultDomainCount 2 `
>>    -PlatformUpdateDomainCount 5

ResourceGroupName          : RG-SEA1
Id                         : /subscriptions/ee59a5c9-9de7-42a0-b4f4-264e2f362e58/resourceGroups/RG-SEA1/providers/Microsoft.Compute/availabilitySets/AS1
Name                       : AS1
Type                       : Microsoft.Compute/availabilitySets
Location                   : southeastasia
Managed                    :
Sku                        : Aligned
Tags                       : {}
PlatformFaultDomainCount   : 2
PlatformUpdateDomainCount  : 5
Statuses                   : []
VirtualMachinesReferences  : []
ProximityPlacementGroup    :
```

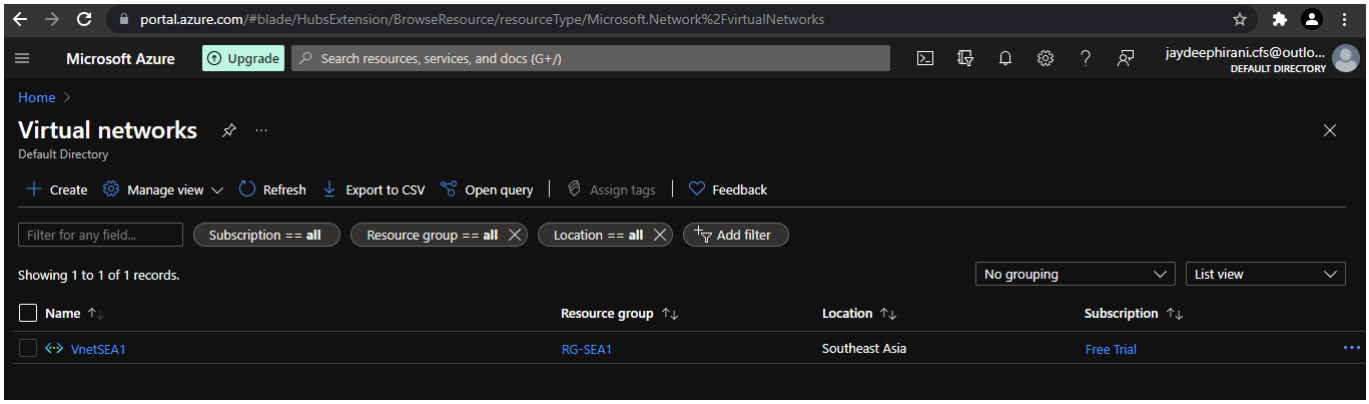


Virtual Network

- Created a Virtual Network *VnetSEA1* using PowerShell command

```
$vnet1 = @{
   Name = 'VnetSEA1'
   ResourceGroupName = ‘RG-SEA1’
   Location = ‘SoutheastAsia'
   AddressPrefix = '10.100.0.0/16'
}
$virtualNetwork = New-AzVirtualNetwork @vnet1
```

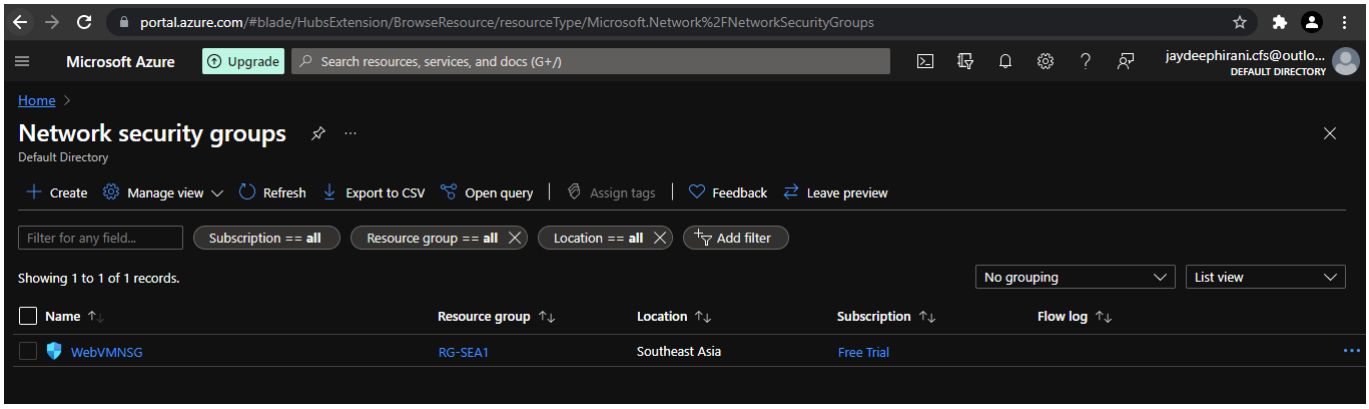




Security Group

- Created a Security Group *WebVMNSG* using PowerShell command
  New-AzNetworkSecurityGroup -Name "WebVMNSG" -ResourceGroupName "RG-SEA1" -Location " SoutheastAsia"

```
PS /home/jaydeep> New-AzNetworkSecurityGroup -Name "WebVMNSG" -ResourceGroupName "RG-SEA1" -Location " SoutheastAsia"

Name              : WebVMNSG
ResourceGroupName : RG-SEA1
Location          : southeastasia
