



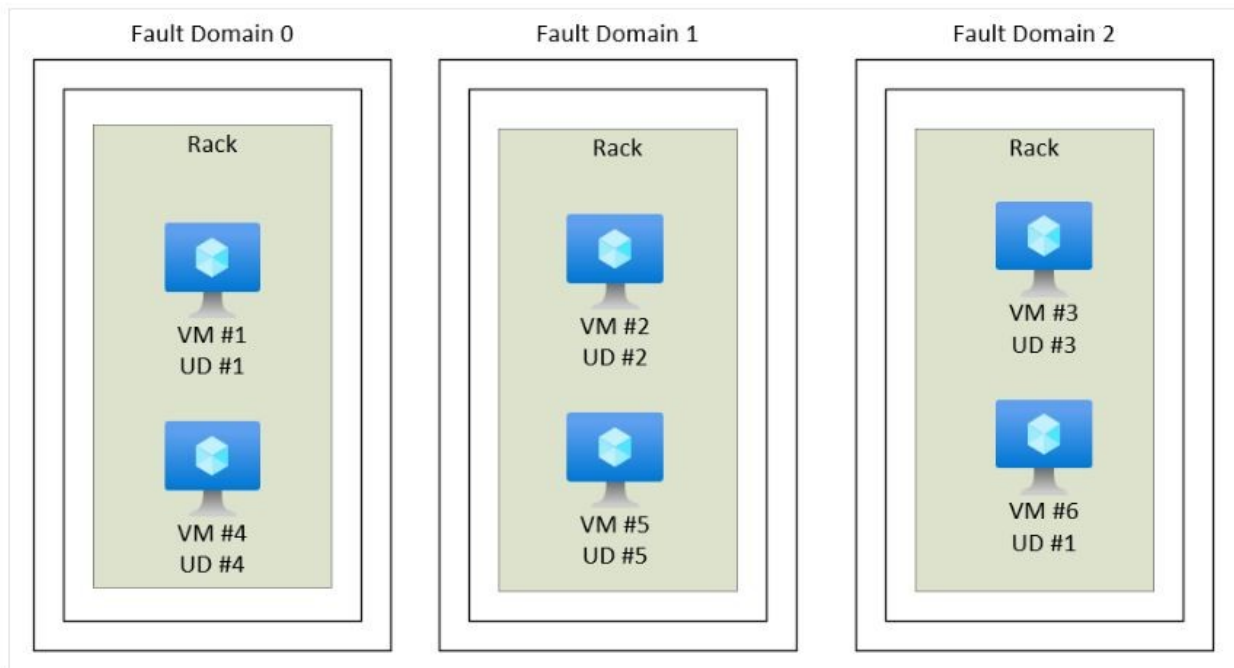
Stories 10: Virtual Machine Scale Set

A Virtual Machine Scale Set (VMSS) is a feature in Azure, Microsoft's cloud computing platform, that allows you to deploy and manage a set of identical, load-balanced virtual machines. This is particularly useful for handling high traffic or providing high availability for applications.

