Batch: CC-9 Roll No.: 16010122323

Experiment No. 6

Grade: AA / AB / BB / BC / CC / CD /DD

Title: Microsoft Azure portal services, VM creation and management using Microsoft Azure

Objective: To implement Microsoft Azure portal services, VM creation and management using Microsoft Azure services.

Expected Outcome of Experiment:

CO	Outcome
CO4	Build cloud services and applications

Books/ Journals/ Websites referred:
Microsoft Azure Documentation: https://learn.microsoft.com/en-us/azure/

Azure Virtual Machines Documentation: https://learn.microsoft.com/en-us/azure/virtual-machines/

Microsoft Learn - Free Training on Azure: https://learn.microsoft.com/en-us/training/

Azure Portal: https://portal.azure.com/

Azure YouTube Channel: https://www.youtube.com/user/windowsazure

Abstract:-

This experiment explores the use of the Microsoft Azure cloud platform for creating and managing virtual machines (VMs). Cloud computing has revolutionized the way IT resources are utilized by offering on-demand computing services over the internet. Azure, one of the leading cloud platforms, allows users to deploy, monitor, and manage virtual machines with flexibility and scalability. The focus of this experiment is to understand Azure portal services, perform the creation of a VM, and manage it effectively through various administrative tools provided by the platform. By doing so, students gain hands-on experience in cloud infrastructure management, a critical skill in modern computing environments.

Related Theory: -

Microsoft Azure is a comprehensive cloud computing platform offered by Microsoft, providing a wide range of services including computing, analytics, storage, and networking. Among these, Infrastructure as a Service (IaaS) enables users to create and manage virtual machines.

A Virtual Machine (VM) in Azure acts like a physical computer, running an operating system and applications, and is fully customizable in terms of CPU, memory, and disk configuration. Azure VMs are commonly used for development, testing, hosting applications, and extending data centers.

Key components and concepts involved in Azure VM management:

- Azure Portal: A web-based interface for managing Azure resources including VMs.
- Resource Groups: Logical containers to group and manage resources.
- Virtual Networks and Subnets: Provide isolated network environments for VMs.
- Public IP Address and Network Security Group (NSG): Manage VM connectivity and security.
- Disks: Azure provides both OS disks and data disks, with support for standard and premium storage.

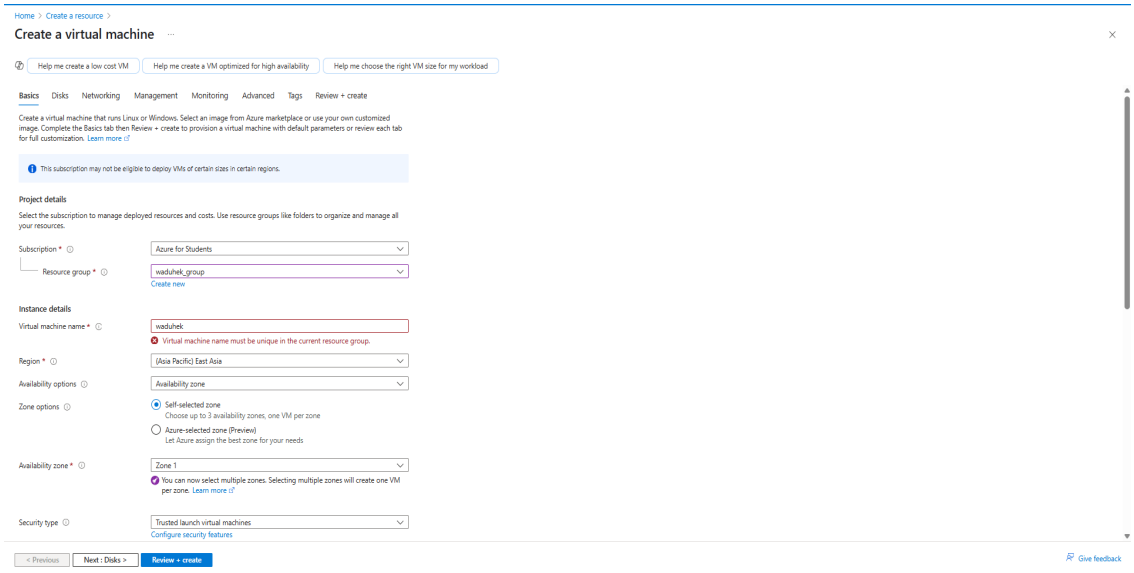
VMs can be provisioned with either Windows or Linux OS. Once created, users can:

