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BSSE – 7A

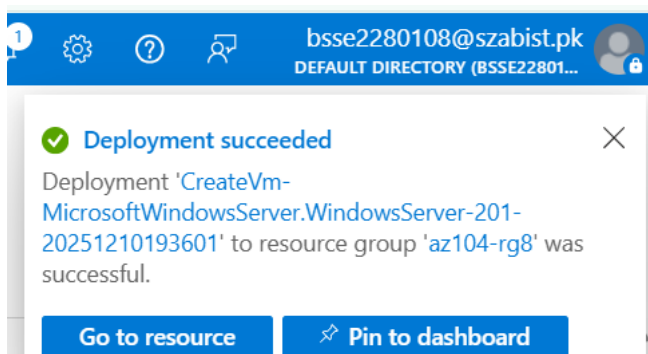
Lab: 08

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

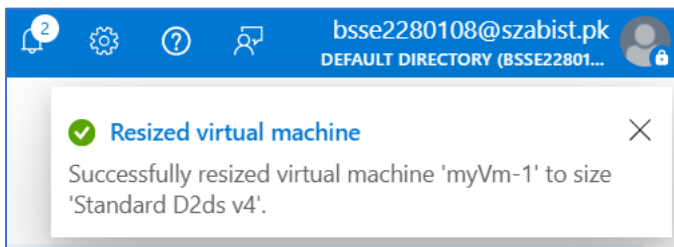
1. Sign in to the Azure portal - `https://portal.azure.com`.
2. Search for and select `Virtual machines`, on the **Virtual machines** blade, click **+ Create**, and then select in the drop-down **Azure virtual machine**. Notice your other choices.
3. Click **Next : Advanced >**, take the defaults, then click **Review + Create**.
4. After the validation, click **Create**.
5. Wait for the deployment to complete, then select **Go to resource**.



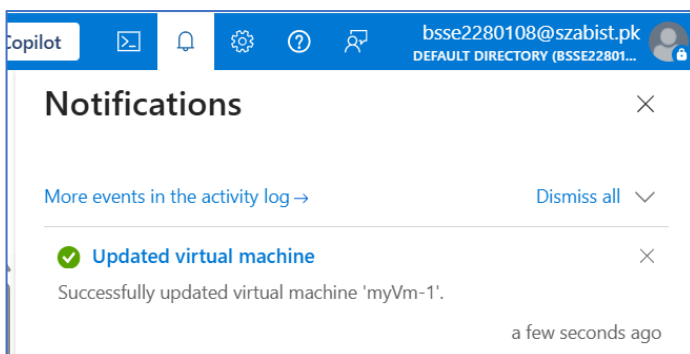
Task 2: Manage compute and storage scaling for virtual machines

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.

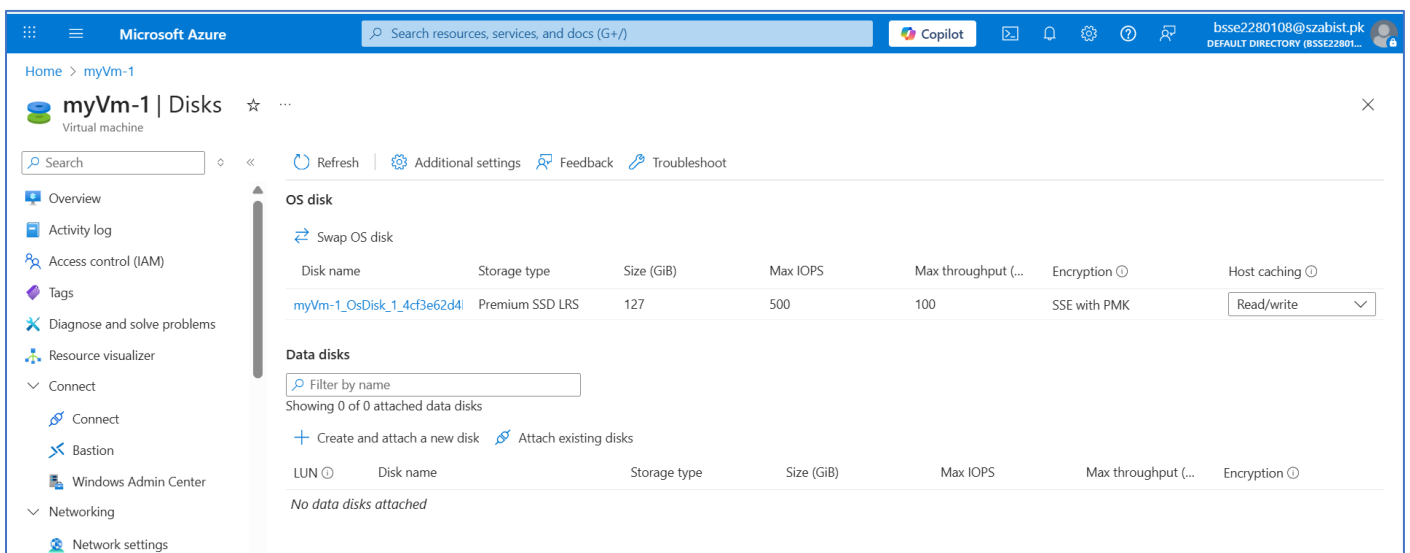
1. On the **az104-vm1** virtual machine, in the **Availability + scale** blade, select **Size**.
2. Set the virtual machine size to **D2ds_v4** and click **Resize**. When prompted, confirm the change.