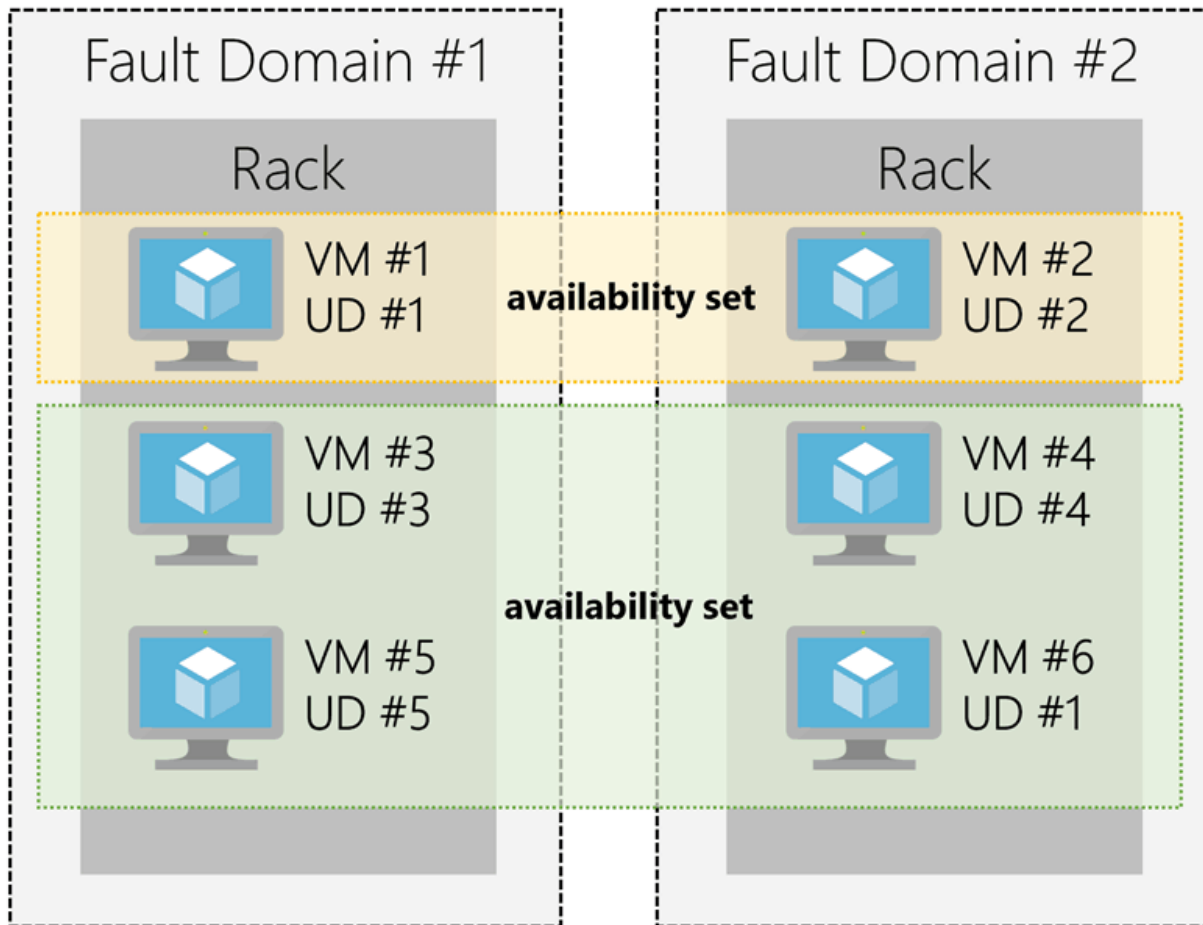
Azure Virtual Machine Scale Sets let you create and manage a group of load balanced VMs. The number of VM instances can automatically increase or decrease in response to demand or a defined schedule. Scale sets provide the following key benefits:

- Easy to create and manage multiple VMs
- Provides high availability and application resiliency by distributing VMs across availability zones or fault domains
- Allows your application to automatically scale as resource demand changes
- Works at large-scale

Fault domain is a concept used to increase the resilience and availability of applications by ensuring that resources are distributed across different physical segments within a data center. Azure uses fault domains as part of its strategy to mitigate the impact of hardware or infrastructure failures.



Update domain :



To Create Virtual machine Scale set


Solution :

Step 1:

Search for vmss click on Virtual machine scale set

Create

Create a virtual machine scale set ...

 Changing Basic options may reset selections you have made. Review all options prior to creating the virtual machine.

Azure virtual machine scale sets let you create and manage a group of load balanced VMs. The number of VM instances can automatically increase or decrease in response to demand or a defined schedule. Scale sets provide high availability to your applications, and allow you to centrally manage, configure, and update a large number of VMs.

[Learn more about virtual machine scale sets](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *	<div>Azure for Students</div>
Resource group *	<div>mubeenRG</div> <div>Create new</div>

Scale set details

Virtual machine scale set name *	<div>myscaleset</div>
Region *	<div>(Asia Pacific) South India</div>
Availability zone ⓘ	<div>None</div> <div>No availability zones are available for the location you have selected. View locations that support availability zones</div>

Orchestration

A scale set has a "scale set model" that defines the attributes of virtual machine instances (size, number of data disks, etc). As the number of instances in the scale set changes, new instances are added based on the scale set model.

