

Implementing IaaS & PaaS in Azure

POC for Nilavembu Herbs

~Jaydeep Hirani

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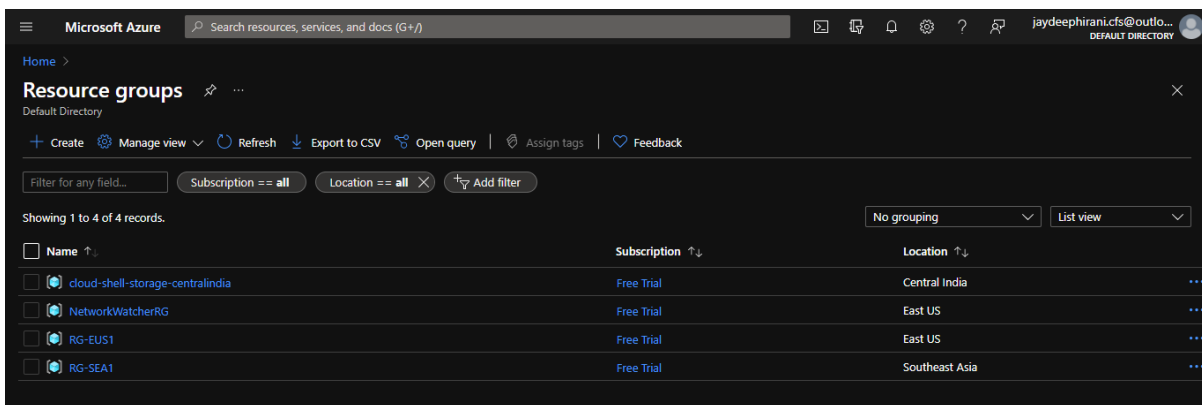
SEA Region

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
```



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

Home > Resource groups

Default Directory

+ Create | Manage view | Refresh | Export to CSV | Open query | Assign tags | Feedback

Filter for any field... | Subscription == all | Location == all | Add filter

Showing 1 to 4 of 4 records. | No grouping | List view

Name ↑	Subscription ↑↓	Location ↑↓
cloud-shell-storage-centralindia	Free Trial	Central India
NetworkWatcherRG	Free Trial	East US
RG-EUS1	Free Trial	East US
RG-SEA1	Free Trial	Southeast Asia

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 :
```

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, an 'Upgrade' button, a search bar, and user information for 'jaydeep@outlook.com'. The main content area displays the details for an Availability Set named 'AS1'. On the left, there is a sidebar with navigation links: Overview (selected), Activity log, Access control (IAM), Tags, Settings, Configuration, Virtual machines, Properties, and Locks. The main panel shows the 'Overview' tab for 'AS1'. It includes a search bar, 'Delete' and 'Refresh' buttons, and a 'JSON View' link. Below this, there is a table of 'Essentials' with the following data:

Property	Value
Resource group (change)	RG-SEA1
Location	Southeast Asia
Subscription (change)	Free Trial
Subscription ID	ee59a5c9-9de7-42a0-b4f4-264e2f362e58
Fault domains	2
Update domains	5
Virtual machines	0
Managed	Yes
Colocation status	N/A

Below the essentials table, there is a section for 'Virtual machines' with a search bar and a table with columns: Name, Status, Colocation status, Fault Domain, and Update Domain. The table currently shows 'No results'.

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
```

```
PS /home/jaydeep> $vnet1 = @{  
>>     Name = 'VnetSEA1'  
>>     ResourceGroupName = 'RG-SEA1'  
>>     Location = 'SoutheastAsia'  
>>     AddressPrefix = '10.100.0.0/16'  
>> }  
PS /home/jaydeep> $virtualNetwork = New-AzVirtualNetwork @vnet1
```

The screenshot shows the Microsoft Azure portal interface for managing Virtual Networks. The page title is 'Virtual networks' and it shows a single record for 'VnetSEA1'.

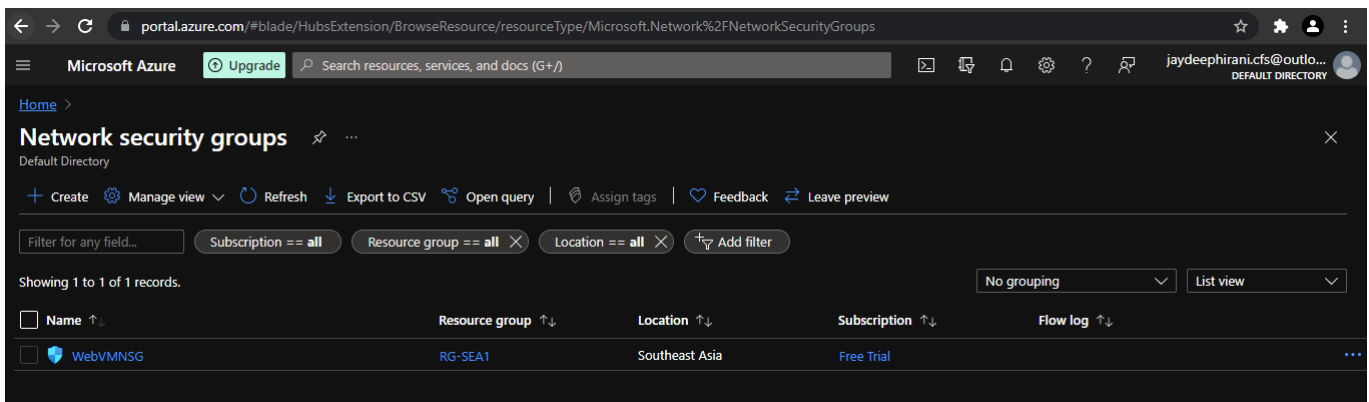
Name	Resource group	Location	Subscription
VnetSEA1	RG-SEA1	Southeast Asia	Free Trial

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-a1c4-6586f74422d8"
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
```