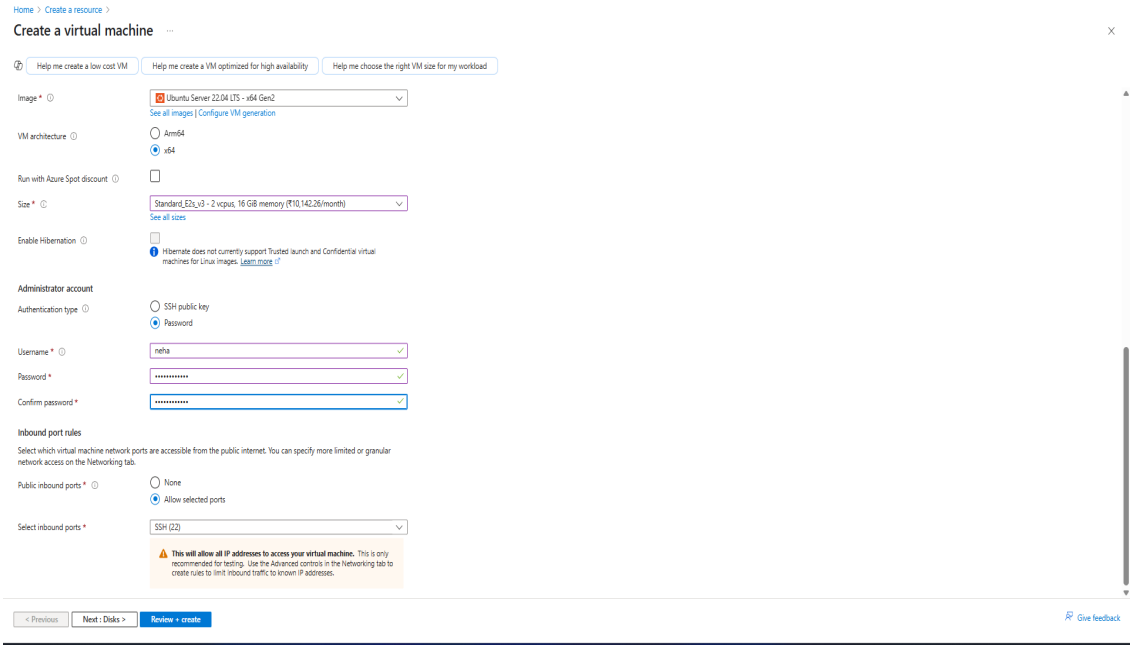
- Connect via Remote Desktop (Windows) or SSH (Linux)