Id                : /subscriptions/ee59a5c9-9de7-42a0-b4f4-264e2f362e58/resourceGroups/RG-SEA1/providers/Microsoft.Network/networkSecurityGroups/WebVMNSG
Etag              : W/"ecf5b18a-477d-4757-a1c4-6556f74422d8"
ResourceGuid      : 336ab3f6-3848-49b2-b335-08153d015adb
ProvisioningState : Succeeded
Tags              :
SecurityRules     : []
```



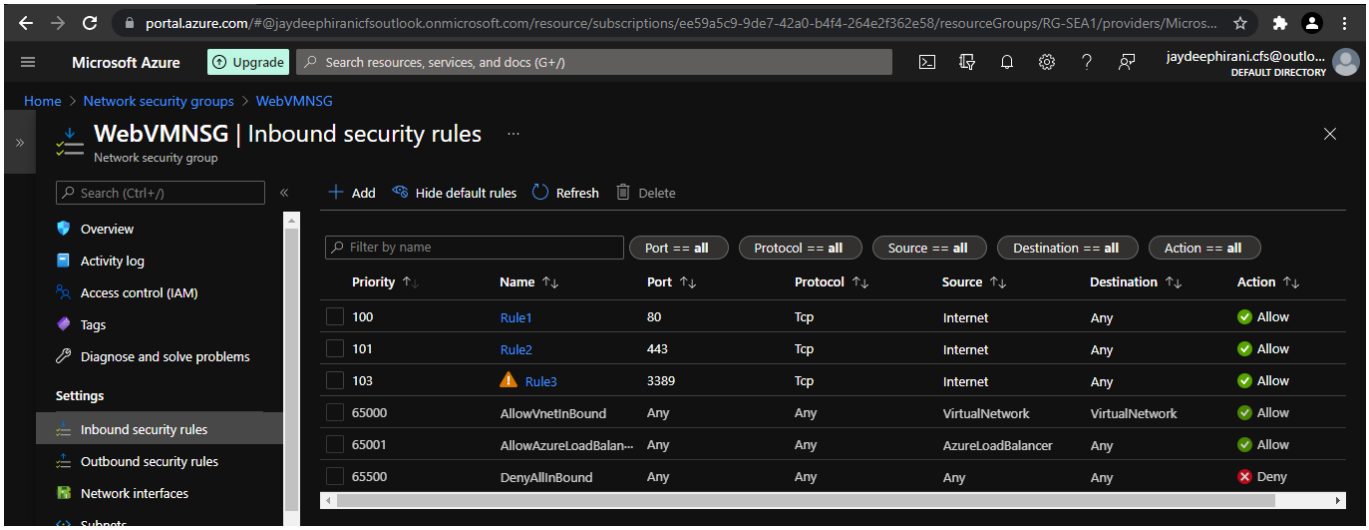
- Created three Security Rules for RDP, HTP & HTTP access

```
$rule1 = New-AzNetworkSecurityRuleConfig -Name Rule1 -Description "Allow HTTP" `
   -Access Allow -Protocol Tcp -Direction Inbound -Priority 100 -SourceAddressPrefix `
   Internet -SourcePortRange * -DestinationAddressPrefix * -DestinationPortRange 80

$rule2 = New-AzNetworkSecurityRuleConfig -Name Rule2 -Description "Allow HTTPS" `
   -Access Allow -Protocol Tcp -Direction Inbound -Priority 101 -SourceAddressPrefix `
   Internet -SourcePortRange * -DestinationAddressPrefix * -DestinationPortRange 443

$rule3 = New-AzNetworkSecurityRuleConfig -Name Rule3 -Description "Allow RDP" `
   -Access Allow -Protocol Tcp -Direction Inbound -Priority 103 -SourceAddressPrefix `
   Internet -SourcePortRange * -DestinationAddressPrefix * -DestinationPortRange 3389
```

- Applied the Security Rules to the Security Group

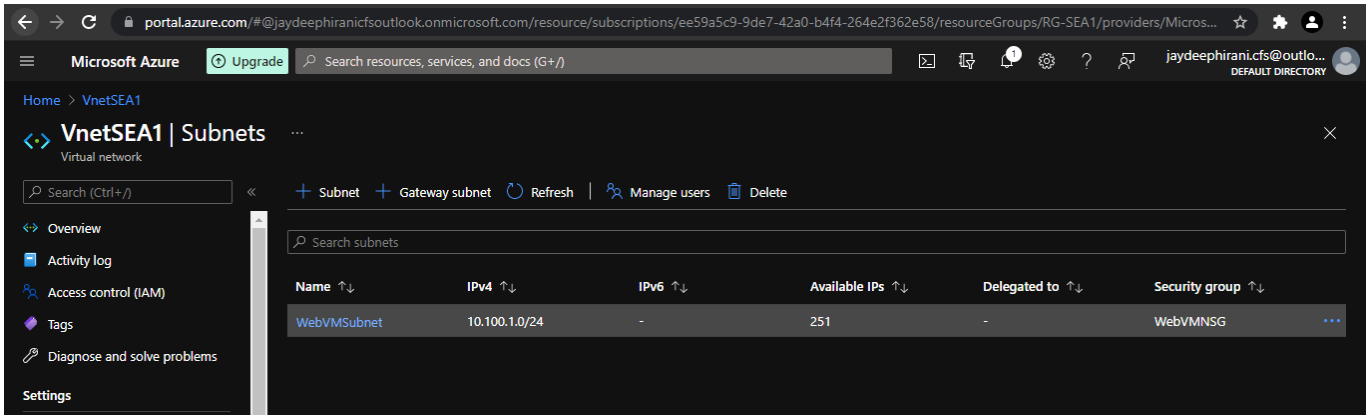
```
$nsg = New-AzNetworkSecurityGroup -ResourceGroupName RG-SEA1 -Location SoutheastAsia -Name `