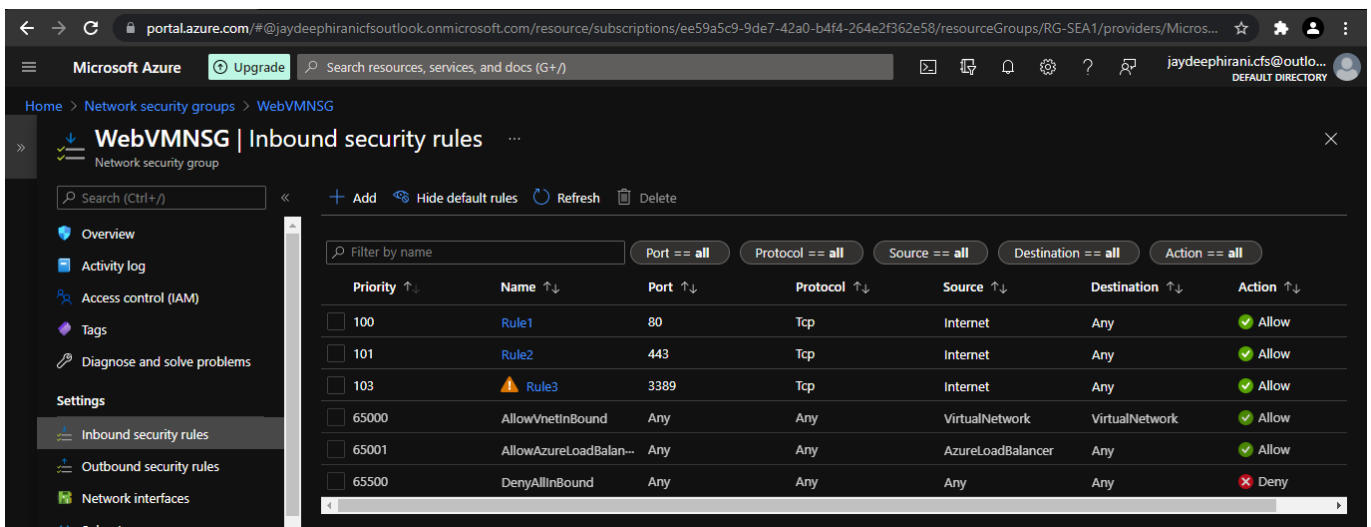
```
$rule3 = New-AzNetworkSecurityRuleConfig -Name Rule3 -Description "Allow RDP" `
-Access Allow -Protocol Tcp -Direction Inbound -Priority 103 -SourceAddressPrefix `
Internet -SourcePortRange * -DestinationAddressPrefix * -DestinationPortRange 3389
```

- Applied the Security Rules to the Security Group

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

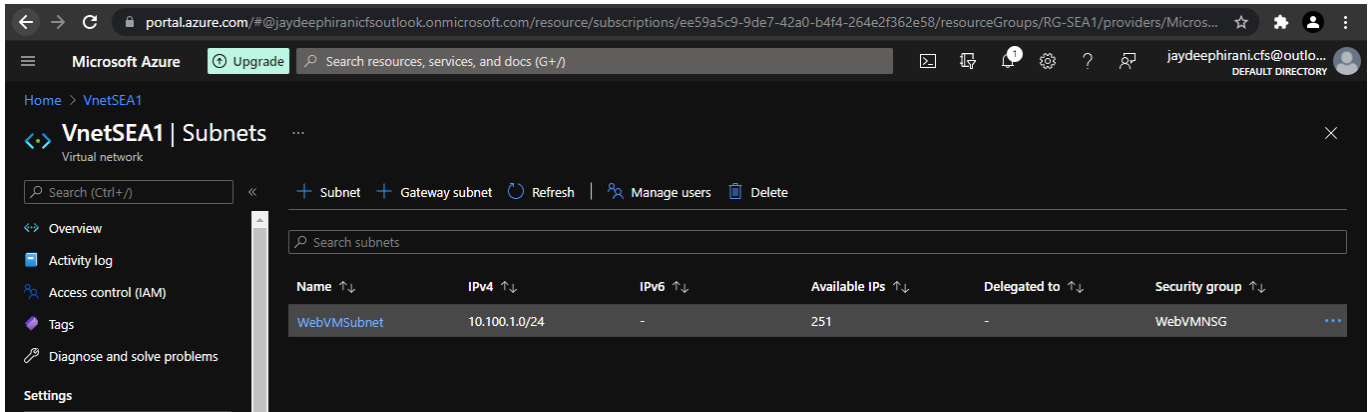
```
PS /home/jaydeep> $rule1 = New-AzNetworkSecurityRuleConfig -Name Rule1 -Description "Allow HTTP" `
>> -Access Allow -Protocol Tcp -Direction Inbound -Priority 100 -SourceAddressPrefix `
>> Internet -SourcePortRange * -DestinationAddressPrefix * -DestinationPortRange 80
PS /home/jaydeep> $rule2 = 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
```

```
PS /home/jaydeep> $vm1 = @{  
>> ResourceGroupName = 'RG-SEA1'  
>> Location = 'SoutheastAsia'  
>> Name = 'WebVM1'  
>> VirtualNetworkName = 'VnetSEA1'  
>> SubnetName = 'WebVMSubnet'  
>> AvailabilitySetName = 'AS1'  
>> }  
PS /home/jaydeep> New-AzVM @vm1  
  
cmdlet New-AzVM at command pipeline position 1  
Supply values for the following parameters:  
Credential  
User: UserWebVM1  
Password for user UserWebVM1: *****  
  
No Size value has been provided. The VM will be created with the default size Standard_D2s_v3.  
□
```

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

```
PS /home/jaydeep> $vm2 = @{  
>> ResourceGroupName = 'RG-SEA1'  
>> Location = 'SoutheastAsia'  
>> Name = 'WebVM2'  
>> VirtualNetworkName = 'VnetSEA1'  
>> SubnetName = 'WebVMSubnet'  
>> AvailabilitySetName = 'AS1'  
>> }  
PS /home/jaydeep> New-AzVM @vm2  
  
cmdlet New-AzVM at command pipeline position 1  
Supply values for the following parameters:  
Credential  
User: UserWebVM2  
Password for user UserWebVM2: *****  
  
No Size value has been provided. The VM will be created with the default size Standard_D2s_v3.  
□
```

portal.azure.com/#blade/HubsExtension/BrowseResource/resourceType/Microsoft.Compute%2FVirtualMachines

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

Home > Virtual machines

Default Directory

+ Create Switch to classic Reservations Manage view Refresh Export to CSV Open query Assign tags Start Restart Stop Delete

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

Showing 1 to 2 of 2 records. No grouping List view

Name	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
WebVM1	Free Trial	RG-SEA1	Southeast Asia	Running	Windows	Standard_D2s_v3	138.91.34.203	1
WebVM2	Free Trial	RG-SEA1	Southeast Asia	Running	Windows	Standard_D2s_v3	23.101.30.5	1

- VMs are added in the Availability Set

portal.azure.com/#@jaydeephiranicfsoutlook.onmicrosoft.com/resource/subscriptions/ee59a5c9-9de7-42a0-b4f4-264e2f362e58/resourceGroups/RG-SEA1/providers/Micros...