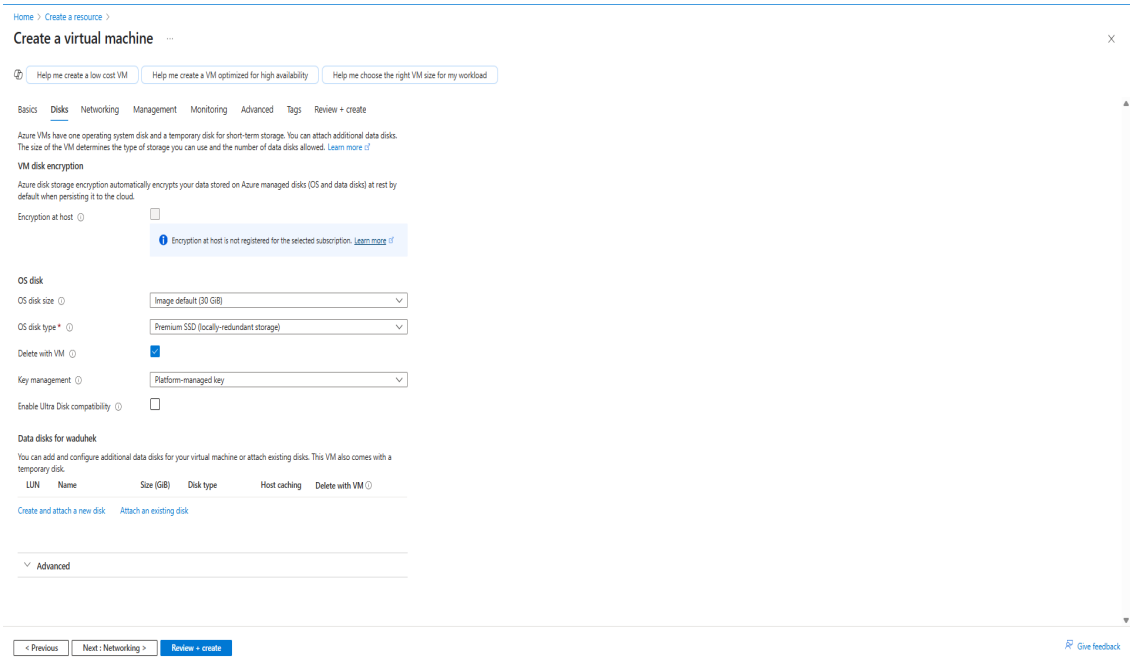
- Start, stop, restart, or delete VMs
- Scale resources and monitor performance
- Set up auto-shutdown and backup policies

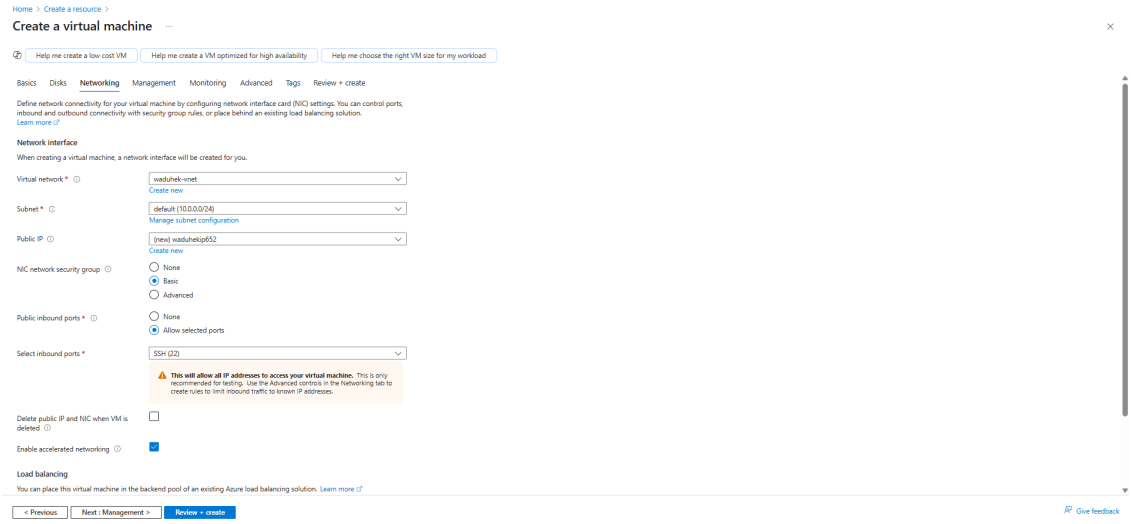
Azure provides high availability and redundancy, making it suitable for production-grade deployments. Understanding VM management in Azure is crucial for cloud administrators and developers to optimize performance and ensure operational reliability.

