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Section: B

LAB: 08

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

The image shows two screenshots from the Microsoft Azure portal. The top screenshot is the 'Create a virtual machine' wizard. It shows the 'Review + create' step, where the user has selected '2 X Standard D2s v3' by Microsoft. The price is listed as '0.3760 USD/hr'. The user has passed validation, and the 'Create' button is visible. The bottom screenshot shows the deployment completion screen for the resource 'CreateVm-MicrosoftWindowsServer.WindowsServer-202-2026011115142'. It displays a green checkmark and the message 'Your deployment is complete'. The deployment details show the name, subscription, resource group, start time, and correlation ID. There are also recommendations for 'Setup auto-shutdown', 'Monitor VM health, performance and network dependencies', and 'Run a script inside the virtual machine'. A 'Notifications' panel on the right shows the deployment succeeded.

Microsoft Azure Portal - Create a virtual machine

Validation passed

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

Basics | Disks | Networking | Management | Monitoring | Advanced | Tags | **Review + create**

Price

2 X Standard D2s v3 by Microsoft
Terms of use | Privacy policy

Subscription credits apply
0.3760 USD/hr
Pricing for other VM sizes

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed.

< Previous | Next > | **Create**

Download a template for automation | Give feedback

Microsoft Azure Portal - Deployment Details

CreateVm-MicrosoftWindowsServer.WindowsServer-202-2026011115142

Deployment

Search

Overview | Inputs | Outputs | Template

Your deployment is complete

Deployment name: Create... | Start time: 1/11/... | Correlation ID: cda1...
Subscription: Azure subscri... | Resource group: az104-rg8

Deployment details

Next steps

Setup auto-shutdown Recommended
Monitor VM health, performance and network dependencies Recommended
Run a script inside the virtual machine Recommended

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

Notifications

More events in the activity log → Dismiss all

Deployment succeeded

Deployment 'CreateVm-MicrosoftWindowsServer-202-2026011115142' to resource group 'az104-rg8' was successful.

Go to reso... | Pin to dashb...

a few seconds ago

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

az104-vm1 | Size

Virtual machine

Search

- Diagnose and solve problems
- Resource visualizer
- Connect
- Networking
- Settings
- Availability + scale
- Size**
- Availability + scaling
- Security
- Backup + disaster recovery
- Operations
- Monitoring

Resize this virtual machine

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**

Series	Storage	VM size	Max IOPS
DC1ds_v3	Confidential compute	1	8
DC2ds_v3	Confidential compute	2	16

Unsupported generation 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.](#)

Resize

az104-vm1 | Disks

Virtual machine

Search

- Diagnose and solve problems
- Resource visualizer
- Connect
- Networking
- Settings
- Disks**
- Extensions + applications
- Operating system
- Configuration
- Advisor recommendations
- Properties
- Tools

Refresh | Additional settings | Feedback | Troubleshoot

Swap OS disk

Disk name	Storage type	Size (GiB)	Max IOPS
az104-vm1_OsDisk_1_0daa92ff5084412f	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 (...)	Encryption
0	vm1-disk1	Standard HDD (...)	32	500	60	Platform-m

Apply **Discard changes**

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

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All services > CreateVm-MicrosoftWindowsServer-202-202601111115142 | Overview > az104-vm1

az104-vm1 | Disks

Virtual machine

Search

Refresh

Additional settings

Feedback

Troubleshoot

Diagnose and solve problems

Resource visualizer

Connect

Networking

Settings

Disks

Extensions + applications

Operating system

Configuration

Advisor recommendations

Properties

...

Swap OS disk

Disk name	Storage type	Size (GiB)	Max IOPS
az104-vm1_OsDisk_1_0daa92ff5084412f	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 (...)	Encryption
0	vm1-disk1	Standard HDD LRS	32	500	60	SSE with PM...