   "WebVMNSG" -SecurityRules $rule1,$rule2,$rule3
```

```
PS /home/jaydeep> $rule1 = New-AzNetworkSecurityRuleConfig -Name Rule1 -Description "Allow HTTP" `
>>     -Access Allow -Protocol Tcp -Direction Inbound -Priority 100 -SourceAddressPrefix `
>>     Internet -SourcePortRange * -DestinationAddressPrefix * -DestinationPortRange 80
PS /home/jaydeep> $rule2 = New-AzNetworkSecurityRuleConfig -Name Rule2 -Description "Allow HTTPS" `
>>     -Access Allow -Protocol Tcp -Direction Inbound -Priority 101 -SourceAddressPrefix `
>>     Internet -SourcePortRange * -DestinationAddressPrefix * -DestinationPortRange 443
PS /home/jaydeep> $rule3 = New-AzNetworkSecurityRuleConfig -Name Rule3 -Description "Allow RDP" `
>>     -Access Allow -Protocol Tcp -Direction Inbound -Priority 103 -SourceAddressPrefix `
>>     Internet -SourcePortRange * -DestinationAddressPrefix * -DestinationPortRange 3389
PS /home/jaydeep> $nsg = New-AzNetworkSecurityGroup -ResourceGroupName RG-SEA1 -Location SoutheastAsia -Name `
>>     "WebVMNSG" -SecurityRules $rule1,$rule2,$rule3

Confirm
Are you sure you want to overwrite resource 'WebVMNSG'
[Y] Yes  [N] No  [S] Suspend  [?] Help (default is "Y"): Y
PS /home/jaydeep>
```



Subnets

- Created a new subnet *WebVMSubnet* with IP range of 10.100.1.0/24 on the Azure portal
- Associated the subnet with the *WebVMNSG* security group

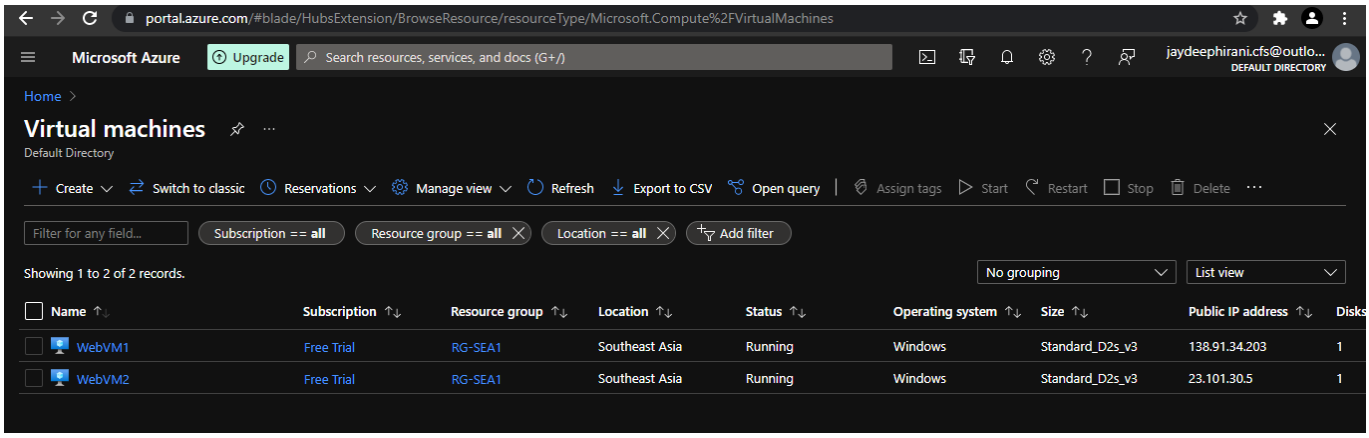