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+J)

Copilot

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Home > Storage center

Storage center | Azure Disks

Default Directory (bsse2280108@szabist.onmicrosoft.com)

Search

SummaryResources

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
<input type="checkbox"/>	myVm-1_OsDisk_1_4cf3e62d4b594c98895	Premium SSD LRS	127	myVm-1	AZ104-RG8	Central India
<input type="checkbox"/>	myVm-2_OsDisk_1_a65bc633a87c409d99f	Premium SSD LRS	127	myVm-2	AZ104-RG8	Central India
<input type="checkbox"/>	vm1-disk1	Standard SSD LRS	32	myVm-1	az104-rg8	Central India

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DEFAULT DIRECTORY (BSSE22801...

Successfully updated disk

Successfully updated disk 'vm1-disk1'.

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Home > myVm-1

myVm-1 | Disks

Virtual machine

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

ApplyDiscard changes

Updated virtual machine

Successfully updated virtual machine 'myVm-1'.

Activate Windows

Go to Settings to activate Windows.

Task 3: Create and configure Azure Virtual Machine Scale Sets

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Home > Compute infrastructure | Virtual Machine Scale Set (VMSS) >

Create a Virtual Machine Scale Set (VMSS)

Validation passed

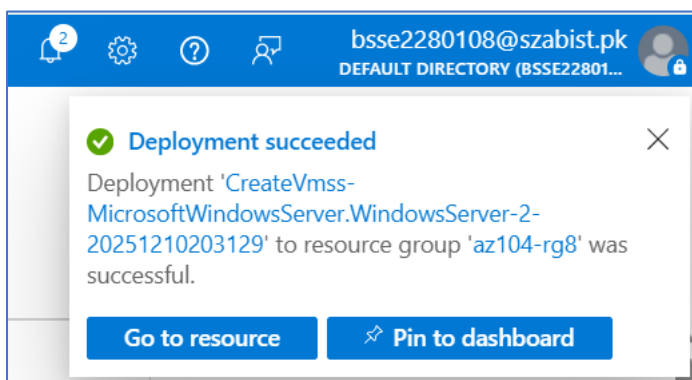
Basics Spot Disks Networking Management Health Advanced Tags **Review + create**

Basics

Subscription	Azure for Students
Resource group	az104-rg8
Virtual machine scale set name	vmss1
Region	Central India
Orchestration mode	Uniform
Availability zone	2,3
Image	Windows Server 2019 Datacenter - Gen2
Size	Standard D2s v3 (2 vcpus, 8 GiB memory)
Scaling mode	Manually update the capacity
Instance count	1
Security type	Standard
Enable Hibernation	No

< Previous Next > **Create**

Activate Windows
Go to Settings to activate Windows
[Download a template for automation](#) [Give feedback](#)



- 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.