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

Home > AS1 Availability set

Search (Ctrl+/) Delete Refresh

Overview

Activity log

Access control (IAM)

Tags

Settings

Configuration

Virtual machines

Properties

Locks

Automation

Essentials

Resource group (change) : RG-SEA1

Location : Southeast Asia

Subscription (change) : Free Trial

Subscription ID : ee59a5c9-9de7-42a0-b4f4-264e2f362e58

Fault domains : 2

Update domains : 5

Virtual machines : 2

Managed : Yes

Colocation status : N/A

Search virtual machines

Name	Status	Colocation status	Fault Domain	Update Domain
WebVM1	Running		0	0
WebVM2	Running		1	1

Note:

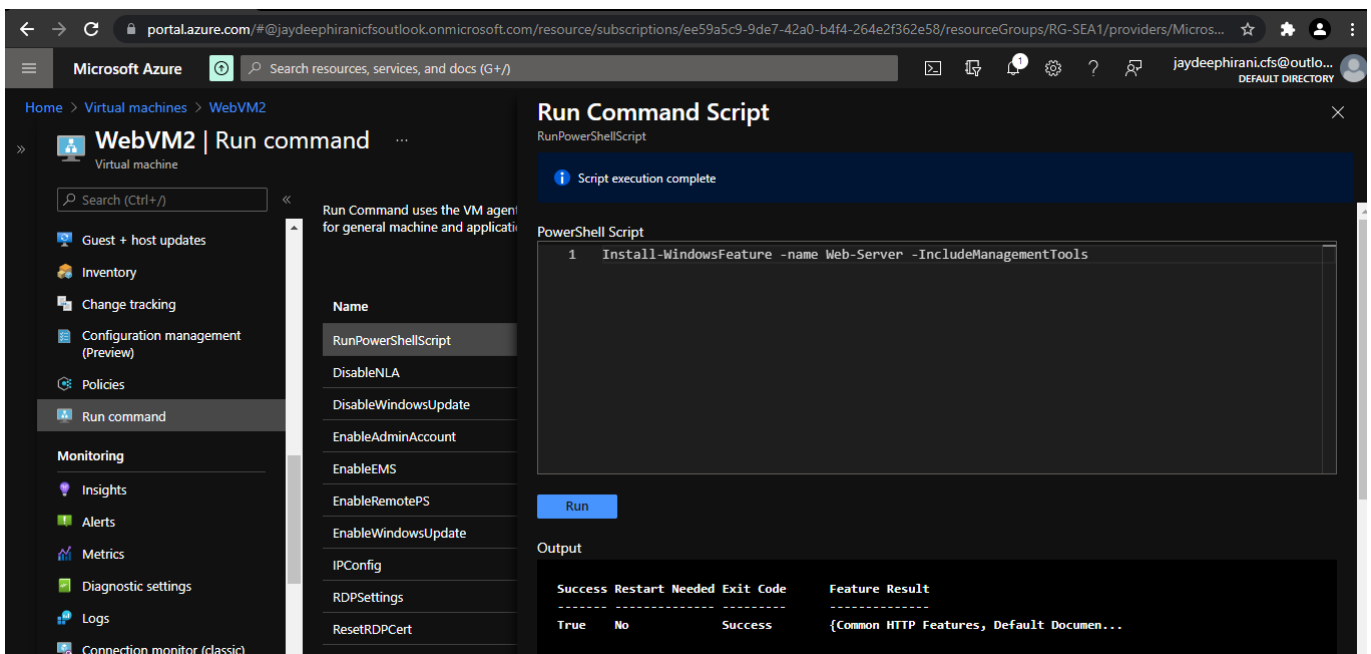
- Tried to install IIS on VMs using different methods but could not verify it ☹
- VM1

```
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)}'

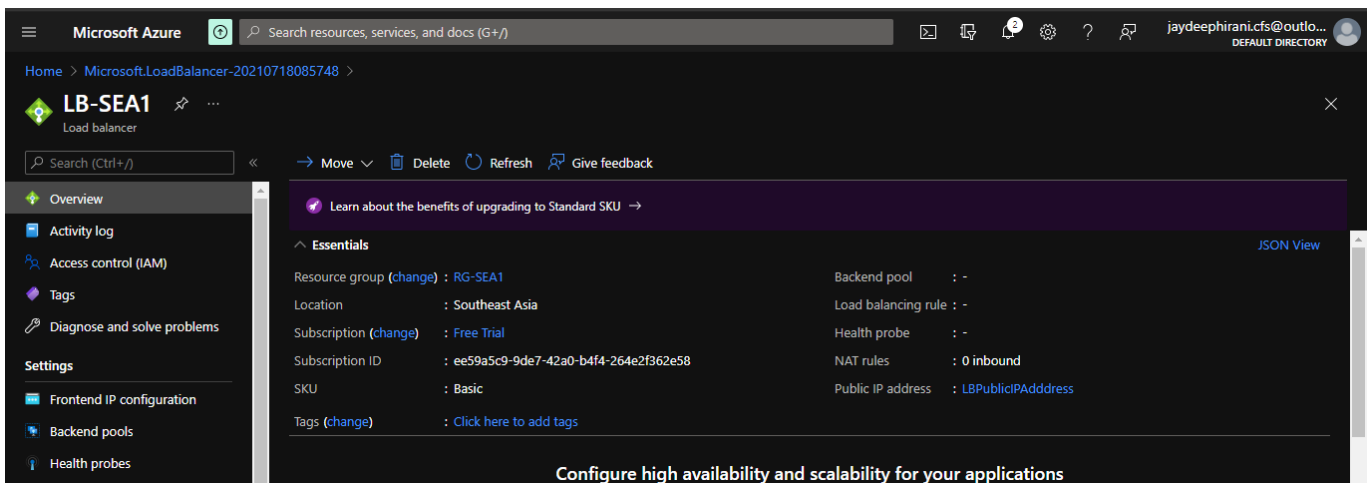
RequestId IsSuccessStatusCode StatusCode ReasonPhrase
-----
True OK OK
```