VM Deployment

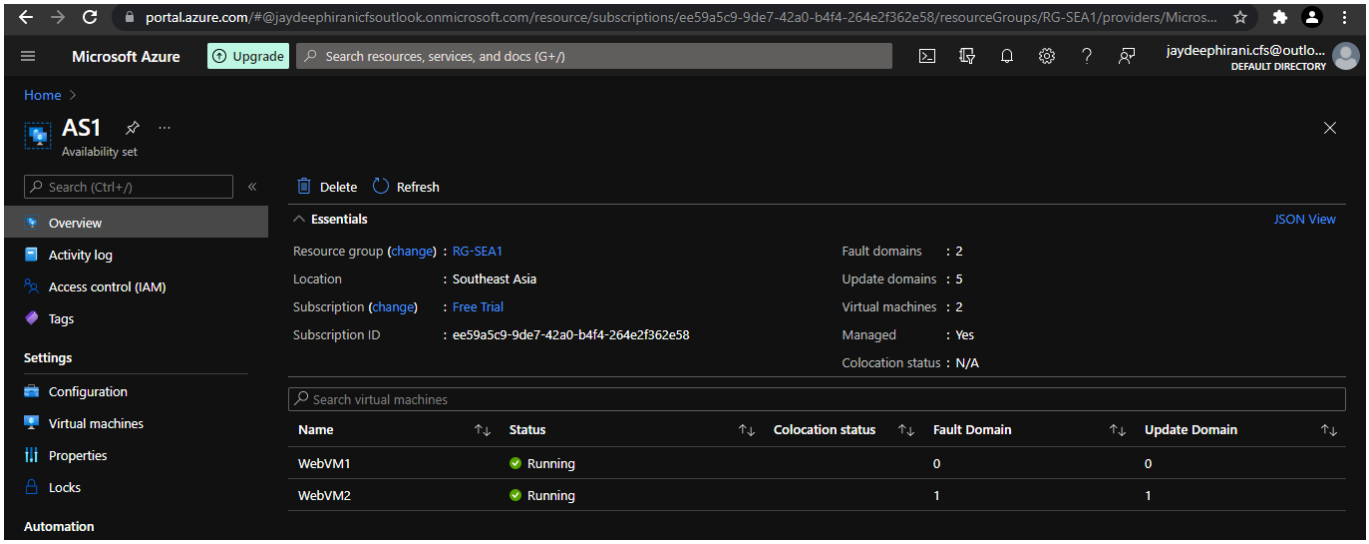
- Deployed two VMs as Web Servers using PowerShell

```
$vm1 = @{
   ResourceGroupName = 'RG-SEA1'
   Location = 'SoutheastAsia'
   Name = 'WebVM1'
   VirtualNetworkName = 'VnetSEA1'
   SubnetName = 'WebVMSubnet'
   AvailabilitySetName = 'AS1'
}
New-AzVM @vm1
```


```
$vm2 = @{
   ResourceGroupName = 'RG-SEA1'
   Location = 'SoutheastAsia'
   Name = 'WebVM2'
   VirtualNetworkName = 'VnetSEA1'
   SubnetName = 'WebVMSubnet'
   AvailabilitySetName = 'AS1'
}
New-AzVM @vm2
```



- VMs are added in the Availability Set



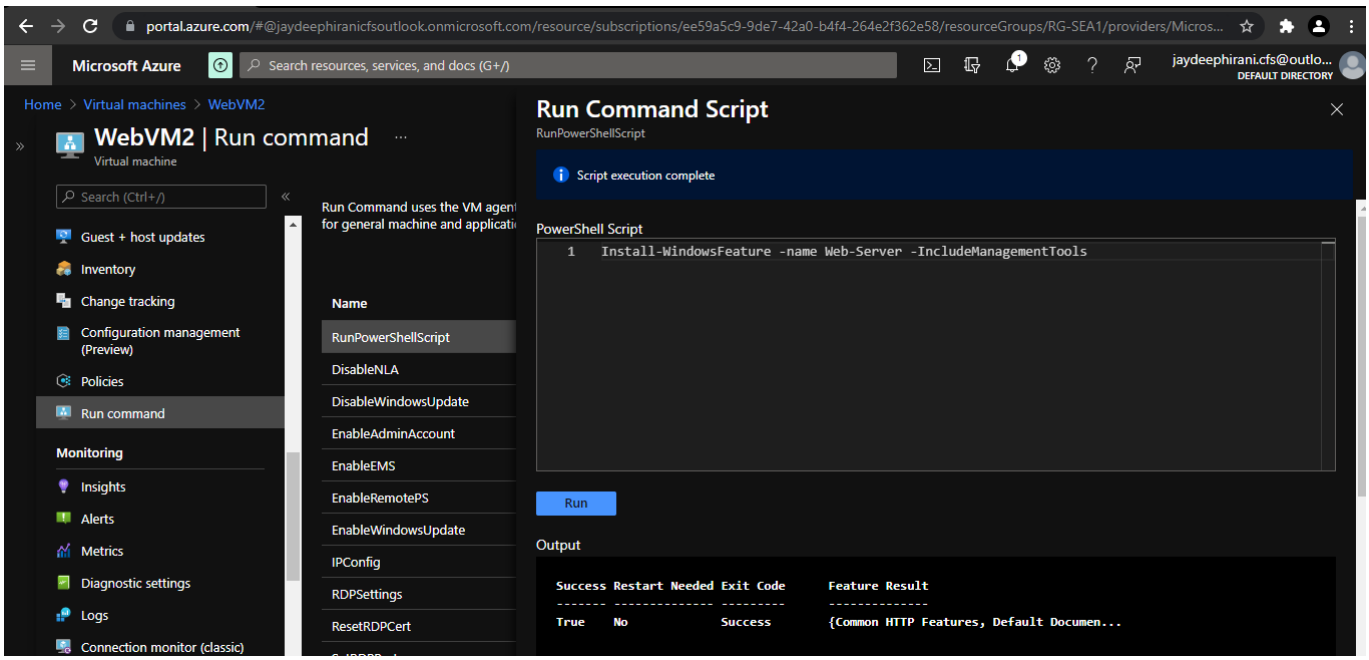
Note:

- Tried to install IIS on VMs using different methods but could not verify it ☹
- VM1

```
Set-AzVMExtension -ResourceGroupName "RG-SEA1" `
   -ExtensionName "IIS" `
   -VMName "WebVM1" `
   -Location " SoutheastAsia" `
   -Publisher Microsoft.Compute `
   -ExtensionType CustomScriptExtension `
   -TypeHandlerVersion 1.8 `
   -SettingString '{"commandToExecute":"powershell Add-WindowsFeature Web-Server; powershell Add-Content -Path \"C:\\inetpub\\wwwroot\\Default.htm\" -Value $($env:computername)"}'
```

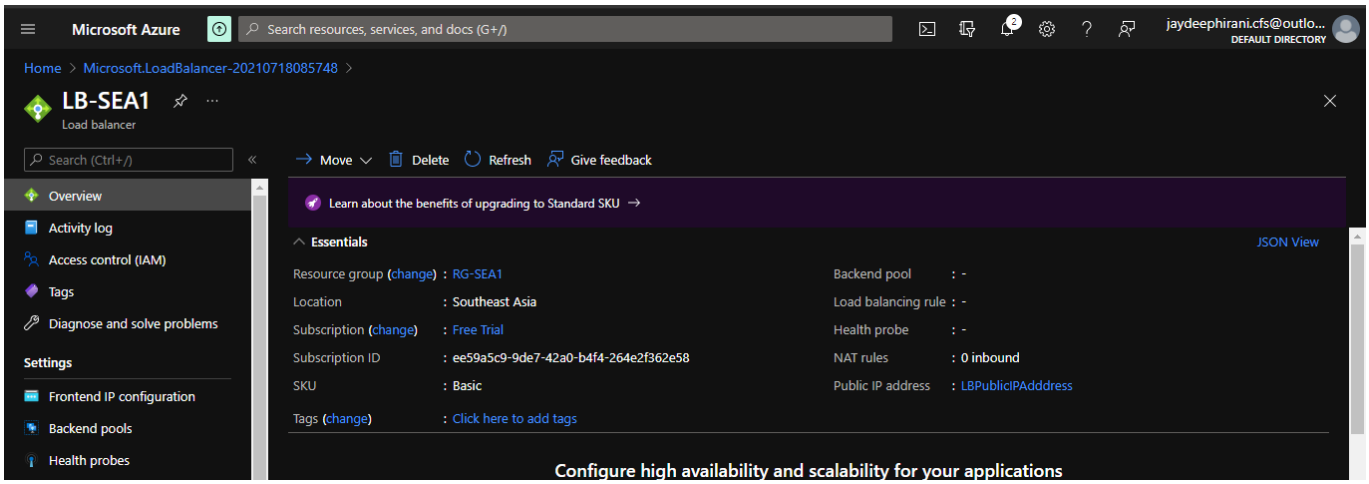
```
PS /home/jaydeep> Set-AzVMExtension -ResourceGroupName "RG-SEA1" `
>>     -ExtensionName "IIS" `
>>     -VMName "WebVM1" `
>>     -Location " SoutheastAsia" `
>>     -Publisher Microsoft.Compute `