Microsoft Azure

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Home > vmss1

vmss1 | Instances

Virtual machine scale set

Search

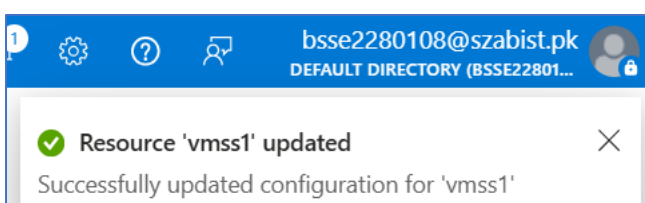
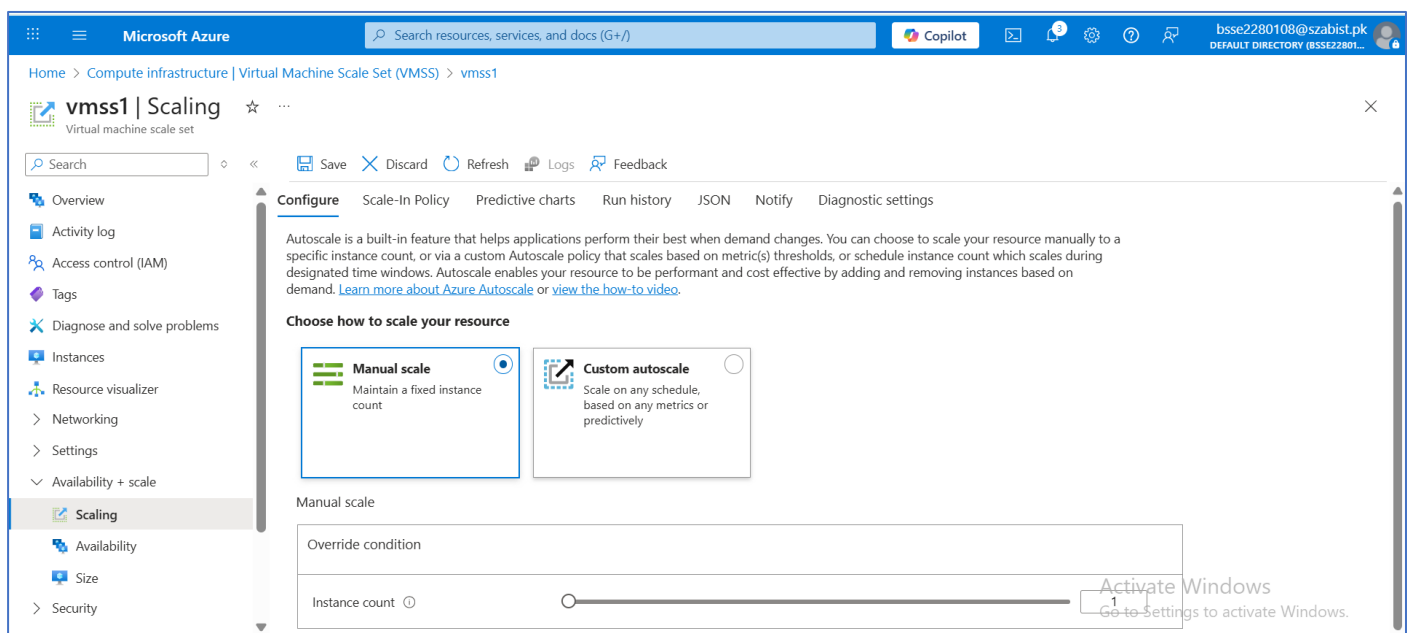
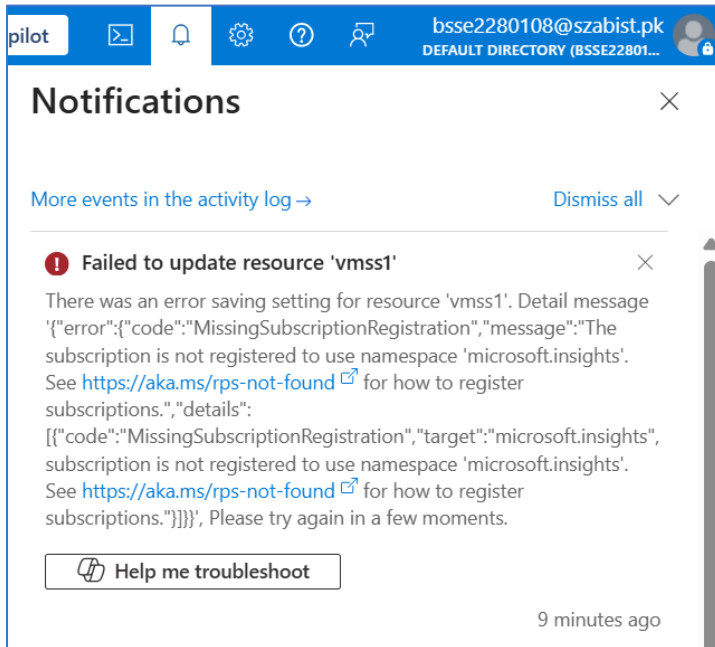
Start Restart Stop Hibernate Reimage Delete Upgrade Refresh Protection

