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Task 1 - Deploy zone-resilient Azure virtual machines by using the Azure portal:

The screenshot shows two consecutive pages from the Azure portal.

Page 1: Create a virtual machine

- Header: Microsoft Azu... | Search resources, services, and docs (G+/-) | Copilot | ... | muhammadosama0661... DEFAULT DIRECTORY (MUHAMM...)
- Breadcrumbs: All services > Compute infrastructure | Virtual machines >
- Title: Create a virtual machine
- Message: Validation passed
- Buttons: Help me choose the right VM size for my workload, Help me create a low cost VM, Help me create a VM optimized for high availability, Help me choose the right VM size for my workload
- Tabs: Basics, Disks, Networking, Management, Monitoring, Advanced, Tags, **Review + create**
- Price section:
 - 2 X Standard D2s v3 by Microsoft
 - Subscription credits apply ⓘ
 - 0.3760 USD/hr** (highlighted)
 - Pricing for other VM sizes
- Terms section: By clicking "Create", I agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed.
- Buttons: < Previous, Next >, Create, Download a template for automation, Give feedback

Page 2: Deployment Status

- Header: Microsoft Azu... | Search resources, services, and docs (G+/-) | Copilot | ... | muhammadosama0661... DEFAULT DIRECTORY (MUHAMM...)
- Breadcrumbs: All services >
- Title: CreateVm-MicrosoftWindowsServer.WindowsServer-202-20260111151...
- Deployment status: Your deployment is complete
- Deployment details:
 - Deployment name: Create...
 - Start time: 1/11/...
 - Subscription: Azure subscri...
 - Correlation ID: cdal
 - Resource group: az104-rg8
- Next steps:
 - Setup auto-shutdown Recommended
 - Monitor VM health, performance and network dependencies Recommended
 - Run a script inside the virtual machine Recommended
- Buttons: Go to resource, Create another VM
- Notifications panel:
 - Deployment succeeded: Deployment 'CreateVm-MicrosoftWindowsServer.WindowsServer-202-2026011115142' to resource group 'az104-rg8' was successful.
 - Cost Management: Get notified to stay within your budget and prevent unexpected charges on your bill. Set up cost alerts >
 - Microsoft Defender for Cloud: Secure your apps and infrastructure. Go to Microsoft Defender for Cloud >
- Free Microsoft tutorials

Task 2 - Manage compute and storage scaling for virtual machines:

If the virtual machine is currently running, changing its size will cause it to be restarted. Stopping the virtual machine may affect your work.

DC-Series

SKU	Type	Cores	Memory (GiB)
DC1ds_v3	Confidential compute	1	8
DC2ds_v3	Confidential compute	2	16

D-Series

SKU	Type	Cores	Memory (GiB)
D2s_v3	General purpose	2	8

E-Series

SKU	Type	Cores	Memory (GiB)
E2s_v3	General purpose	2	8

Unsupported generation

Do you want to resize to size 'Standard_DC2ds_v3'? If the virtual machine is currently running, changing its size will cause it to be restarted.

Resize Cancel

The VM generation selected is not supported for these sizes

Prices presented are estimates in USD that include only Azure infrastructure costs and any discounts for the subscription and location. The prices don't include any applicable software costs. Final charges will appear in your local currency in cost analysis and billing views. [View Azure pricing calculator](#).

Give feedback

az104-vm1 | Disks

Virtual machine

Search

Refresh Additional settings Feedback Troubleshoot

Swap OS disk

Disk name	Storage type	Size (GiB)	Max IOPS
az104-vm1_OsDisk_1_0daa92ff5084412	Premium SSD LRS	127	500

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 (MBps)	Encryption
0	vm1-disk1	Standard HDD (LRS)	32	500	60	Platform-managed

Apply Discard changes

Microsoft Azure | Search resources, services, and docs (G+) | Copilot | muhammadosama0661... DEFAULT DIRECTORY (MUHAMM...) | Sign out

All services > CreateVm-MicrosoftWindowsServer.WindowsServer-202-2026011115142 | Overview > az104-vm1

az104-vm1 | Disks

Virtual machine

Search | Refresh | Additional settings | Feedback | Troubleshoot | Swap OS disk

Diagnose and solve problems

Resource visualizer

> Connect

> Networking

✓ Settings

- Disks**
- Extensions + applications
- Operating system
- Configuration
- Advisor recommendations
- Properties
- Locks

Data disks

Filter by name

LUN	Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MiB/s)	Encryption
0	vm1-disk1	Standard HDD LRS	32	500	60	SSE with PMR