>>     -ExtensionType CustomScriptExtension `
>>     -TypeHandlerVersion 1.8 `
>>     -SettingString '{"commandToExecute":"powershell Add-WindowsFeature Web-Server; powershell Add-Content -Path \"C:\\inetpub\\wwwroot\\Default.htm\" -Value $($env:computername)"}'

RequestId IsSuccessStatusCode StatusCode ReasonPhrase
--------- ------------------- ---------- ------------
                         True         OK OK
```

- VM2



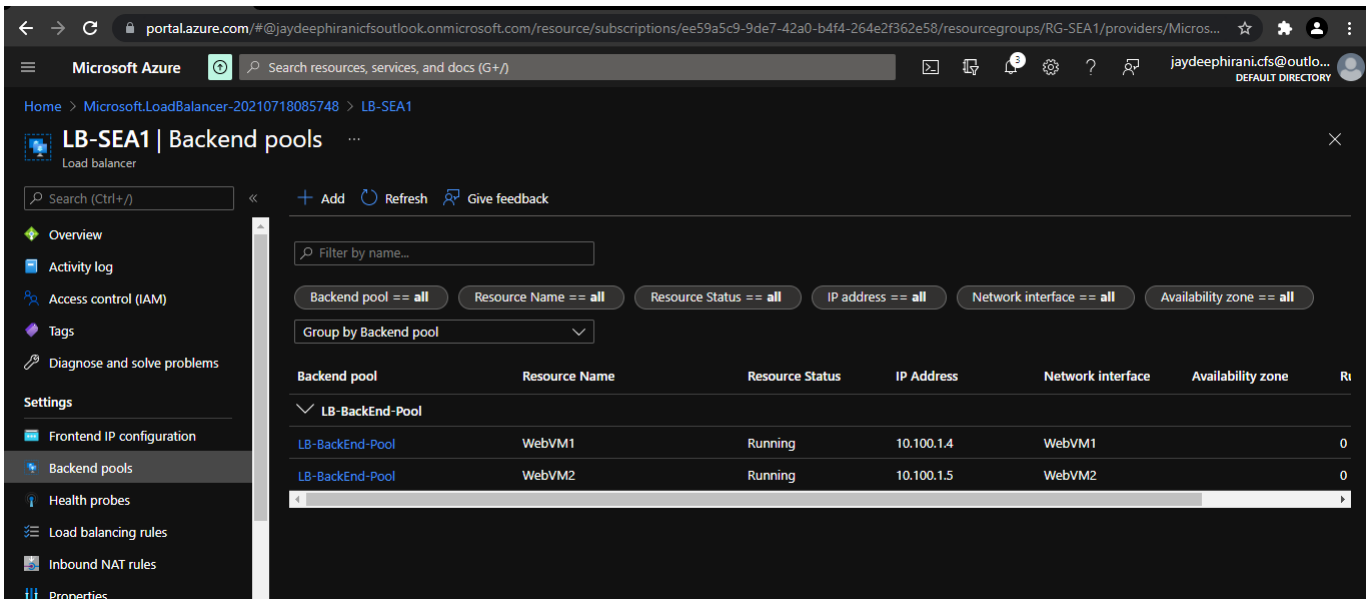
Load Balancer

- Created a Load Balancer *LB-SEA1* and associated configuration as per below

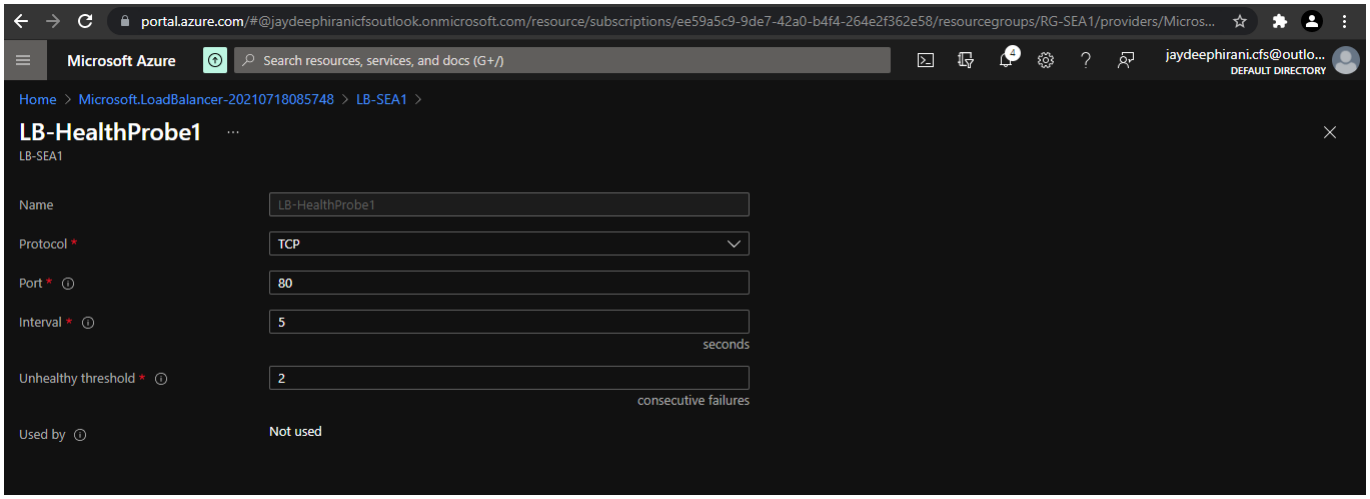


Backend Pool

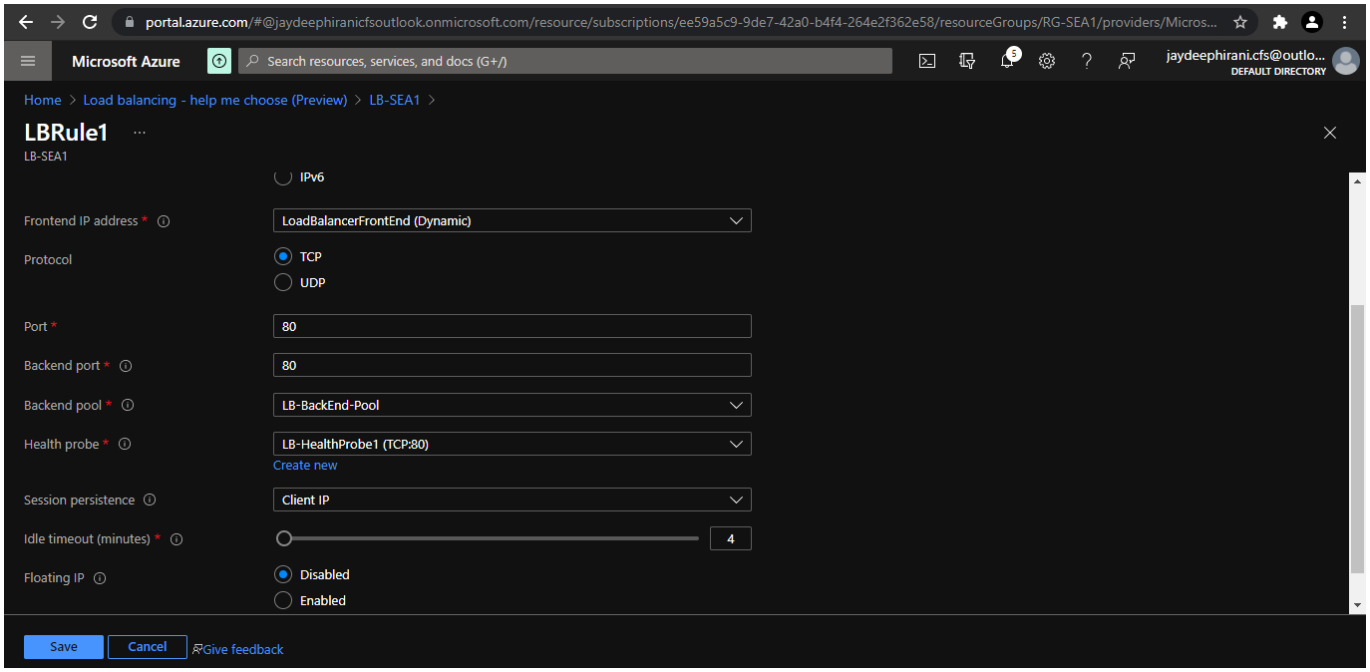
- Created Backend Pool and added VMs into add



Health Probe

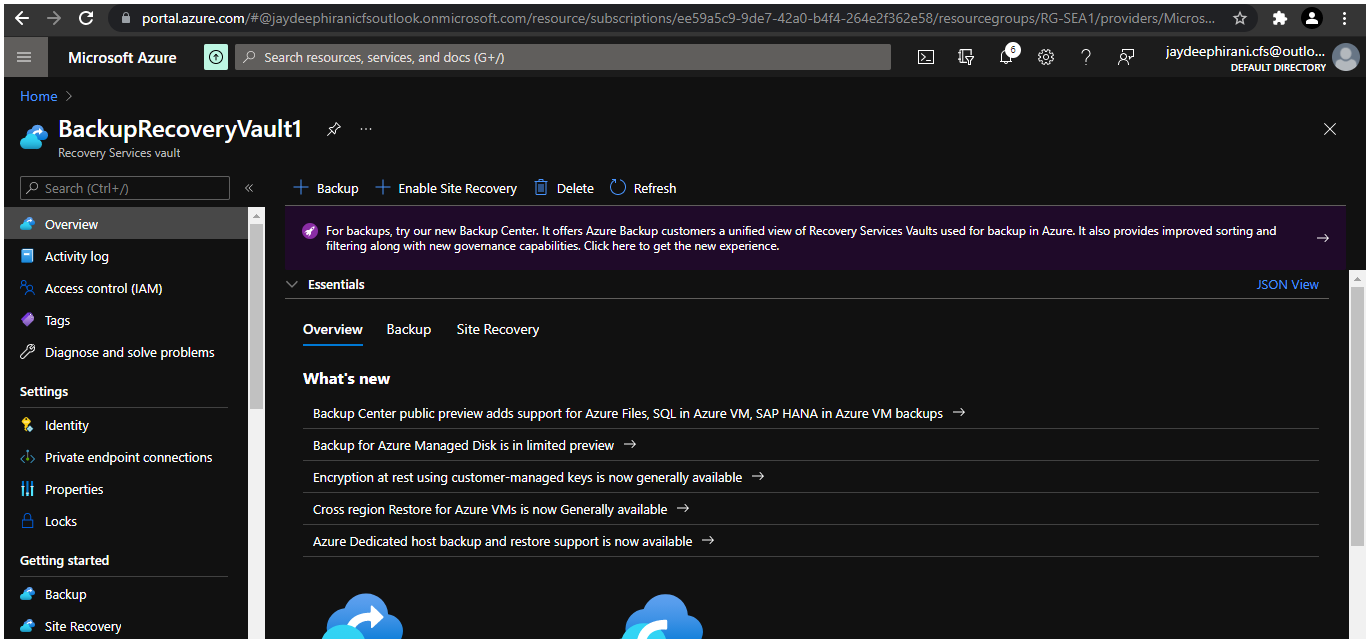


Load Balancing Rule

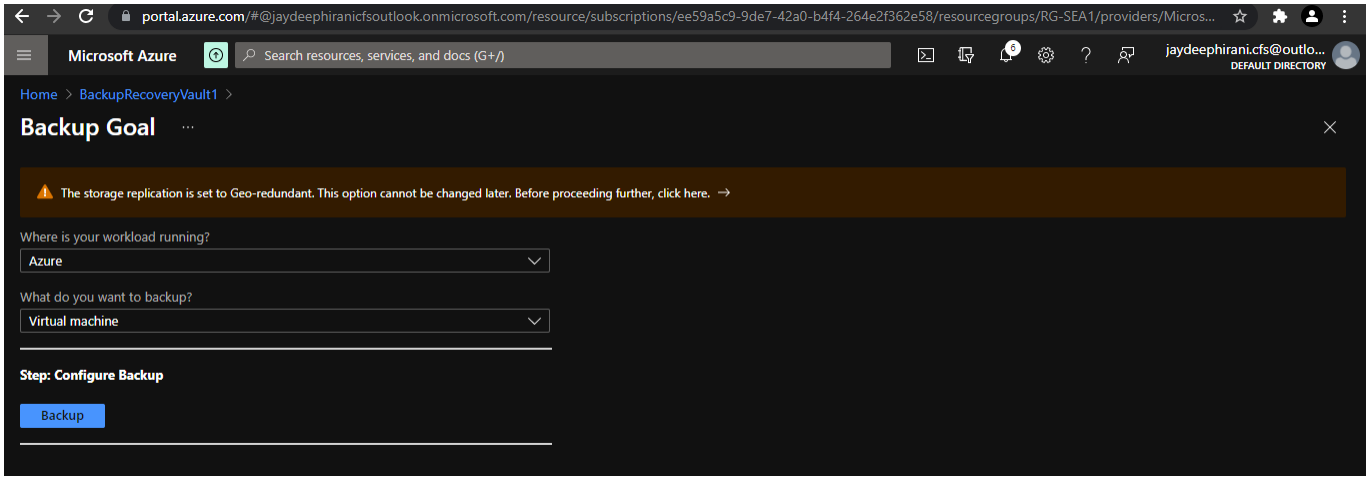


Server Backup

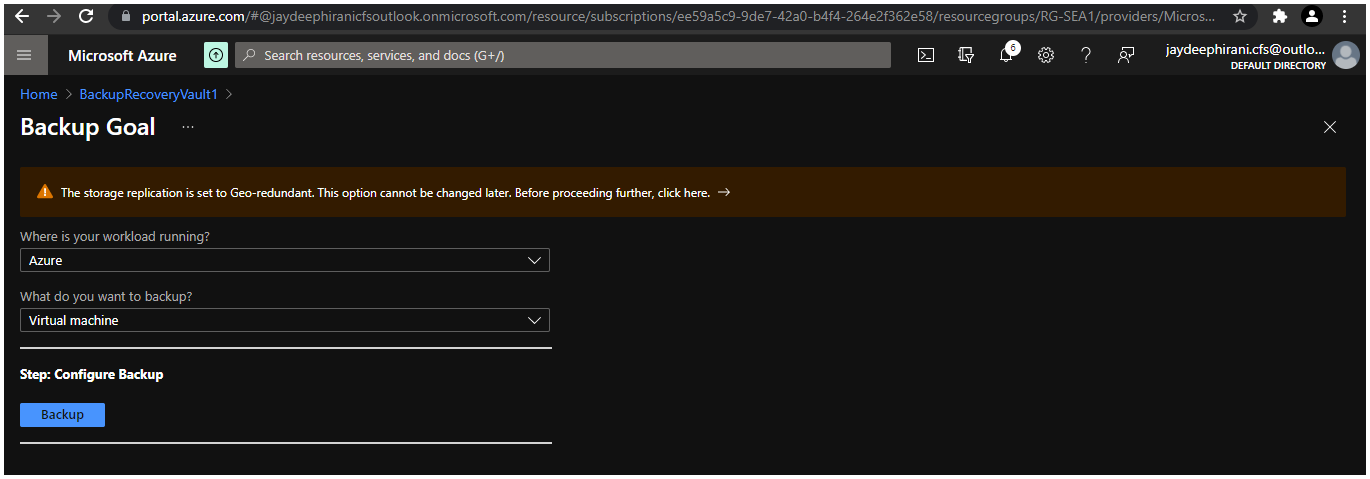
Recovery Service Vault

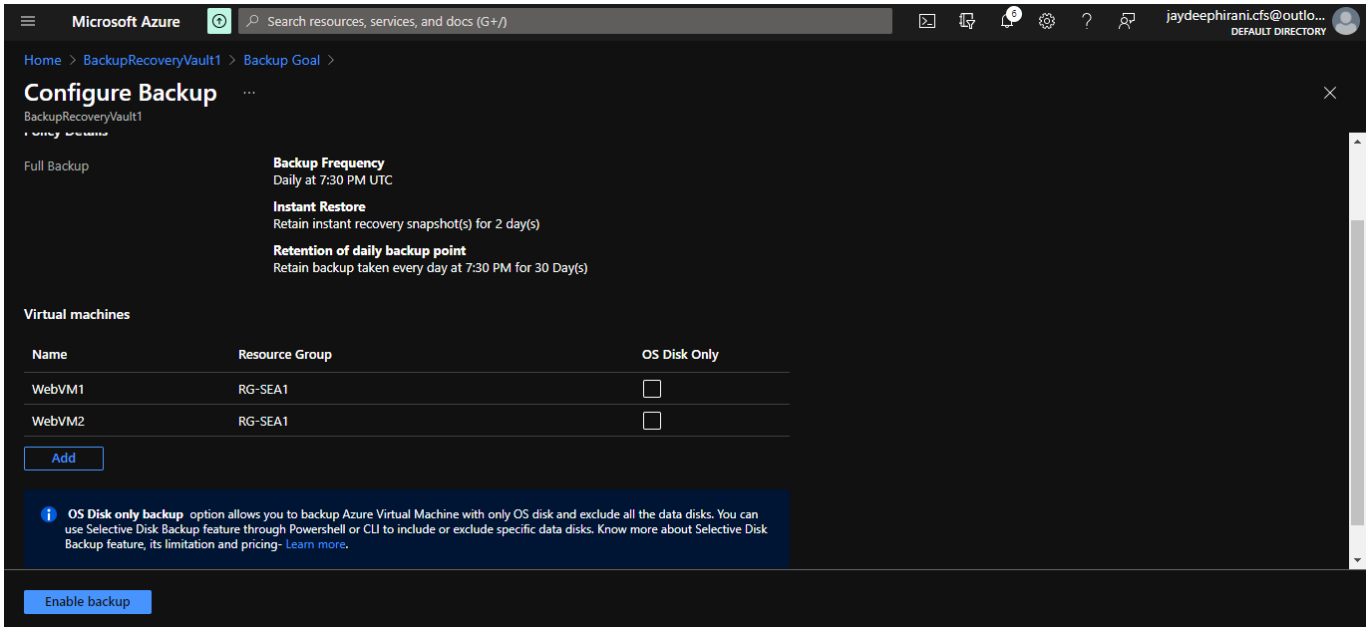


Backup Configuration for VM



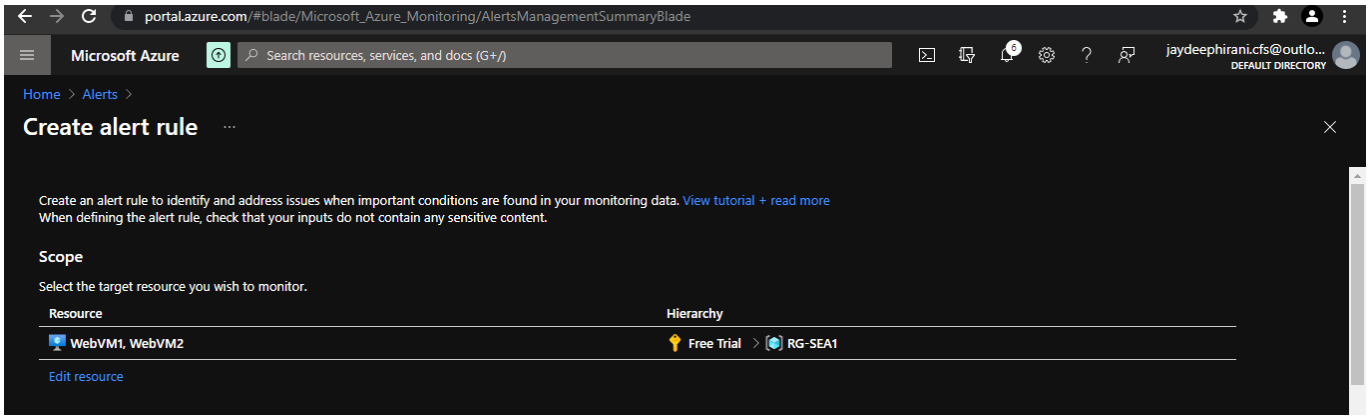
Backup Policy

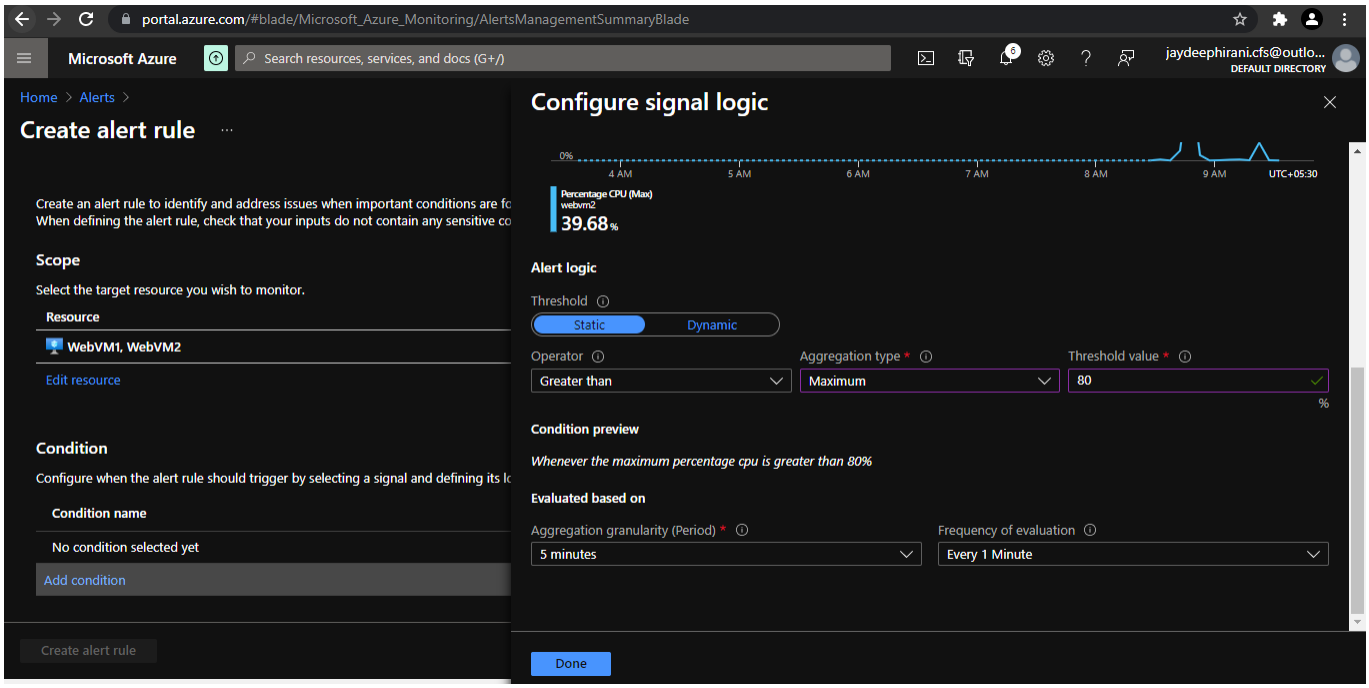


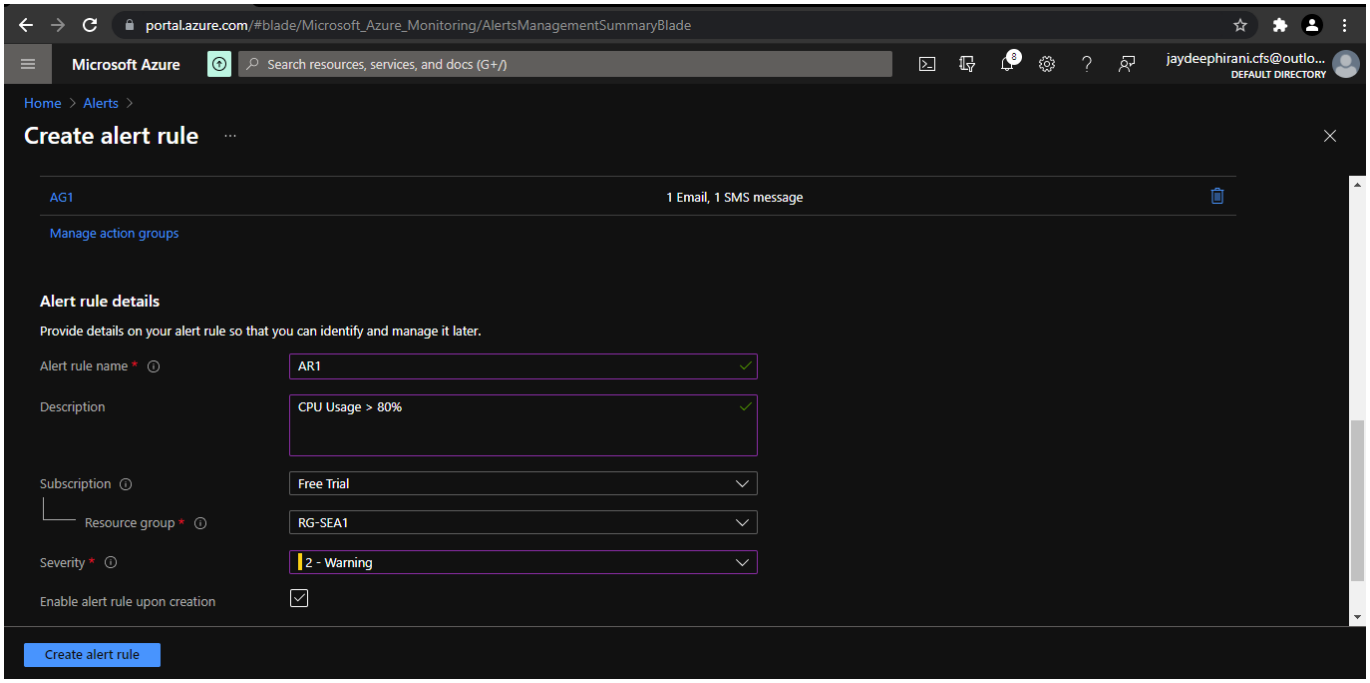


Alert Rule

- Configured Alert Rule to get an alert when CPU usage on VMs exceeds 80%



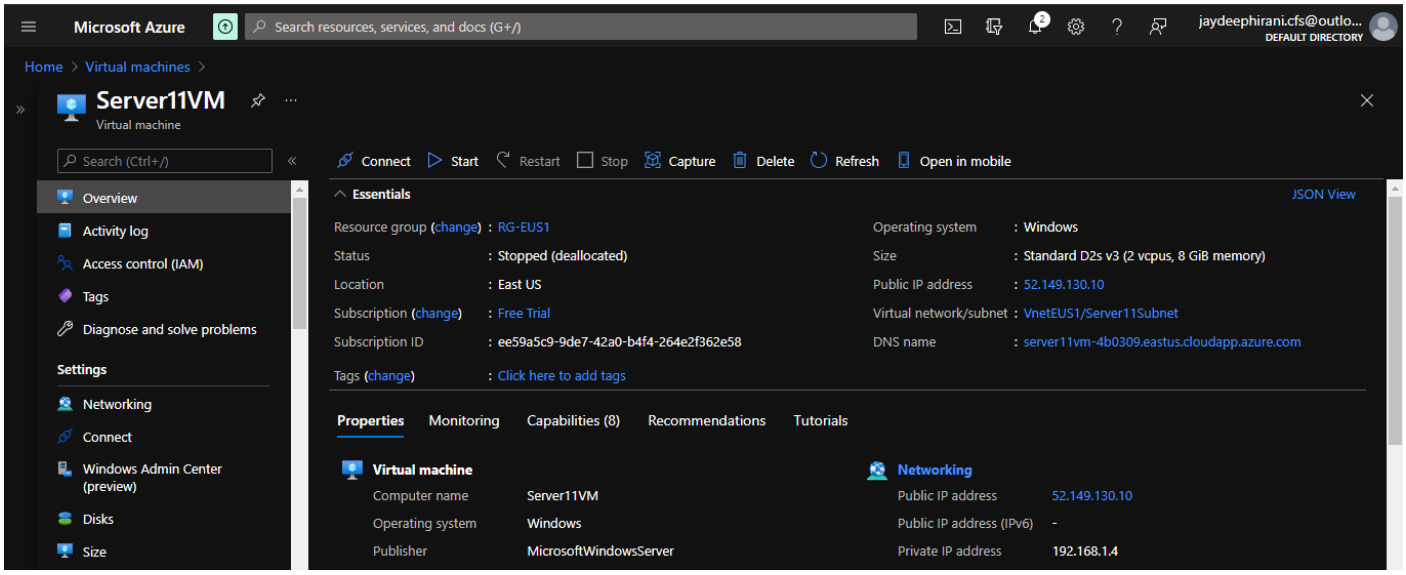



portal.azure.com/#blade/Microsoft_Azure_Monitoring/AlertsManagementSummaryBlade
Microsoft Azure
Search resources, services, and docs (G+/)
jaydeephirani.cfs@outlo...