- VM2



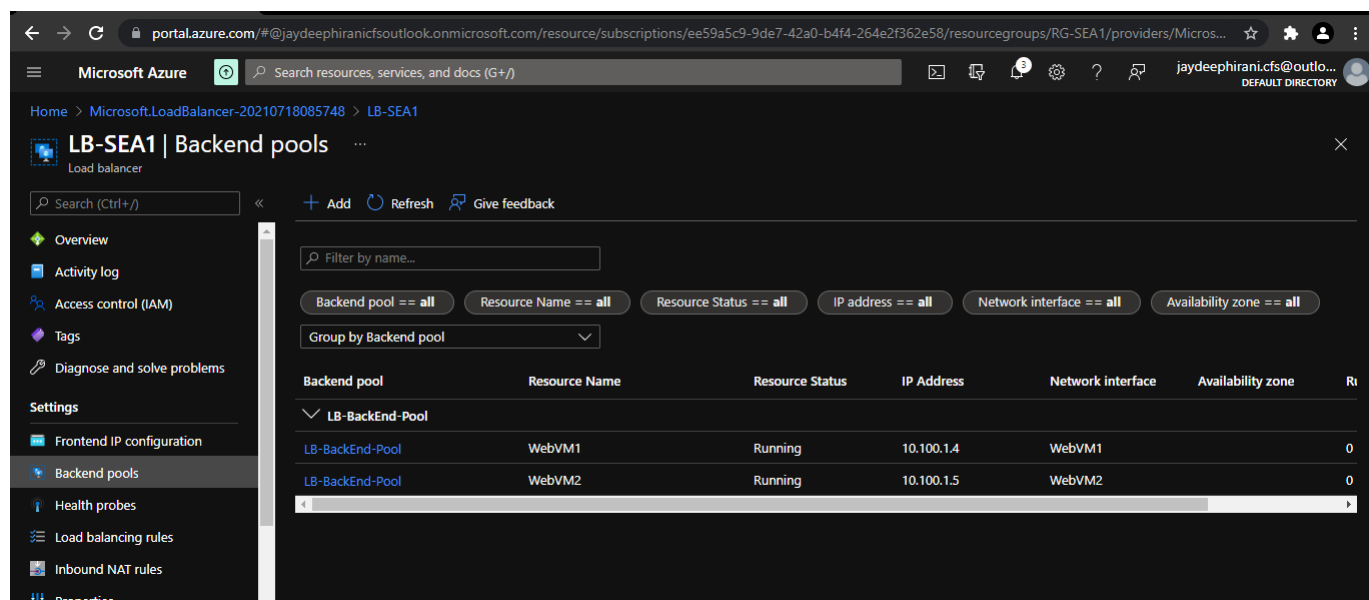
Load Balancer

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



Backend Pool

- Created Backend Pool and added VMs into add



Health Probe

The screenshot shows the configuration page for a Health Probe in the Azure portal. The breadcrumb trail is: Home > Microsoft.LoadBalancer-20210718085748 > LB-SEA1 > LB-HealthProbe1. The form fields are as follows:

Field	Value
Name	LB-HealthProbe1
Protocol *	TCP
Port *	80
Interval *	5 seconds
Unhealthy threshold *	2 consecutive failures
Used by	Not used

Load Balancing Rule

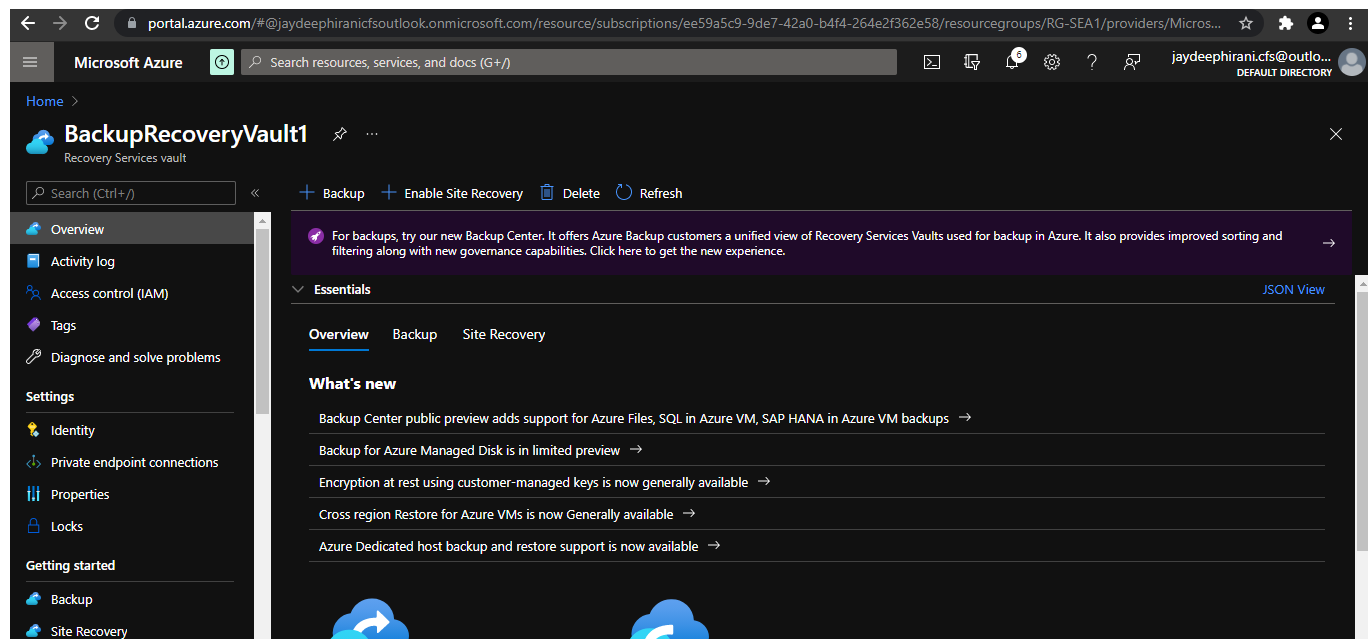
The screenshot shows the configuration page for a Load Balancing Rule in the Azure portal. The breadcrumb trail is: Home > Load balancing - help me choose (Preview) > LB-SEA1 > LBRule1. The form fields are as follows:

Field	Value
Frontend IP address *	LoadBalancerFrontEnd (Dynamic)
Protocol	<input checked="" type="radio"/> TCP <input type="radio"/> UDP
Port *	80
Backend port *	80
Backend pool *	LB-BackEnd-Pool
Health probe *	LB-HealthProbe1 (TCP:80) Create new
Session persistence	Client IP
Idle timeout (minutes) *	4
Floating IP	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled

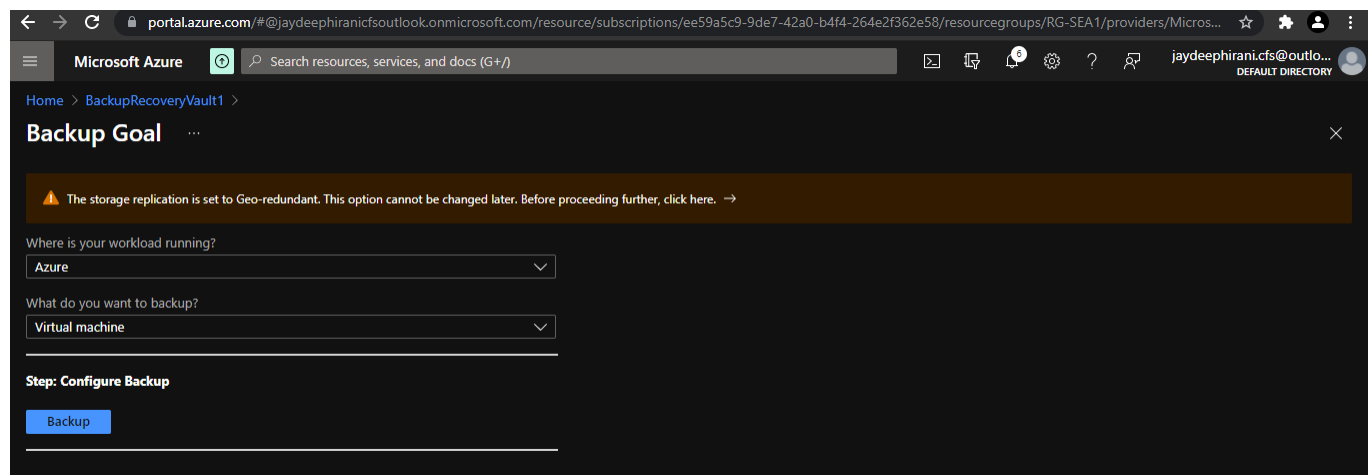
At the bottom of the form, there are buttons for "Save", "Cancel", and a link to "Give feedback".

Server Backup

Recovery Service Vault



Backup Configuration for VM



Backup Policy

portal.azure.com/#@jaydeephiranicsoutlook.onmicrosoft.com/resource/subscriptions/ee59a5c9-9de7-42a0-b414-264e2f362e58/resourcegroups/RG-SEA1/providers/Micros...

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

Home > BackupRecoveryVault1 >

Backup Goal

The storage replication is set to Geo-redundant. This option cannot be changed later. Before proceeding further, click here. →

Where is your workload running?
Azure

What do you want to backup?
Virtual machine

Step: Configure Backup

Backup

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

Home > BackupRecoveryVault1 > Backup Goal >

Configure Backup

BackupRecoveryVault1

Full Backup

Backup Frequency
Daily at 7:30 PM UTC

Instant Restore
Retain instant recovery snapshot(s) for 2 day(s)

Retention of daily backup point
Retain backup taken every day at 7:30 PM for 30 Day(s)

Virtual machines

Name	Resource Group	OS Disk Only
WebVM1	RG-SEA1	<input type="checkbox"/>
WebVM2	RG-SEA1	<input type="checkbox"/>

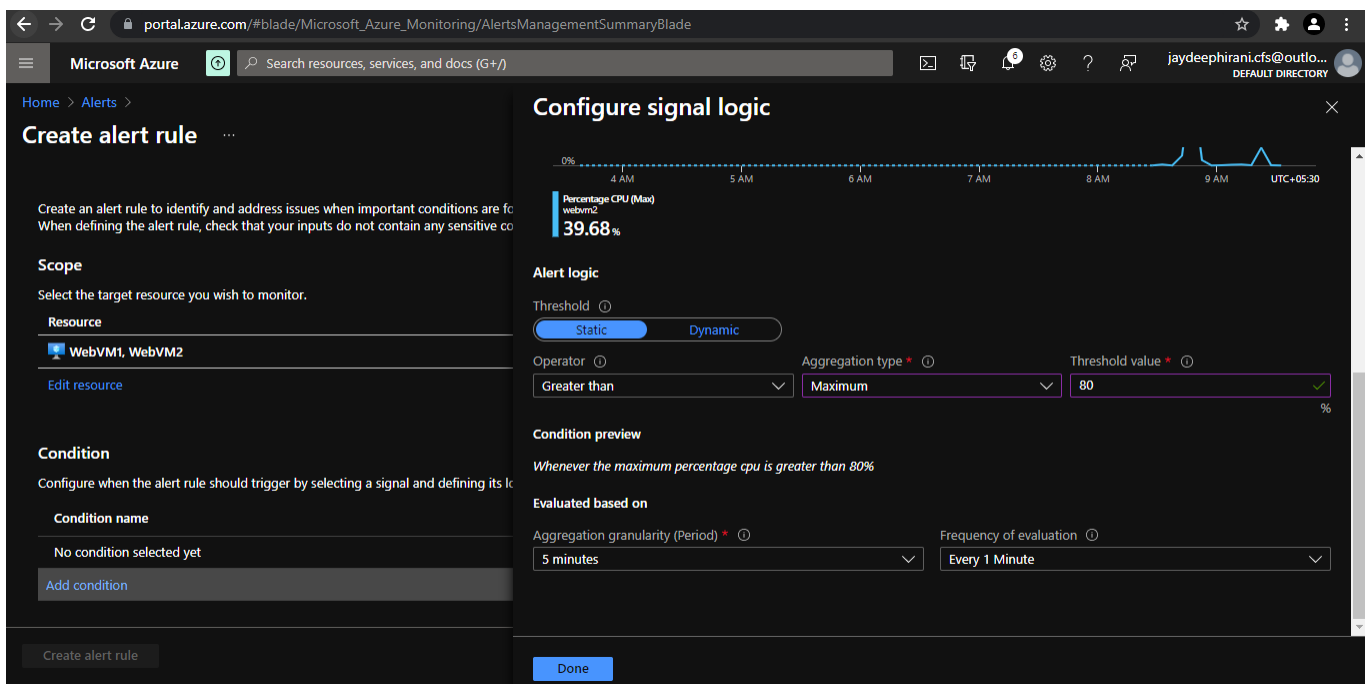
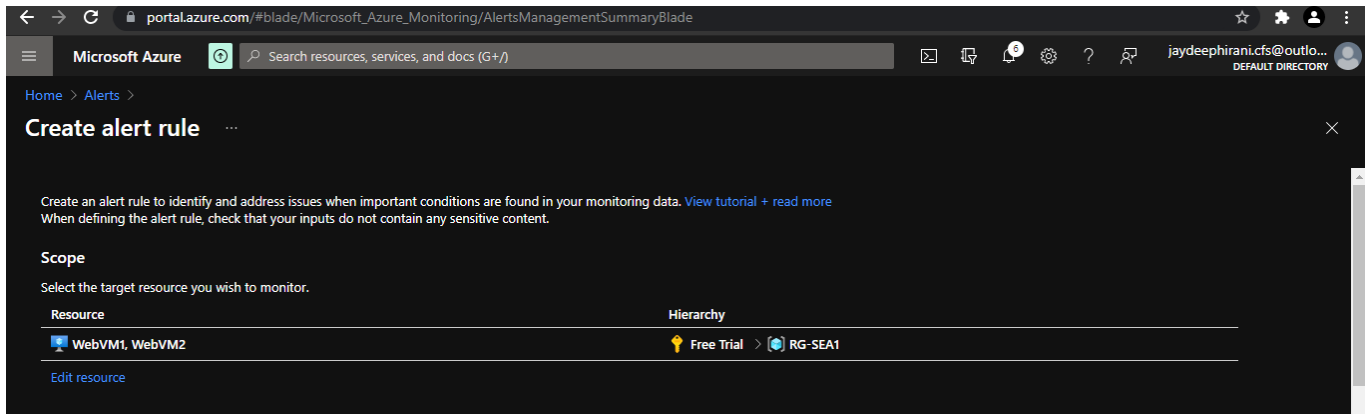
Add

OS Disk only backup option allows you to backup Azure Virtual Machine with only OS disk and exclude all the data disks. You can use Selective Disk Backup feature through Powershell or CLI to include or exclude specific data disks. Know more about Selective Disk Backup feature, its limitation and pricing- [Learn more](#).