Apply | Discard changes

Microsoft Azure | Search resources, services, and docs (G+) | Copilot | muhammadosama0661... DEFAULT DIRECTORY (MUHAMM...) | Sign out

All services > CreateVm-MicrosoftWindowsServer.WindowsServer-202-2026011115142 | Overview > az104-vm1

az104-vm1 | Disks

Virtual machine

Search | Refresh | Additional settings | Feedback | Troubleshoot | Swap OS disk

Diagnose and solve problems

Resource visualizer

> Connect

> Networking

✓ Settings

- Disks**
- Extensions + applications
- Operating system
- Configuration
- Advisor recommendations
- Properties
- Locks

Data disks

Filter by name

LUN	Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MiB/s)	Encryption

No data disks attached

Apply | Discard changes

Microsoft Azure | Search resources, services, and docs (G+) | Copilot | muhammadosama0661... DEFAULT DIRECTORY (MUHAMM...) | Sign out

All services > Storage center | Azure Disks > vm1-disk1

vm1-disk1 | Size + performance

Disk

Search | Resource visualizer | Explore ways to boost disk performance

Why is my disk running slow?

Settings

- Size + performance**
- Encryption
- Networking
- Disk Export
- Properties
- Locks
- Monitoring
- Automation
- Help

Storage type

Standard SSD (locally-redundant storage) | Why are some options disabled?

Size	Disk tier	Provisioned IOPS	Provisioned thro...	Max Shares (throughput (MiB/s)
4 GiB	E1	500	100	3	600
8 GiB	E2	500	100	3	600
16 GiB	E3	500	100	3	600
32 GiB	E4	500	100	3	600
64 GiB	E6	500	100	3	600
128 GiB	E10	500	100	3	600
256 GiB	E10	500	100	3	600

Save | Discard | Give feedback

az104-vm1 | Disks

Disk name: az104-vm1_OsDisk_1_0daa92ff5084412; Storage type: Premium SSD LRS; Size (GiB): 127; Max IOPS: 500

Data disks

LUN	Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (...	Encryption
0	vm1-disk1	Standard SSD LRS	32	500	100	SSE with PM

Actions: Apply, Discard changes

Task 3 - Create and configure Azure Virtual Machine Scale Sets:

vmss-vnet

Assigns the resource an IP address from the subnet. [Learn more](#)

+ Add a subnet

Subnets	IP address range	Size	NAT gateway
default	10.82.0.0 - 10.82.0.255	/24 (256 addresses)	-

Add IPv4 address space |

Create a Virtual Machine Scale Set (VMSS)

Validation passed

Orchestration mode	Uniform
Availability zone	1,2
Image	Windows Server 2025 Datacenter - Gen2
Size	Standard D2s v3 (2 vcpus, 8 GiB memory)
Scaling mode	Manually update the capacity
Instance count	2
Security type	Trusted launch virtual machines
Enable secure boot	Yes
Enable vTPM	Yes
Integrity monitoring	No
Enable Hibernation	No
Username	localadmin

< Previous Next > Create Download a template for automation Give feedback

vmss1 | Network settings

Virtual machine scale set

Resource visualizer

Networking

Network settings

- Load balancing
- Application security groups
- Network manager

Inbound port rules (4)

Prio...	Name	Port	Protocol	Source	Action
300	HTTP	80	TCP	Any	A
65000	AllowVnetInBound	Any	Any	VirtualNetwork	A
65001	AllowAzureLoadBalancerInB...	Any	Any	AzureLoadBalancer	A
65500	DenyAllInBound	Any	Any	Any	D

Outbound port rules (3)

vmss1

Virtual machine scale set

Recommend a size for this scale set

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Instances

Resource visualizer

Refresh Start Restart Stop Delete Reimage Move Open in mobile

Resource group (move) az104-rg8

Status 2 out of 2 succeeded

Subscription Azure subscription 1

Location (move)

Operating system Windows

Size Standard D2s v3 (2 instances)

Public IP address 4.249.72.17

Public IP address (IPv6)

Task 4 - Scale Azure Virtual Machine Scale Sets:

Screenshot 1: Choose how to scale your resource

The screenshot shows the Azure VMSS Scaling page. Under the 'Scaling' tab, it displays two options: 'Manual scale' (selected) and 'Custom autoscale'. The 'Custom autoscale' option is described as scaling on any schedule based on metrics or predictively.

Screenshot 2: Scale rule configuration

The screenshot shows the 'Scale rule' configuration dialog. It defines a scale condition where the metric threshold is greater than 70% for a duration of 10 minutes, using an average time aggregation. The action is set to increase the percentage by 5%.