DEFAULT DIRECTORY
Home > Alerts >
Create alert rule
AG1
1 Email, 1 SMS message
Manage action groups
Alert rule details
Provide details on your alert rule so that you can identify and manage it later.
Alert rule name *
AR1
Description
CPU Usage > 80%
Subscription
Free Trial
Resource group *
RG-SEA1
Severity *
2 - Warning
Enable alert rule upon creation
Create alert rule

EastUS Region

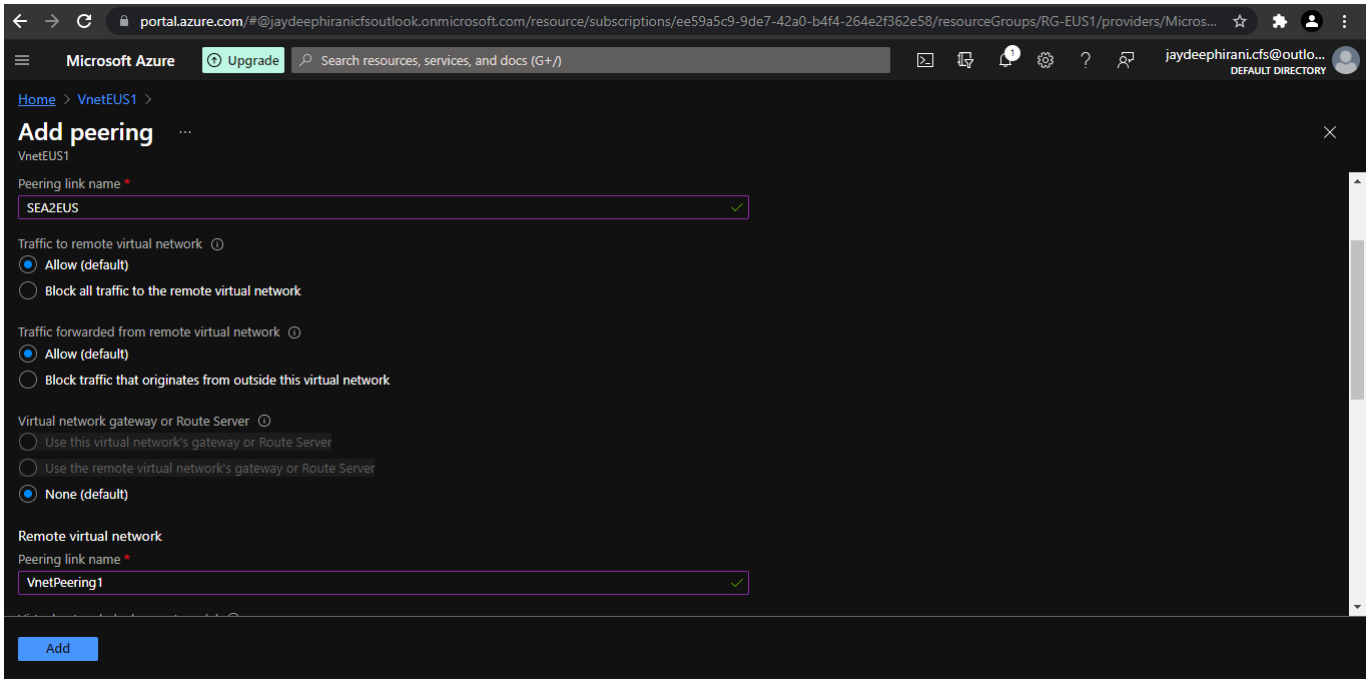
VM Deployment

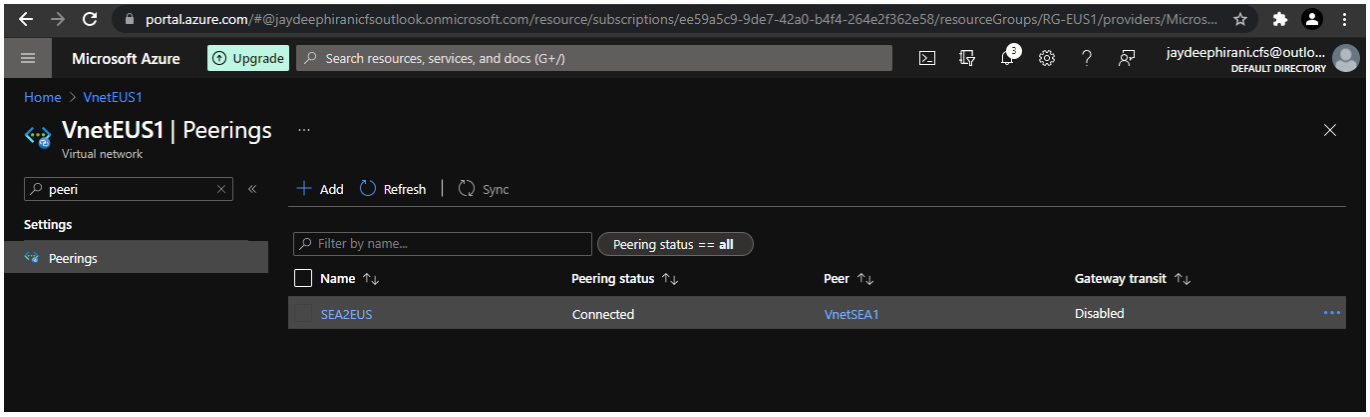
- Deployed *Server11VM* in the East US region (using the same method by which the VMs deployed in SEA region)