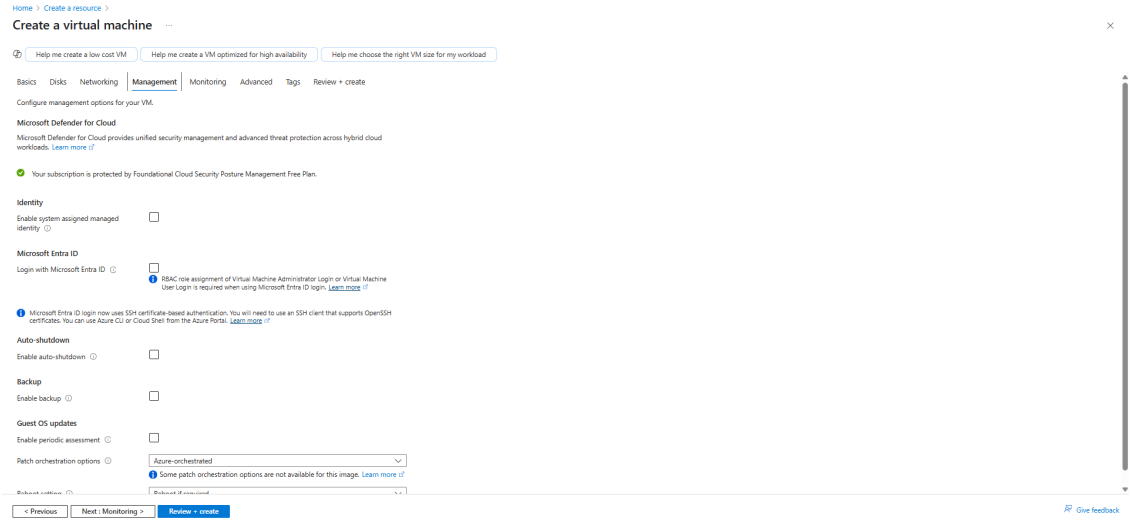
Implementation Details:

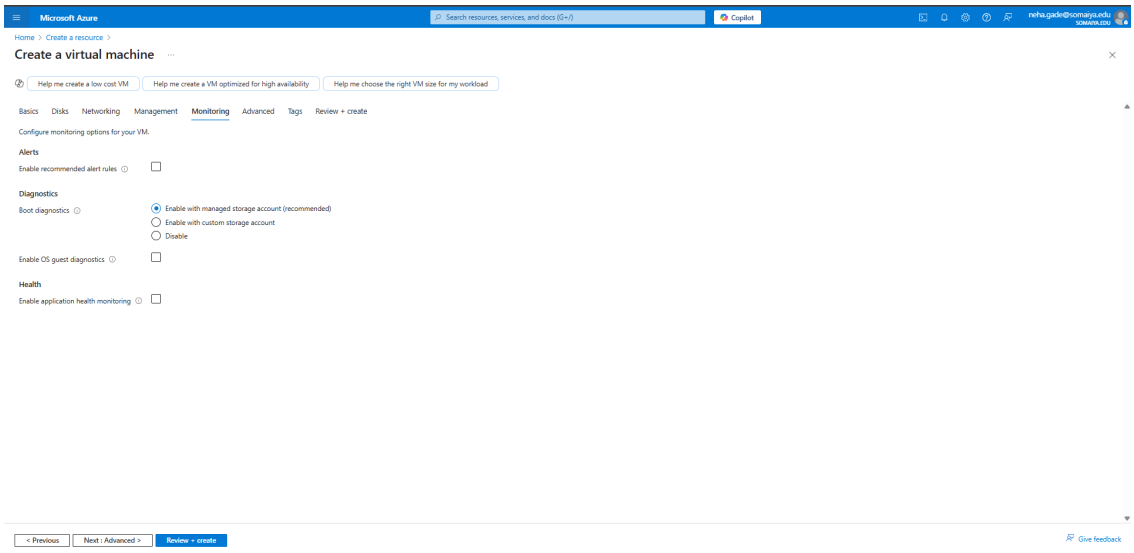


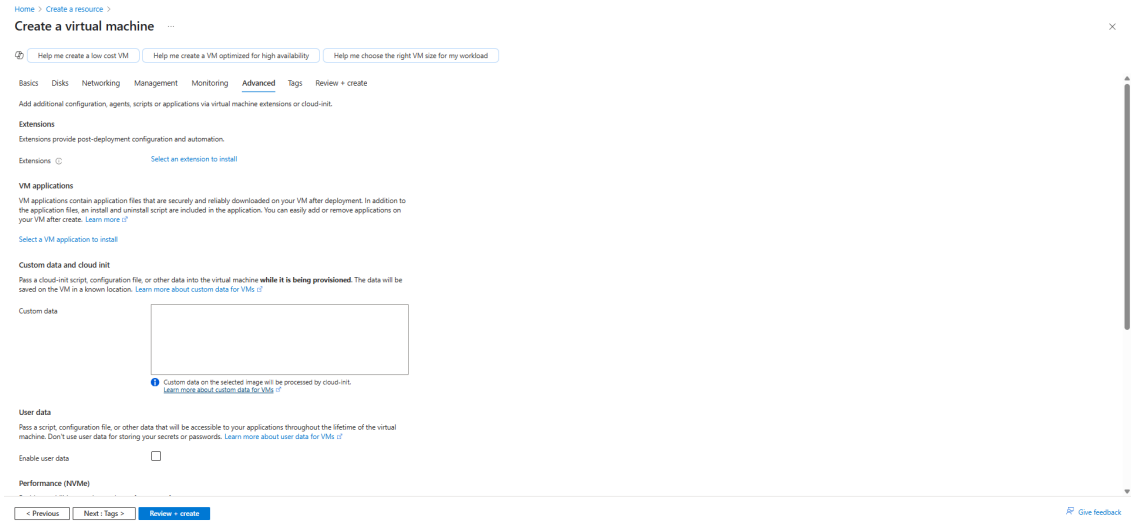

Home > Create a resource >
Create a virtual machine
Help me create a low cost VM
Help me create a VM optimized for high availability
Help me choose the right VM size for my workload
Image *
Ubuntu Server 22.04 LTS - x64 Gen2
See all images | Configure VM generation
VM architecture
Arm64
x64
Run with Azure Spot discount
Size *
Standard_E2s_v3 - 2 vcpus, 16 GiB memory (₹10,142.26/month)
See all sizes
Enable Hibernation
Hibernate does not currently support Trusted launch and Confidential virtual machines for Linux images. Learn more
Administrator account
Authentication type
SSH public key
Password
Username *
neha
Password *
Confirm password *
Inbound port rules
Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.
Public inbound ports *
None
Allow selected ports
Select inbound ports *
SSH (22)
This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.
< Previous
Next : Disks >
Review + create
Give feedback