[Learn more about the scale set model](#)

Orchestration mode * ⓘ	<div><input checked="" type="radio"/> Uniform: optimized for large scale stateless workloads with identical instances</div>
------------------------	--

[Review + create](#)

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[Next : Disks >](#)

Adding storage or disks

Create a virtual machine scale set ...

Basics Disks Networking Scaling Management Health Advanced Tags Review + create

Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed. [Learn more](#)

Disk options

OS disk type *

Premium SSD (locally-redundant storage)

Encryption type *

(Default) Encryption at-rest with a platform-managed key

Enable encryption at host

☐

1

Encryption at host is not registered for the selected subscription. [Learn more about enabling this feature](#)

Enable Ultra Disk compatibility

☐

Ultra Disks can be used only with Virtual Machine Scale Sets in an Availability Zone.

Data disks

You can add and configure additional data disks for your virtual machine scale set or attach existing disks. This VMSS also comes with a temporary disk.

LUN	Name	Size (GiB)	IOPS	THRO...	Disk type	Host cachin
-----	------	------------	------	---------	-----------	-------------

[Create and attach a new disk](#)

^ Advanced

Use managed disks

☒

Ephemeral OS disk

☒ None

☐ OS cache placement

☐ Temp disk placement

1

The selected image is too large for the temp disk of the selected instance.

Review + create

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Next : Networking >

Adding Network to virtual machine scale set

Create a virtual machine scale set ...

Basics Disks **Networking** Scaling Management Health Advanced Tags Review + create

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 about VMSS networking](#)

Virtual network configuration

Azure Virtual Network (VNet) enables many types of Azure resources to securely communicate with each other, the internet, and on-premises networks. [Learn more about VNets](#)

Virtual network * ⓘ

(New) mubeenRGvnet560 (recommended) ▼

[Create virtual network](#)

Network interface

A network interface enables an Azure virtual machine to communicate with internet, Azure, and on-premises resources. A VM can have one or more network interfaces.

[+ Create new nic](#) [Delete](#)

	CREATE PUBLI...	SUBNET	NETWORK SECU...	ACCELERATED N...	
Gvnet560-nic01	Yes	default (10.3.0.0/16)	Basic	On	Edit

Load balancing

You can place this virtual machine scale set in the backend pool of an existing Azure load balancing solution. [Learn more](#)

[Review + create](#)

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Note : By default the public Ip address for nic will be disabled so we need to enable it by clicking the pen icon as shown in the above image

Edit network interface ...

Name *

mubeenRGvnet560-nic01

Virtual network ⓘ

mubeenRGvnet560

Subnet * ⓘ

default (10.3.0.0/16)

NIC network security group ⓘ

☐

None

☒

Basic

☐

Advanced

Public inbound ports * ⓘ

☒

None

☐

Allow selected ports

Select inbound ports

Select one or more ports

i All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

Public IP address ⓘ

Disabled

Enabled

Accelerated networking ⓘ

Disabled

Enabled

OK

Cancel

Configuring the scaling for vmss

Select CUSTOM

Create a virtual machine scale set ...

Basics Disks Networking **Scaling** Management Health Advanced Tags Review + create

An Azure virtual machine scale set can automatically increase or decrease the number of VM instances that run your application. This automated and elastic behavior reduces the management overhead to monitor and optimize the performance of your application. [Learn more about VMSS scaling](#)

Initial instance count * ⓘ

2

Scaling

Scaling policy ⓘ

☐ Manual
☒ Custom

Minimum number of instances * ⓘ

2



Maximum number of instances * ⓘ

5



Scale out

CPU threshold (%) * ⓘ

75

Duration in minutes * ⓘ

10

Number of instances to increase by * ⓘ

1



Scale in

CPU threshold (%) * ⓘ

25

Number of instances to decrease by * ⓘ

1



Diagnostic logs

[Review + create](#)

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[Next : Management >](#)

Management > health > leave as default

Step 2:

After successfully deployed goto

Home > myscaleset

Virtual machine scale set

Search (Ctrl+/) << → Move Start Restart Stop Delete Refresh Feedback

Overview

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

Settings

- Instances
- Networking
- Scaling
- Disks
- Operating system
- Microsoft Defender for Cloud
- Guest + host updates
- Client

Essentials

Resource group (move): [mubeenRG](#)