VNet Peering

- Configured VNet Peering to establish secure connection to SEA-EUS Azure sites

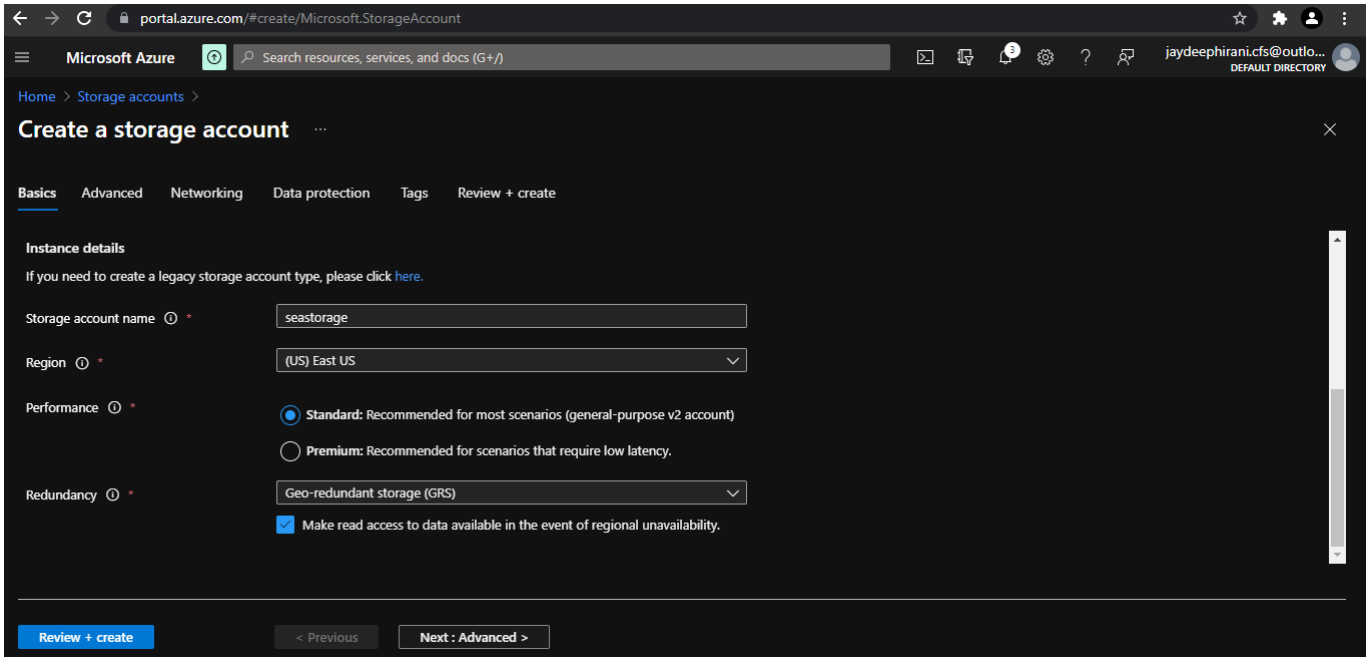


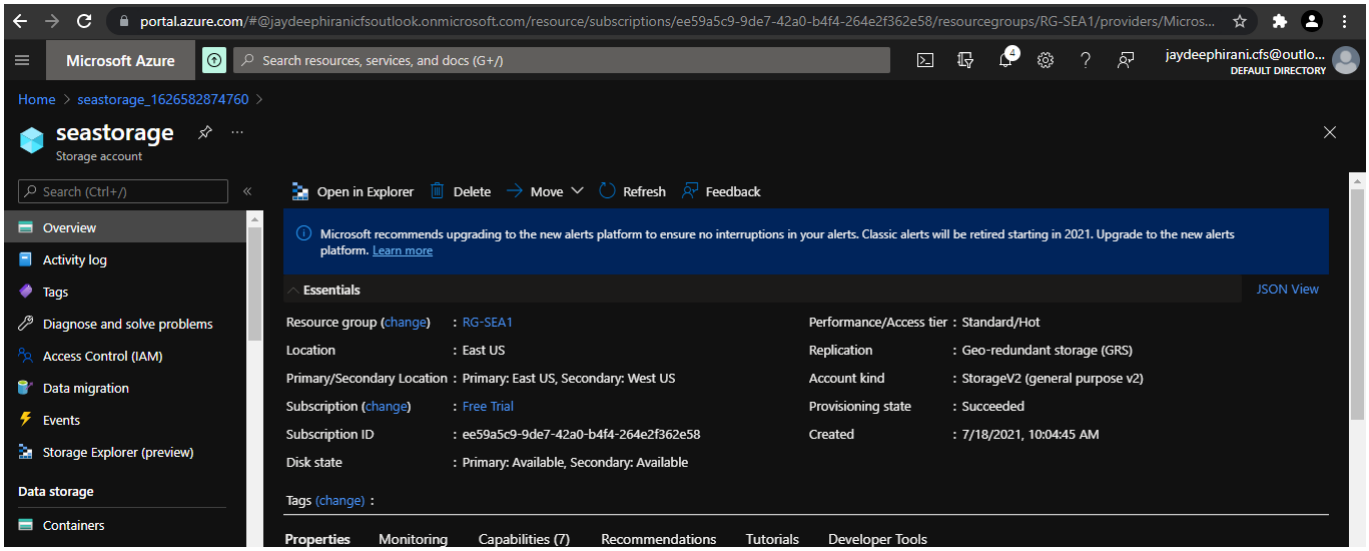


Storage Requirements

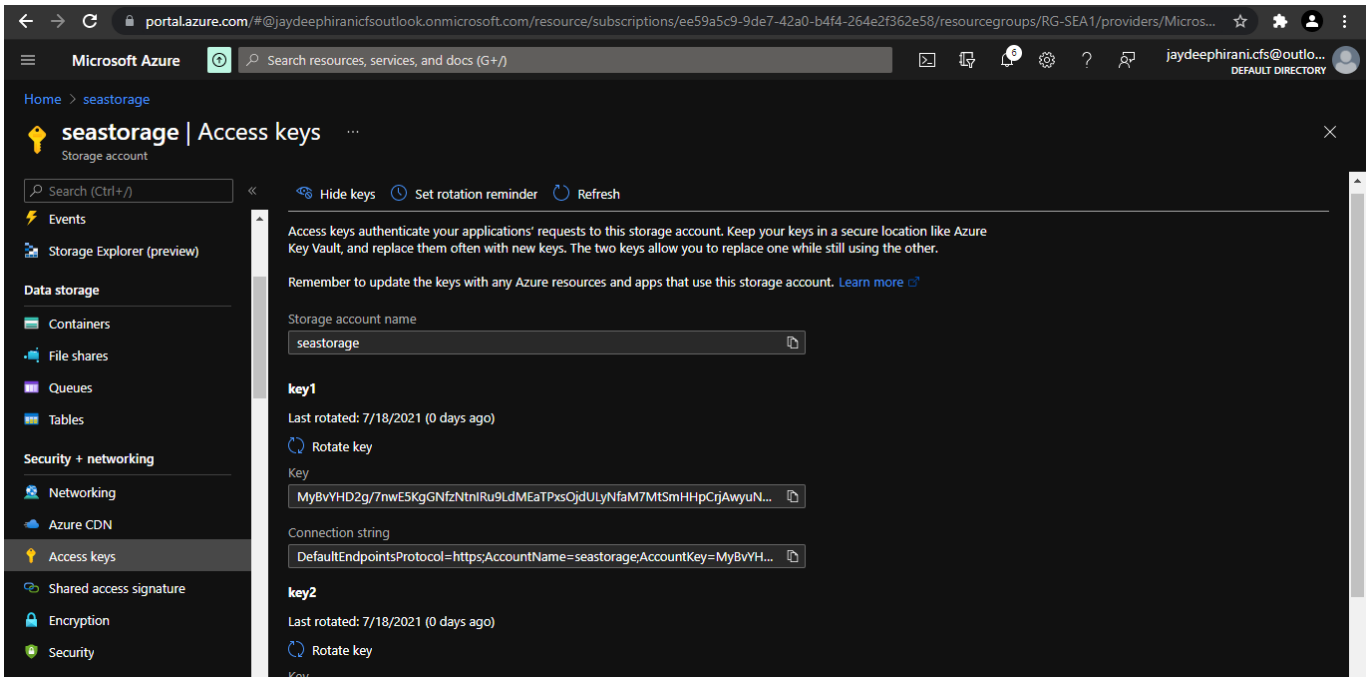
Storage Account - SEA Region

- Created Geo Redundant Storage (GRS) account for resources in the SEA region

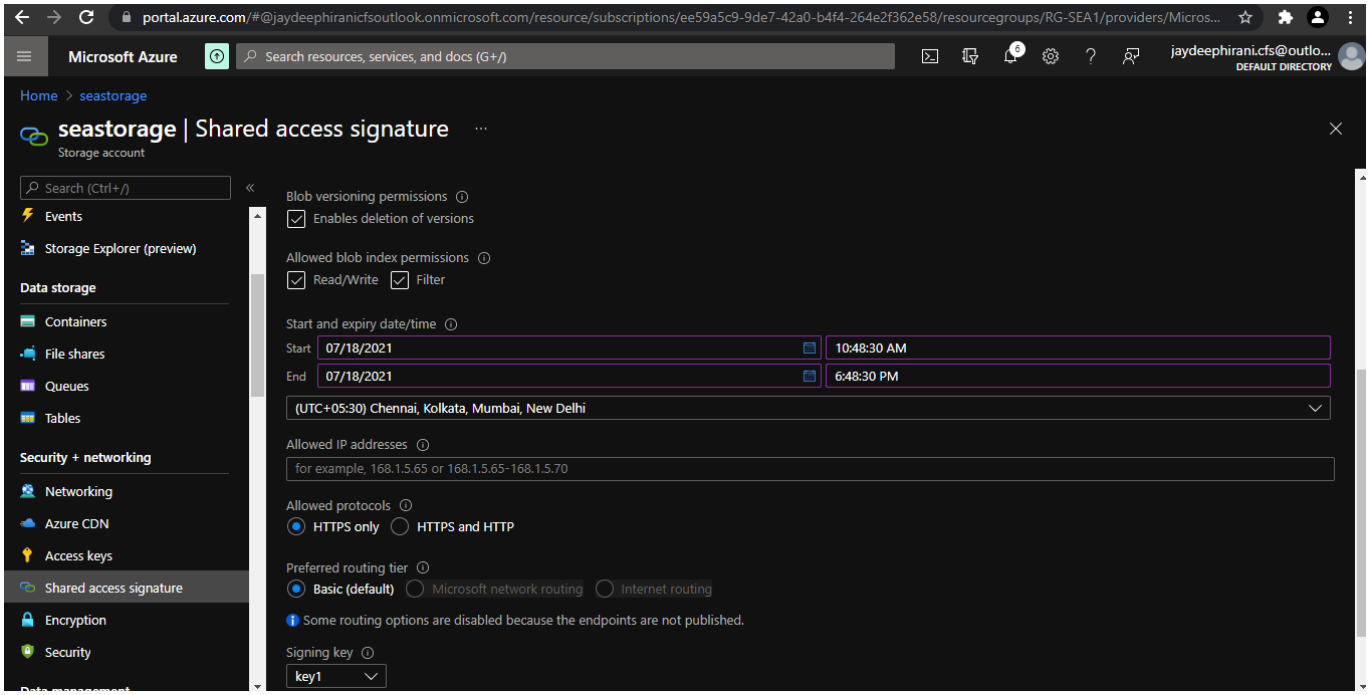




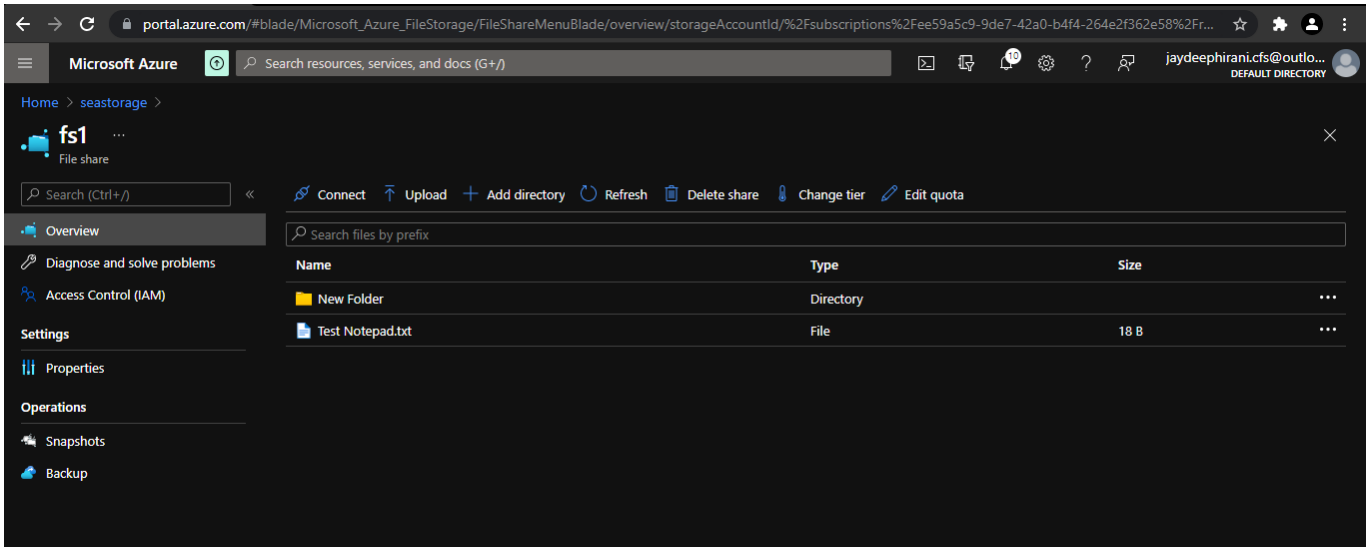
Access Keys



Shared Access Signature

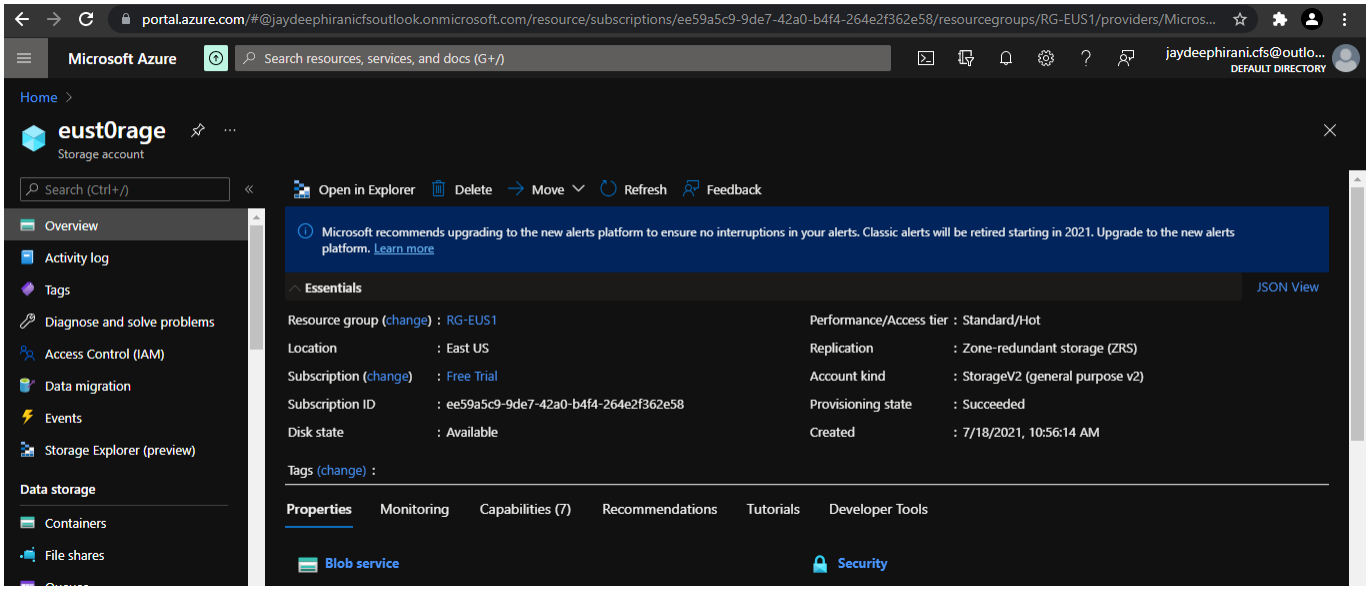