Enable backup

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

AG11 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)

The screenshot displays the Microsoft Azure portal interface for a virtual machine named 'Server11VM'. The left sidebar shows navigation options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings, Networking, Connect, Windows Admin Center (preview), Disks, and Size. The main content area is divided into 'Essentials' and 'Properties' tabs. The 'Essentials' tab shows key details: Resource group (RG-EUS1), Status (Stopped (deallocated)), Location (East US), Subscription (Free Trial), Subscription ID (ee59a5c9-9de7-42a0-b4f4-264e2f362e58), and Tags (Click here to add tags). The 'Properties' tab is further divided into 'Virtual machine' and 'Networking' sections. The 'Virtual machine' section lists Computer name (Server11VM), Operating system (Windows), and Publisher (MicrosoftWindowsServer). The 'Networking' section shows Public IP address (52.149.130.10), Public IP address (IPv6) (-), and Private IP address (192.168.1.4).

Section	Property	Value
Essentials	Resource group (change)	RG-EUS1
	Status	Stopped (deallocated)
	Location	East US
	Subscription (change)	Free Trial
	Subscription ID	ee59a5c9-9de7-42a0-b4f4-264e2f362e58
	Tags (change)	Click here to add tags
Virtual machine	Computer name	Server11VM
	Operating system	Windows
	Publisher	MicrosoftWindowsServer
Networking	Public IP address	52.149.130.10
	Public IP address (IPv6)	-
	Private IP address	192.168.1.4

VNet Peering

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

portal.azure.com/#@jaydeephiranicfsoutlook.onmicrosoft.com/resource/subscriptions/ee59a5c9-9de7-42a0-b4f4-264e2f362e58/resourceGroups/RG-EUS1/providers/Micros...

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

Home > VnetEUS1

Add peering

VnetEUS1

Peering link name *

SEA2EUS

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

Peering link name *

VnetPeering1

Add

portal.azure.com/#@jaydeephiranicfsoutlook.onmicrosoft.com/resource/subscriptions/ee59a5c9-9de7-42a0-b4f4-264e2f362e58/resourceGroups/RG-EUS1/providers/Micros...

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

Home > VnetEUS1

VnetEUS1 | Peerings

Virtual network

peeri

+ Add Refresh Sync

Settings

Peerings

Filter by name...

Peering status == all

Name	Peering status	Peer	Gateway transit
SEA2EUS	Connected	VnetSEA1	Disabled

Storage Requirements

Storage Account - SEA Region

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

The screenshot shows the 'Create a storage account' wizard in the Microsoft Azure portal. The URL is `portal.azure.com/#create/Microsoft.StorageAccount`. The page has tabs for Basics, Advanced, Networking, Data protection, Tags, and Review + create. The Basics tab is active.

Instance details

If you need to create a legacy storage account type, please click [here](#).

Storage account name:

Region:

Performance: ☒ Standard: Recommended for most scenarios (general-purpose v2 account)
☐ Premium: Recommended for scenarios that require low latency.

Redundancy:
☒ Make read access to data available in the event of regional unavailability.

Buttons: Review + create, < Previous, Next : Advanced >

The screenshot shows the 'seastorage' storage account overview page in the Microsoft Azure portal. The URL is `portal.azure.com/#@jaydeephiranicsf@outlook.onmicrosoft.com/resource/subscriptions/ee59a5c9-9de7-42a0-b4f4-264e2f362e58/resourcegroups/RG-SEA1/providers/Microsoft.Storage/storageAccounts/seastorage`. The page has a left sidebar with navigation options: Overview, Activity log, Tags, Diagnose and solve problems, Access Control (IAM), Data migration, Events, Storage Explorer (preview), Data storage, and Containers. The Overview tab is active.

seastorage
Storage account

Search (Ctrl+/)

Open in Explorer, Delete, Move, Refresh, Feedback

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](#)

Essentials [JSON View](#)

Resource group (change)	: RG-SEA1	Performance/Access tier	: Standard/Hot
Location	: East US	Replication	: Geo-redundant storage (GRS)
Primary/Secondary Location	: Primary: East US, Secondary: West US	Account kind	: StorageV2 (general purpose v2)
Subscription (change)	: Free Trial	Provisioning state	: Succeeded
Subscription ID	: ee59a5c9-9de7-42a0-b4f4-264e2f362e58	Created	: 7/18/2021, 10:04:45 AM
Disk state	: Primary: Available, Secondary: Available		

Tags (change) :

Properties, Monitoring, Capabilities (7), Recommendations, Tutorials, Developer Tools