Status: 3 out of 3 succeeded

Location: South India

Subscription (move): [Azure for Students](#)

Subscription ID: c85ec2c3-6bd3-46b1-ad18-d425d54809d5

Tags (edit): [Click here to add tags](#)

Operating system: Windows

Size: Standard_DS1_v2 (3 instances)

Public IP address: -

Public IP address (IPv6): -

Virtual network/subnet: [mubeenRGvnet560/default](#)

Orchestration mode: Uniform

Properties Monitoring Capabilities (6) Recommendations Tutorials

Virtual machine profile

Operating system: Windows

Publisher: MicrosoftWindowsServer

Offer: WindowsServer

Plan: 2016-datacenter-gensecond

Networking

Public IP address: -

Public IP address (IPv6): -

Virtual network/subnet: [mubeenRGvnet560/default](#)

Click on instance to list the instance

Home > myscaleset

myscaleset | Instances

Virtual machine scale set

Search (Ctrl+/) << Start Restart Stop Reimage Delete Upgrade Refresh Protection Policy

Search virtual machine instances

Name	Computer name	Status	Health state	Provisioning state	Protection policy	Latest model
<input type="checkbox"/> myscaleset_0	myscalese000000	Running		Succeeded		Yes
<input type="checkbox"/> myscaleset_1	myscalese000001	Running		Succeeded		Yes

Overview

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

Settings

- Instances
- Networking
- Scaling
- Disks
- Operating system

2 instance are running because we have give minimum 2 instance at scaling option it will scale upto 5 as we have given 5 max scale

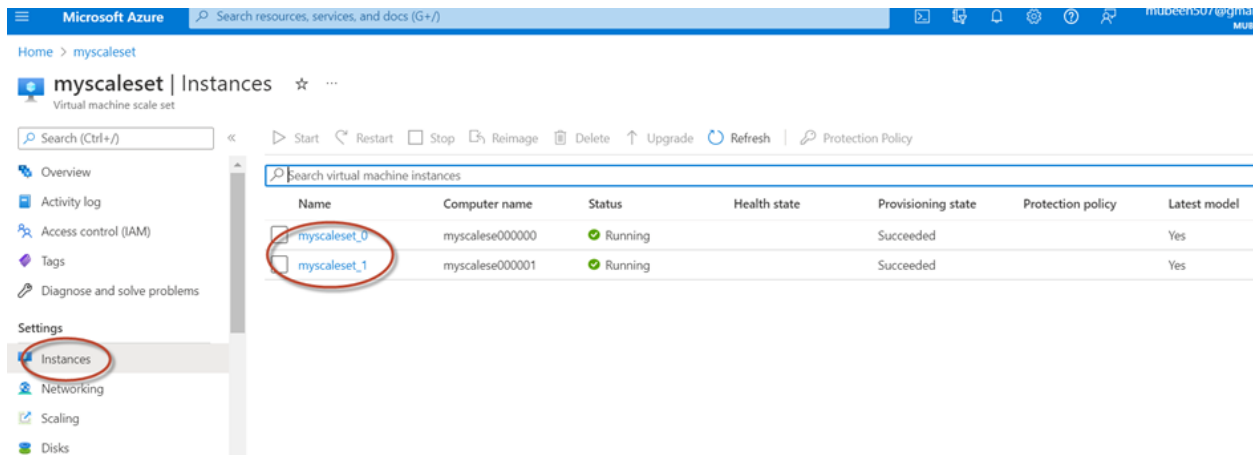
Step 3:

Connect to one the machine...

Note : Allow 3389 in security Group to connect

To connect and to test the scaling you can RDP it and perform Load testing installing software Heavy load. In one of the VM of scale set

Click on instances to list the scale set instances



As we have given minimum 2 and max scale 5 when cpu load increases more than 75 percent one more VM will be added to scale set.

stress commands

Method 1 :

Installation:

If **stress** is not already installed on your Ubuntu system, you can install it using the package manager. Open a terminal and run:

```
sudo apt update
```

```
sudo apt install stress
```

CPU Stress Test:

- To stress the CPU, use the following command:

```
stress --cpu 4
```

Method 2:

top command to check the cpu

Increase cpu load

command

yes > /dev/null &

Kill command to kill the process

kill -9 <PID>