Apply

Discard changes

Microsoft

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All services > CreateVm-MicrosoftWindowsServer-202-202601111115142 | Overview > az104-vm1

az104-vm1 | Disks

Virtual machine

Search

Refresh

Additional settings

Feedback

Troubleshoot

Diagnose and solve problems

Resource visualizer

Connect

Networking

Settings

Disks

Extensions + applications

Operating system

Configuration

Advisor recommendations

Properties

...

Swap OS disk

Disk name	Storage type	Size (GiB)	Max IOPS
az104-vm1_OsDisk_1_0daa92ff5084412f	Premium SSD LRS	127	500

Data disks

Filter by name

Showing 0 of 0 attached data disks

Create and attach a new disk

Attach existing disks

LUN	Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (...)	Encryption
No data disks attached						

Apply

Discard changes

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

vm1-disk1 | Size + performance

Disk

Search

Explore ways to boost disk performance

Settings

Configuration

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 U
4 GiB	E1	500	100	3	600 150
8 GiB	E2	500	100	3	600 150
16 GiB	E3	500	100	3	600 150
32 GiB	E4	500	100	3	600 150
64 GiB	E6	500	100	3	600 150
128 GiB	E10	500	100	3	600 150
256 GiB	E15	500	100	3	600 150

Save

Discard

Give feedback

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Microsoft Azure portal interface showing the configuration of disks for a virtual machine named **az104-vm1**.

The left sidebar lists navigation options: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Resource visualizer, Connect, Networking, Settings, Disks (selected), Extensions + applications, and Certificates.

The main content area displays the **Disks** configuration for **az104-vm1**. It includes a search bar, a refresh button, and links for Additional settings, Feedback, and Troubleshoot.

The **Data disks** section shows a table of attached disks:

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

Buttons for **Apply** and **Discard changes** are visible at the bottom.

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

Microsoft Azure portal interface showing the configuration of a Virtual Machine Scale Set (VMSS) named **vmss-vnet**.

The left sidebar lists navigation options: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Resource visualizer, Connect, Networking, Settings, Disks, Extensions + applications, and Certificates.

The main content area displays the **vmss-vnet** configuration. It includes a search bar, a refresh button, and links for Additional settings, Feedback, and Troubleshoot.

The **Subnets** section shows a table of subnets:

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

Buttons for **Save** and **Cancel** are visible at the bottom.

Microsoft Azure

Search resources, services, and docs (G+/)

Copilot

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All services > Compute infrastructure | Virtual Machine Scale Set (VMSS) >

Create a Virtual Machine Scale Set (VMSS)

Validation passed

Orchestration mode

Availability zone

Image

Size

Scaling mode

Instance count

Security type

Enable secure boot

Enable vTPM

Integrity monitoring

Enable Hibernation

Username

Uniform

1,2

Windows Server 2025 Datacenter - Gen2

Standard D2s v3 (2 vcpus, 8 GiB memory)

Manually update the capacity

2

Trusted launch virtual machines

Yes

Yes

No

No

localadmin

< Previous

Next >

Create

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All services > Compute infrastructure | Virtual Machine Scale Set (VMSS) > vmss1

vmss1 | Network settings

Search

Resource visualizer

Networking

Network settings

Load balancing

Application security groups

Network manager

Settings

Availability + scale

Security

Operations

Monitoring

Automation

Search rules

Source == all

Destination == all

Protocol == all

Action == all

Prio...	Name	Port	Protocol	Source
Inbound port rules (4)				
300	HTTP	80	TCP	Any
65000	AllowVnetInBound	Any	Any	VirtualNetwork
65001	AllowAzureLoadBalancerInB...	Any	Any	AzureLoadBalancer
65500	DenyAllInBound	Any	Any	Any
Outbound port rules (3)				

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All services > Compute infrastructure | Virtual Machine Scale Set (VMSS) >

vmss1

Refresh

Start

Restart

Stop

Delete

Reimage

Move

Open in mob

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Instances

Resource visualizer

Essentials

Resource group (move)

Status

Subscription

Location (move)

Operating system

Size

Public IP address

Public IP address (IPv6)

Microsoft

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Task 4 - Scale Azure Virtual Machine Scale Sets:

The image displays three sequential screenshots of the Azure portal interface, illustrating the process of configuring an Azure Virtual Machine Scale Set (VMSS) for scaling.