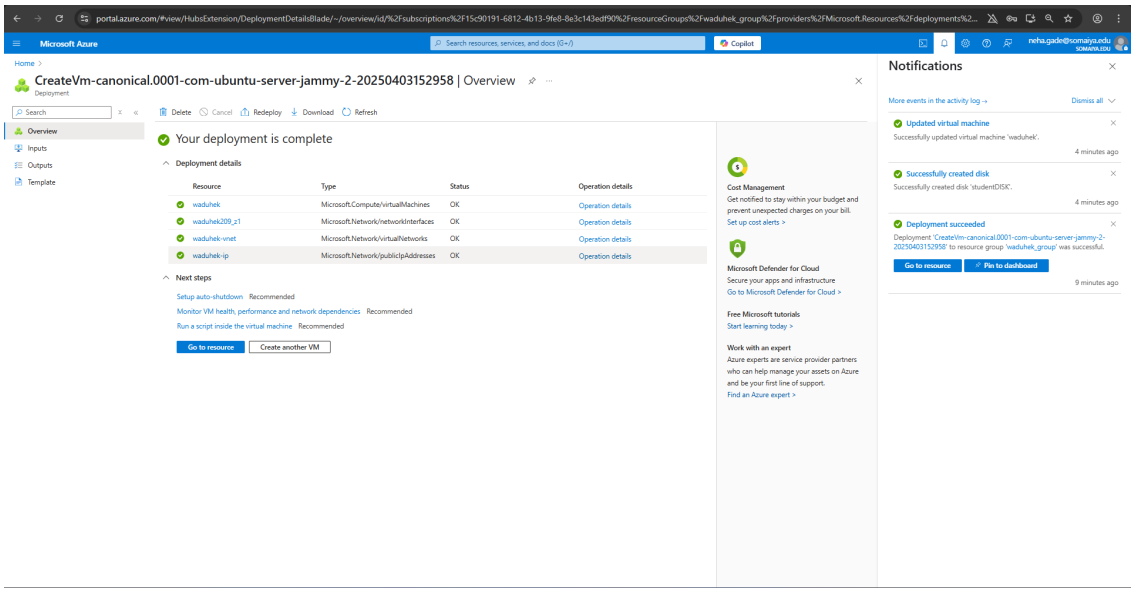

Home > Create a resource >
Create a virtual machine
Help me create a low cost VM
Help me create a VM optimized for high availability
Help me choose the right VM size for my workload
Basics
Disks
Networking
Management
Monitoring
Advanced
Tags
Review + create
Azure VMs have one operating system disk and 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
VM disk encryption
Azure disk storage encryption automatically encrypts your data stored on Azure managed disks (OS and data disks) at rest by default when persisting it to the cloud.
Encryption at host
Encryption at host is not registered for the selected subscription. Learn more
OS disk
OS disk size
Image default (30 GiB)
OS disk type *
Premium SSD (locally-redundant storage)
Delete with VM
Key management
Platform-managed key
Enable Ultra Disk compatibility
Data disks for waduhek
You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.
LUN
Name
Size (GiB)
Disk type
Host caching
Delete with VM
Create and attach a new disk
Attach an existing disk
Advanced
< Previous
Next : Networking >
Review + create
Give feedback

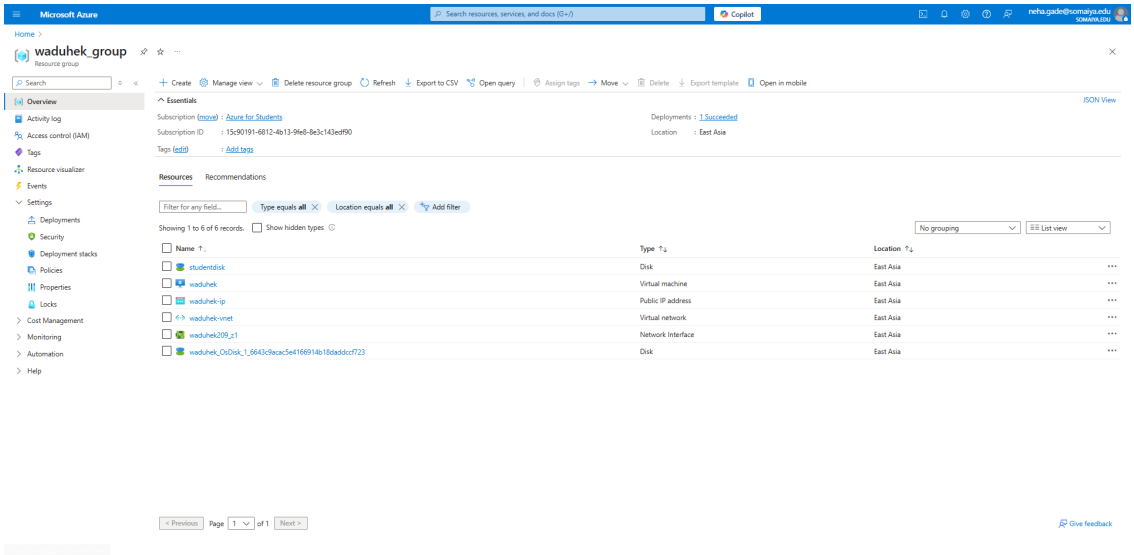

Home > Create a resource >
Create a virtual machine
Help me create a low cost VM
Help me create a VM optimized for high availability
Help me choose the right VM size for my workload
Basics Disks Networking Management Monitoring Advanced Tags Review + create
Define network connectivity for your virtual 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
Network interface
When creating a virtual machine, a network interface will be created for you.
Virtual network *
waduhek-vnet
Create new
Subnet *
default (10.0.0.0/24)
Manage subnet configuration
Public IP
(new) waduhekip652
Create new
NIC network security group
None
Basic
Advanced
Public inbound ports *
None
Allow selected ports
Select inbound ports *
SSH (22)
This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.
Delete public IP and NIC when VM is deleted
Enable accelerated networking
Load balancing
You can place this virtual machine in the backend pool of an existing Azure load balancing solution. Learn more
< Previous
Next : Management >
Review + create
Give feedback