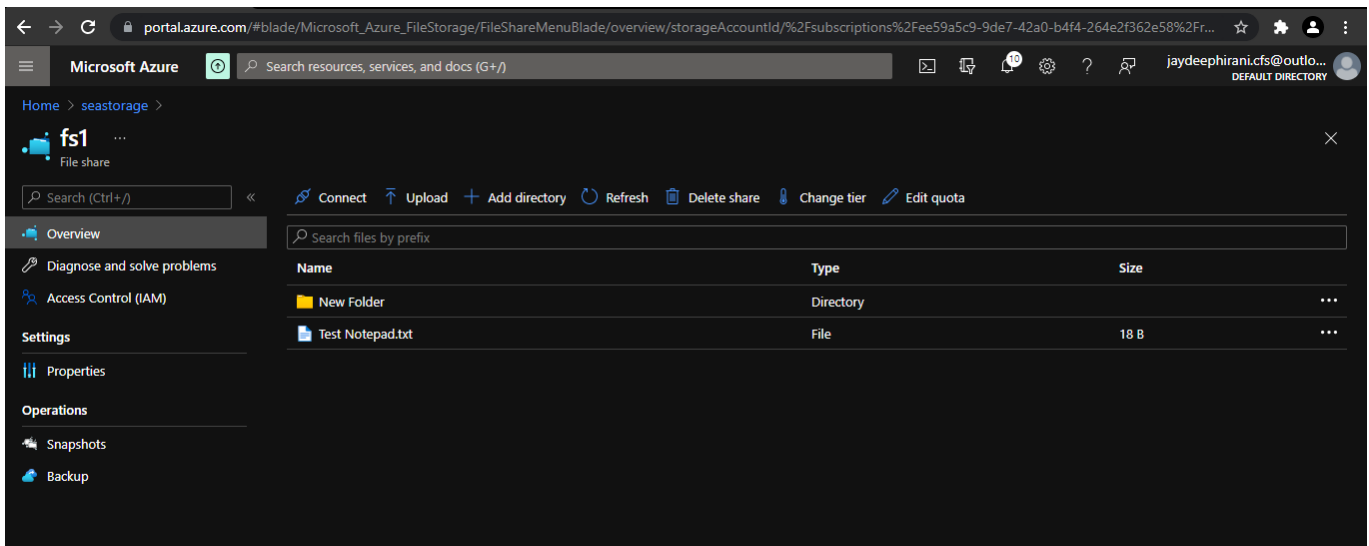
Access Keys

The screenshot shows the 'Access keys' page for a storage account named 'seastorage'. The left sidebar contains navigation options: Events, Storage Explorer (preview), Data storage (Containers, File shares, Queues, Tables), and Security + networking (Networking, Azure CDN, Access keys, Shared access signature, Encryption, Security). The 'Access keys' section is active. The main content area displays instructions on how to use access keys, a 'Remember to update the keys' reminder, and details for two keys. Key 1 and Key 2 both show a 'Last rotated' date of 7/18/2021 (0 days ago) and a 'Rotate key' button. The 'Key' field for Key 1 is partially visible, showing 'My8vYHD2g/7nwE5KgGNfzNtnlRu9LdMEaTPxsOjdULyNfaM7MtSmHHpCrjAwyuN...'. The 'Connection string' field shows 'DefaultEndpointsProtocol=https;AccountName=seastorage;AccountKey=My8vYH...'. The 'Storage account name' field shows 'seastorage'.

Shared Access Signature

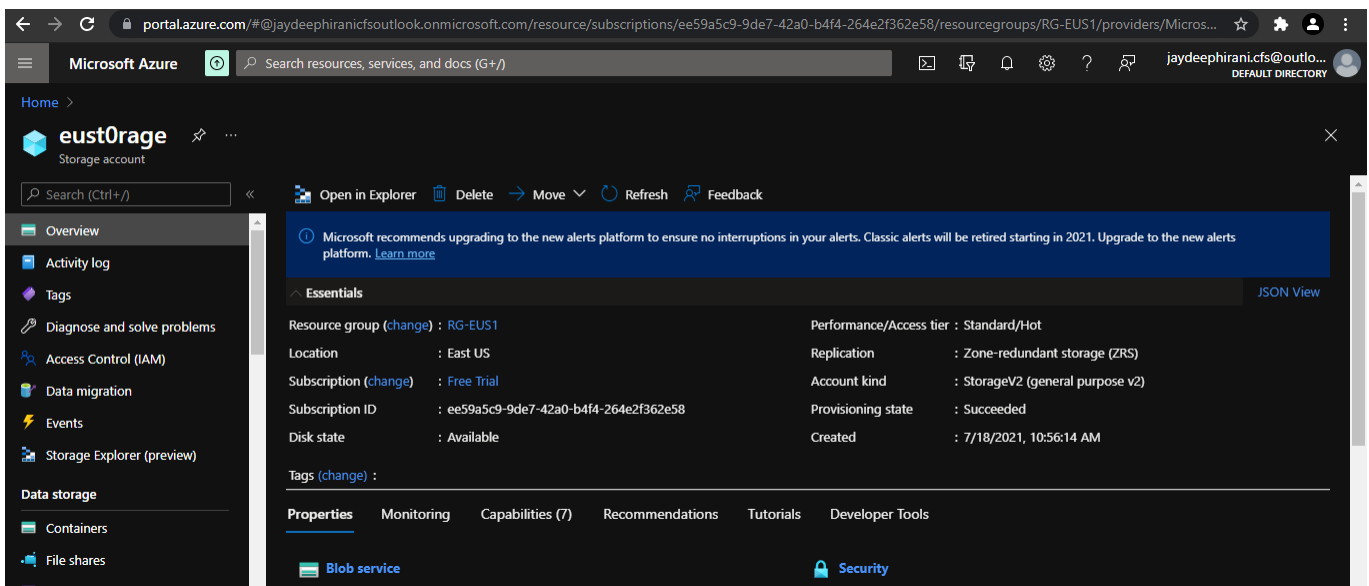
The screenshot shows the 'Shared access signature' page for a storage account named 'seastorage'. The left sidebar is the same as in the previous screenshot. The 'Shared access signature' section is active. The main content area displays configuration options for the signature: 'Blob versioning permissions' (checked), 'Allowed blob index permissions' (Read/Write and Filter checked), 'Start and expiry date/time' (Start: 07/18/2021 10:48:30 AM, End: 07/18/2021 6:48:30 PM, UTC+05:30), 'Allowed IP addresses' (for example, 168.1.5.65 or 168.1.5.65-168.1.5.70), 'Allowed protocols' (HTTPS only selected), 'Preferred routing tier' (Basic (default) selected), and 'Signing key' (key1 selected). A note states: 'Some routing options are disabled because the endpoints are not published.'