Top Screenshot: Shows the 'vmss1 | Scaling' page. The left sidebar lists navigation options: Resource Visualizer, Networking, Settings, Availability + scale, Scaling (selected), Availability, Size, Security, Operations, Monitoring, Automation, and Help. The main content area is titled 'Configure' and includes tabs for Scale-In Policy, Predictive charts, Run history, JSON, Notify, and Diagnostic settings. A description of Autoscale is provided. Below, the 'Choose how to scale your resource' section offers two options: 'Manual scale' (Maintain a fixed instance count) and 'Custom autoscale' (Scale on any schedule, based on any metrics or predictively). The 'Custom autoscale' option is selected.

Middle Screenshot: Shows the 'Scale rule' configuration dialog. The 'Default' tab is active, displaying 'Auto created default scale condition'. The 'Scale mode' is set to 'Scale based on a metric'. The 'Rules' section shows a single rule with the following configuration: Operator: Greater than; Metric threshold to trigger scale action: 70; Duration (minutes): 10; Time grain (minutes): 1; Time grain statistic: Average; Time aggregation: Average; Action: Increase percent by 50. The 'Instance limits' section shows a minimum of 2 instances. The 'Schedule' section is empty. A blue 'Add' button is visible at the bottom right.

Bottom Screenshot: Shows the 'Scale rule' configuration dialog with the 'Default' tab selected. The 'Scale mode' is set to 'Scale based on a metric'. The 'Rules' section shows a single rule with the following configuration: When: vmss1; (Average) Percentage CPU > 70; Increase percent by 50. The 'Instance limits' section shows a minimum of 2 instances, a maximum of 2 instances, and a default of 2 instances. The 'Schedule' section is empty. A blue 'Add a rule' button is visible at the bottom left. A message at the bottom states: 'This scale condition is executed when none of the other scale condition(s) match'.

Microsoft Azure portal interface showing the 'vmss1 | Scaling' page. The left sidebar lists navigation options: Networking, Settings, Availability + scale, Scaling, Availability, Size, Security, Operations, Monitoring, Automation, and Help. The main content area displays the 'Default' tab for the 'Auto created default scale condition'. The 'Scale rule' panel on the right shows a metric threshold of 30.45%, an operator of 'Less than', and a duration of 10 minutes. The 'Action' section shows a 'Decrease percent by' of 50%.

Microsoft Azure portal interface showing the 'vmss1 | Scaling' page. The left sidebar lists navigation options: Networking, Settings, Availability + scale, Scaling, Availability, Size, Security, Operations, Monitoring, Automation, and Help. The main content area displays the 'Default' tab for the 'Auto created default scale condition'. The 'Scale rule' panel on the right shows a metric threshold of 30.45%, an operator of 'Less than', and a duration of 10 minutes. The 'Action' section shows a 'Decrease percent by' of 50%.

Microsoft Azure portal interface showing the 'vmss1 | Scaling' page. The left sidebar lists navigation options: Networking, Settings, Availability + scale, Scaling, Availability, Size, Security, Operations, Monitoring, Automation, and Help. The main content area displays the 'Default' tab for the 'Auto created default scale condition'. The 'Scale rule' panel on the right shows a metric threshold of 30.45%, an operator of 'Less than', and a duration of 10 minutes. The 'Action' section shows a 'Decrease percent by' of 50%.

Microsoft Azure Portal interface showing the Virtual Machine Scale Set (VMSS) page for 'vmss1'.

vmss1 | Instances
Virtual machine scale set

Search virtual machine instances

Instance	Computer name	Status	Protection policy	Provisioning
<input type="checkbox"/> vmss1_0	vmss1grt5000000	Running		Succeeded
<input type="checkbox"/> vmss1_1	vmss1grt5000001	Running		Succeeded

Navigation links: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, **Instances**, Resource visualizer, Networking.

User profile: muhammadosama...
muhammadosama0661@gm...
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Yes

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
```