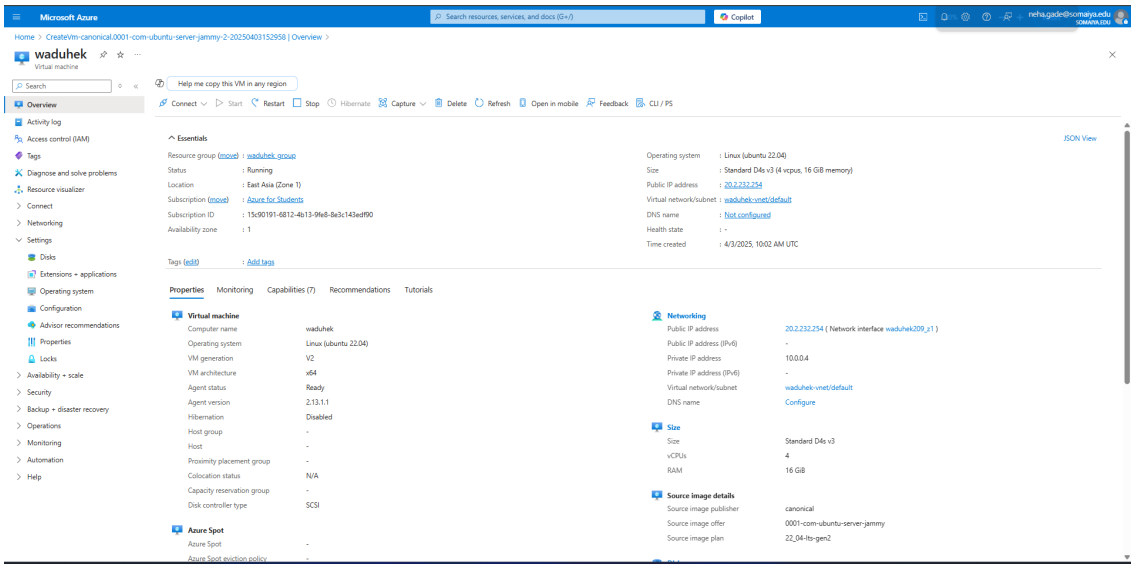

Home > Create a resource >
Create a virtual machine
Help me create a low cost VM
Help me create a VM optimized for high availability
Help me choose the right VM size for my workload
Basics Disks Networking Management Monitoring Advanced Tags Review + create
Configure management options for your VM.
Microsoft Defender for Cloud
Microsoft Defender for Cloud provides unified security management and advanced threat protection across hybrid cloud workloads. Learn more
Your subscription is protected by Foundational Cloud Security Posture Management Free Plan.
Identity
Enable system assigned managed identity
Microsoft Entra ID
Login with Microsoft Entra ID
RBAC role assignment of Virtual Machine Administrator Login or Virtual Machine User Login is required when using Microsoft Entra ID login. Learn more
Microsoft Entra ID login now uses SSH certificate-based authentication. You will need to use an SSH client that supports OpenSSH certificates. You can use Azure CLI or Cloud Shell from the Azure Portal. Learn more
Auto-shutdown
Enable auto-shutdown
Backup
Enable backup
Guest OS updates
Enable periodic assessment
Patch orchestration options
Azure-orchestrated
Some patch orchestration options are not available for this image. Learn more
< Previous
Next : Monitoring >
Review + create
Give feedback