File Share



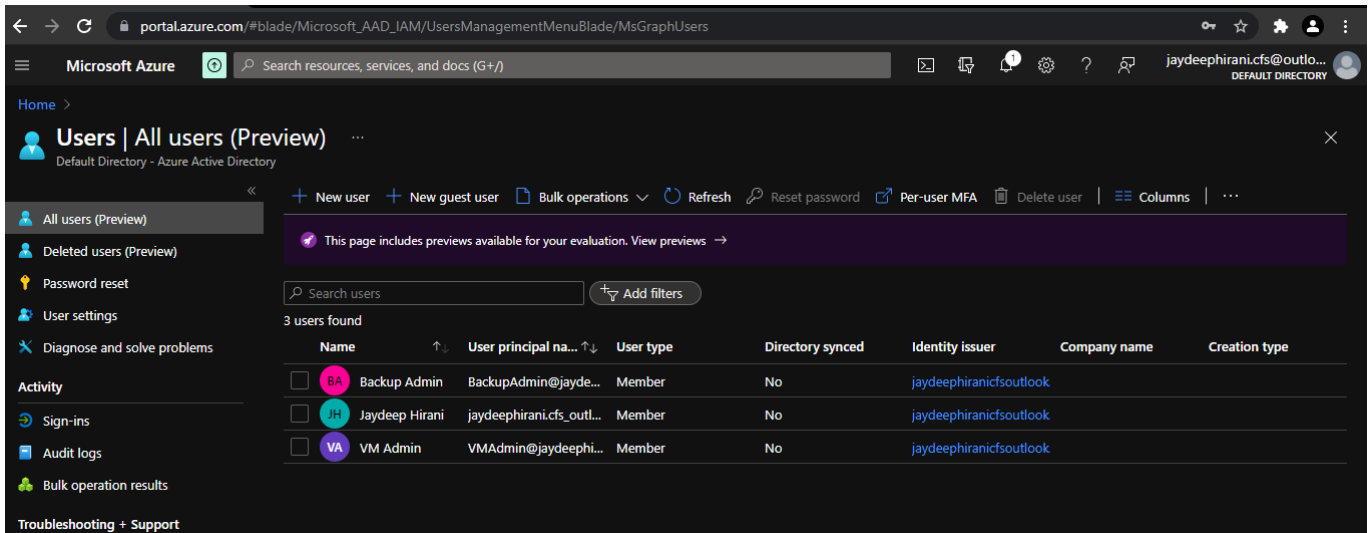
Storage Account - EUS Region

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



Resource Management

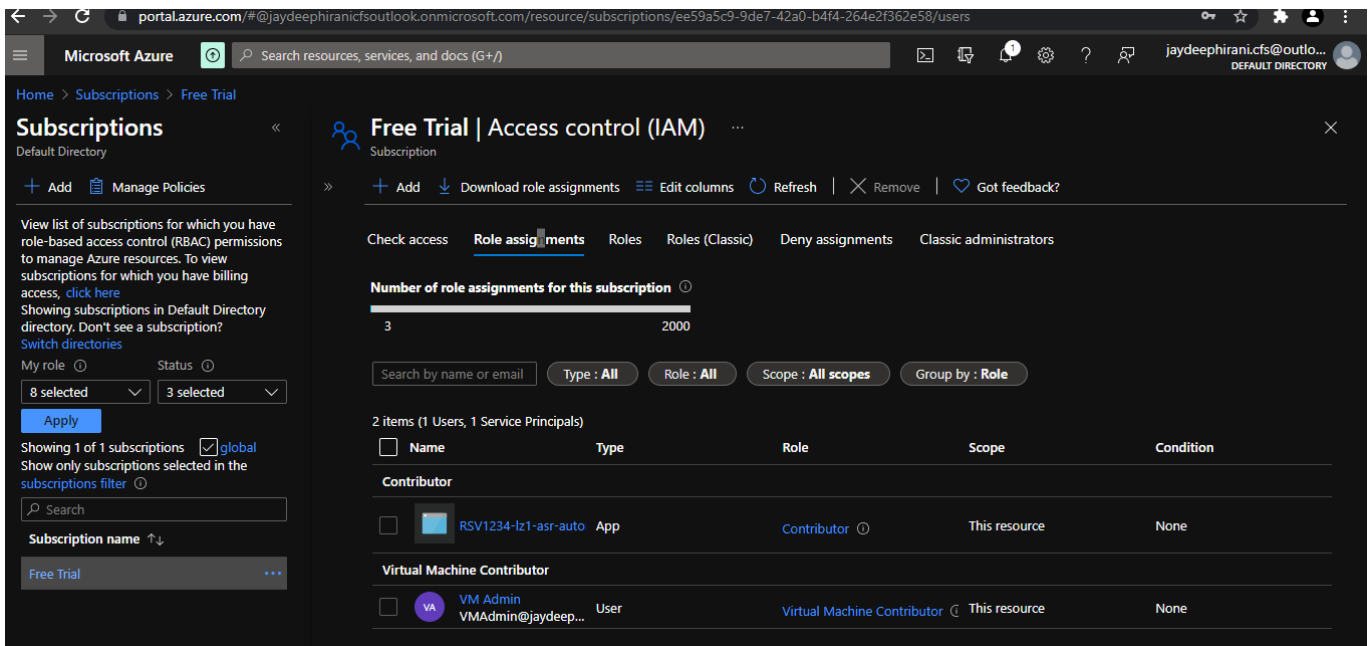
- Created following two users as per the requirement
 - VM Admin
 - Backup Admin



The screenshot shows the 'All users (Preview)' page in the Microsoft Azure portal. The page displays a list of users in the Default Directory - Azure Active Directory. The users listed are Backup Admin, Jaydeep Hirani, and VM Admin. The VM Admin user is highlighted.

Name	User principal name	User type	Directory synced	Identity issuer	Company name	Creation type
Backup Admin	BackupAdmin@jayde...	Member	No	jaydeephiranicsoutlook		
Jaydeep Hirani	jaydeephirani.cfs_outlo...	Member	No	jaydeephiranicsoutlook		
VM Admin	VMAdmin@jaydeephi...	Member	No	jaydeephiranicsoutlook		

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



The screenshot shows the 'Free Trial | Access control (IAM)' page in the Microsoft Azure portal. The page displays the role assignments for the subscription. The 'Virtual Machine Contributor' role is assigned to the VM Admin user.

Name	Type	Role	Scope	Condition
RSV1234-lz1-asr-auto	App	Contributor	This resource	None
VM Admin	User	Virtual Machine Contributor	This resource	None

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

The screenshot shows the Microsoft Azure portal interface for the 'RG-EUS1 | Access control (IAM)' page. The left sidebar contains navigation links for Overview, Activity log, Access control (IAM), Tags, Events, Settings, Deployments, Security, Policies, Properties, Locks, Cost Management, Cost analysis, Cost alerts (preview), and Budgets. The main content area shows the 'Number of role assignments for this subscription' as 3 out of 2000. Below this, there are filters for 'Search by name or email', 'Type: All', 'Role: All', 'Scope: All scopes', and 'Group by: Role'. The table lists three items: Backup Contributor for Backup Admin, Contributor for RSV1234-lz1-asr-autom, and Virtual Machine Contributor for VM Admin. The Backup Admin user is highlighted with a pink circle.

Name	Type	Role	Scope	Condition
Backup Contributor				
<input type="checkbox"/> Backup Admin BackupAdmin@jaydee...	User	Backup Contributor	This resource	None
Contributor				
<input type="checkbox"/> RSV1234-lz1-asr-autom	App	Contributor	Subscription (Inherited)	None
Virtual Machine Contributor				
<input type="checkbox"/> VM Admin VMAdmin@jaydee...	User	Virtual Machine Contributor	Subscription (Inherited)	None