Search virtual machine instances

Instance	Computer name	Status	Protection policy	Provisioning state	Health state	Latest model
<input type="checkbox"/> vmss1_0	vmss1lzw000000	Running		Succeeded		Yes

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)

```
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Home > vmss1

Switch to Bash Restart Manage files New session Editor Web preview Settings Help

Requesting a Cloud Shell.Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell

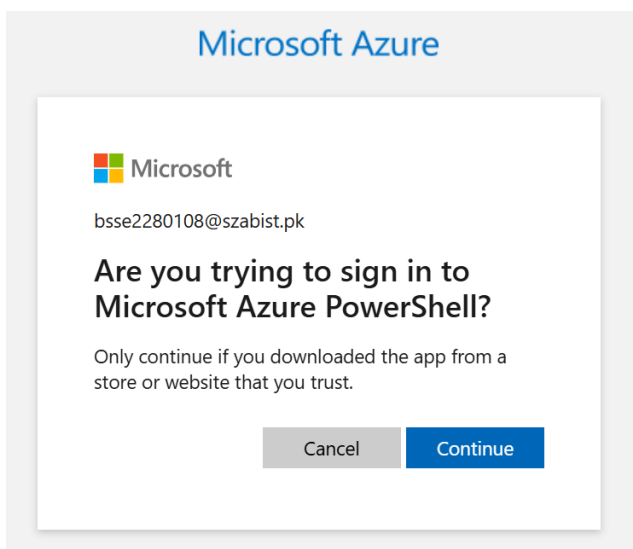
Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

Subscription used to launch your CloudShell 56e803bd-09a5-4d9d-8f86-770890614786 is not registered to Microsoft.CloudShell Namespace. Please follow these instructions "https://aka.ms/RegisterCloudShell" to register. In future, unregistered subscriptions will have restricted access to CloudShell service.

Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.

MOTD: Azure Cloud Shell now includes Predictive IntelliSense! Learn more: https://aka.ms/CloudShell/IntelliSense

VERBOSE: Authenticating to Azure ...
WARNING: You're using Az version 14.6.0. The latest version of Az is 15.1.0. Upgrade your Az modules using the following commands:
  Update-PSResource Az -WhatIf -- Simulate updating your Az modules.
  Update-PSResource Az -- Update your Az modules.
There will be breaking changes from 14.6.0 to 15.1.0. Open https://go.microsoft.com/fwlink/?linkid=2241373 and check the details.
VERBOSE: Building your Azure drive ...
PS /home/bisma>
```



```
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DEFAULT DIRECTORY (BSSE22801...)

Home > vmss1

Switch to Bash Restart Manage files New session Editor Web preview Settings Help

VERBOSE: Authenticating to Azure ...
WARNING: You're using Az version 14.6.0. The latest version of Az is 15.1.0. Upgrade your Az modules using the following commands:
  Update-PSResource Az -WhatIf -- Simulate updating your Az modules.
  Update-PSResource Az -- Update your Az modules.
There will be breaking changes from 14.6.0 to 15.1.0. Open https://go.microsoft.com/fwlink/?linkid=2241373 and check the details.
VERBOSE: Building your Azure drive ...
PS /home/bisma> Connect-AzAccount
WARNING: Interactive authentication is not supported in this session, please run cmdlet 'Connect-AzAccount -UseDeviceAuthentication'.
PS /home/bisma> Connect-AzAccount -UseDeviceAuthentication
WARNING: You may need to login again after updating "EnableLoginByWam".
Please select the account you want to login with.

[Login to Azure] To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code LNCYC2ERJ to authenticate.
Retrieving subscriptions for the selection...

[Announcements]
With the new Azure PowerShell login experience, you can select the subscription you want to use more easily. Learn more about it and its configuration at https://go.microsoft.com/fwlink/?linkid=2271909.

If you encounter any problem, please open an issue at: https://aka.ms/azpsissue

Subscription name Tenant
-----
Azure for Students Default Directory

PS /home/bisma>
PS /home/bisma>
```

Activate Windows
Go to Settings to activate Windows.

```
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, AllowExtensionOperat
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.