Screenshot 3: Scale condition details

The screenshot shows the 'Default' scale condition details. It includes a warning about deleting the last scale condition, the scale mode (set to 'Scale based on a metric'), and the rules section which is currently empty.

Scale rule

30.45 %

Enable metric divide by instance count

Operator * Metric threshold to trigger scale action *

Less than 30 %

Duration (minutes) * Time grain (minutes)

Time grain statistic * Time aggregation *

Action

Operation * Cool down (minutes) *

Decrease percent by Percentage *

Add

This scale condition is

Default * Auto created default scale condition

Delete warning The very last or default recurrence rule cannot be deleted. Instead, you off autoscale.

Scale mode Scale based on a metric Scale to a specific instance count

Rules

Scale out When vmss1 **(Average) Percentage CPU > 70** Increase percent by 50

Scale in When vmss1 **(Average) Percentage CPU < 30** Decrease percent by 50

+ Add a rule

Instance limits Minimum * Maximum * Default *

Default * Auto created default scale condition

Delete warning The very last or default recurrence rule cannot be deleted. Instead, you off autoscale.

Scale mode Scale based on a metric Scale to a specific instance count

Rules

Scale out When vmss1 **(Average) Percentage CPU > 70** Increase percent by 50

Scale in When vmss1 **(Average) Percentage CPU < 30** Decrease percent by 50

+ Add a rule

Instance limits Minimum * Maximum * Default *

Schedule

This scale condition is executed when none of the other scale condition(s) match

+ Add a scale condition

Task 5 - Create a virtual machine using Azure PowerShell (option 1):

```
PS /home/muhammad> 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: osama
Password for user osama: *****

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 information on breaking changes in
Azure PowerShell.
You can reference https://aka.ms/findImagePS on how to find VM Images using PowerShell.
Creating Azure resources [14% - ]
```

```
ResourceGroupName      : az104-rg8
Id                   :
/subscriptions/b27ea303-a842-43a4-8123-8bdf4aec006b/resourceGroups/az104-rg8/providers/Microsoft.Compute/virtualMachines/myPSVM
VmId                : b59c9085-26c9-41ae-9cca-e5394d2b3830
Name                 : myPSVM
Type                 : Microsoft.Compute/virtualMachines
Location             : centralindia
Tags                 : {}
HardwareProfile       : {VmSize}
NetworkProfile        : {NetworkInterfaces}
OSProfile             : {ComputerName, AdminUsername, WindowsConfiguration, Secrets, AllowExtensionOperations, RequireGuestProvisionSignal}
ProvisioningState     : Succeeded
StorageProfile        : {ImageReference, OsDisk, DataDisks, AlignRegionalDisksToVmZone}
Zones                : {1}
FullyQualifiedDomainName : mypsvm-340ac0.Central India.cloudapp.azure.com
TimeCreated           : 1/11/2026 8:22:01 AM
Etag                 : "2"
```

```
Switch to Bash Restart Manage files New session Editor Web preview Settings Help
PS /home/muhammad> Get-AzVM
ResourceGroupName Name Location VmSize OsType NIC ProvisioningState Zone
----- ----- ----- -----
AZ104-RG8 myPSVM centralindia Standard_D2s_v3 Windows myPSVM Succeeded 1

PS /home/muhammad> Get-AzVM -ResourceGroupName 'AZ104-RG8' -Name 'myPSVM' -Status

ResourceGroupName : AZ104-RG8
Name : myPSVM
ComputerName : myPSVM
OsName : Windows Server 2019 Datacenter
OsVersion : 10.0.17763.8146
HyperVGeneration : V1
Disks[0] :
  Name : myPSVM_disk1_a271b05288724e71a0940999a719864a
  Statuses[0] :
    Code : ProvisioningState/succeeded
    Level : Info
    DisplayStatus : Provisioning succeeded
    Time : 1/11/2026 8:22:03 AM
  VMAgent :
    VMAgentVersion : 2.7.41491.1183
      Code : ProvisioningState/succeeded
      Level : Info
      DisplayStatus : Provisioning succeeded
      Time : 1/11/2026 8:22:03 AM
    VMAgent :
      VMAgentVersion : 2.7.41491.1183
      Statuses[0] :
        Code : ProvisioningState/succeeded
        Level : Info
        DisplayStatus : Ready
        Message : GuestAgent is running and processing the extensions.
        Time : 1/11/2026 8:24:59 AM
      Statuses[0] :
        Code : ProvisioningState/succeeded
        Level : Info
        DisplayStatus : Provisioning succeeded
        Time : 1/11/2026 8:22:26 AM
      Statuses[1] :
        Code : PowerState/running
        Level : Info
        DisplayStatus : VM running
```