File Share



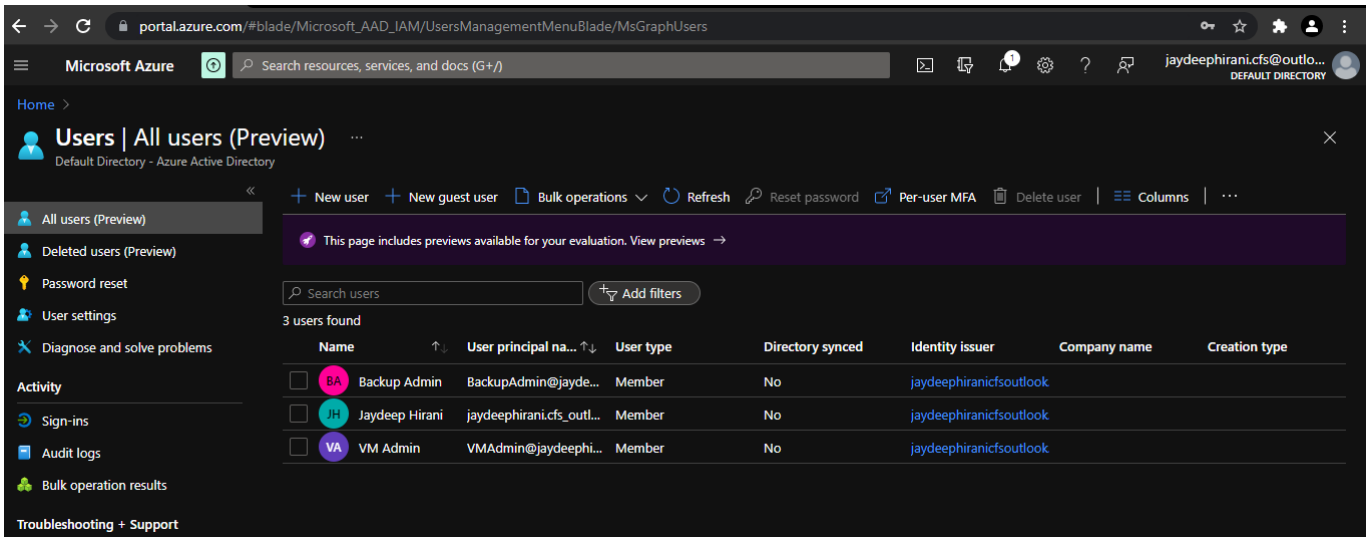
Storage Account - EUS Region

- Created Zone Redundant Storage (ZRS) account for resources in the EUS region

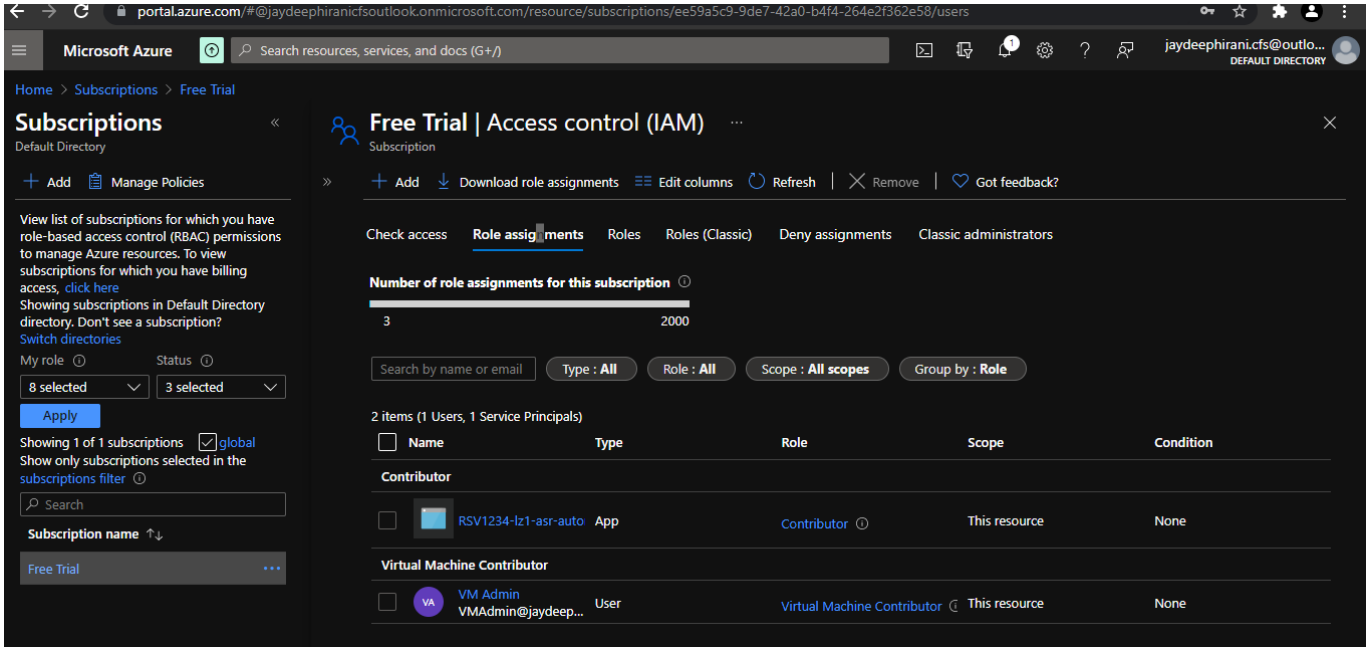


Resource Management

- Created following two users as per the requirement
  - VM Admin
  - Backup Admin



- Provided Subscription level access to the *VM Admin* user to manage all VMs in the subscription



- Provided Resource Group level access to the *Backup Admin* user to manage backup only on the VMs deployed in the East US region.