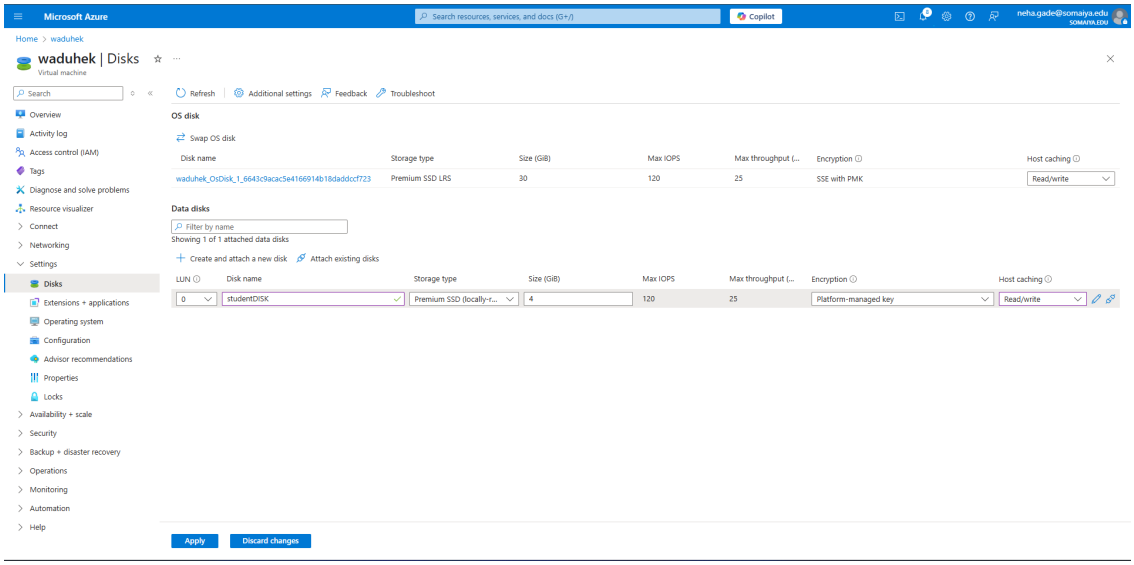

Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
neha.gade@somaiya.edu
SOMAIYA.EDU
Home > Create a resource >
Create a virtual machine
Help me create a low cost VM
Help me create a VM optimized for high availability
Help me choose the right VM size for my workload
Basics Disks Networking Management Monitoring Advanced Tags Review + create
Configure monitoring options for your VM.
Alerts
Enable recommended alert rules
Diagnostics
Boot diagnostics
Enable with managed storage account (recommended)
Enable with custom storage account
Disable
Enable OS guest diagnostics
Health
Enable application health monitoring
< Previous
Next : Advanced >
Review + create
Give feedback

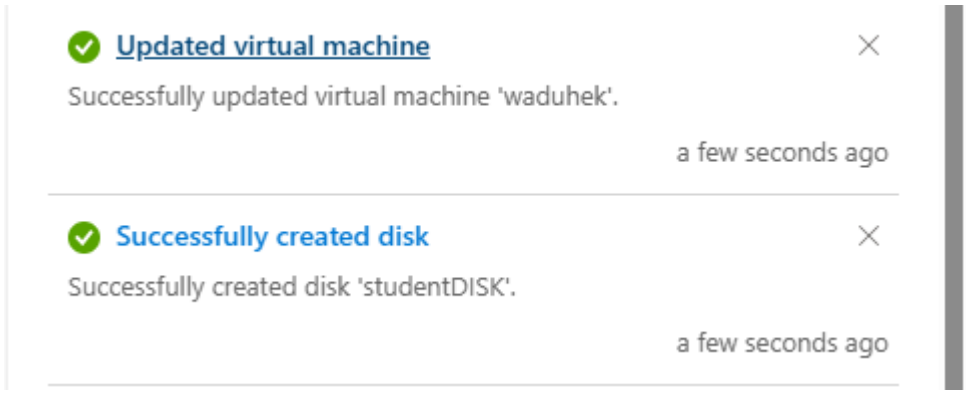

Home > Create a resource >
Create a virtual machine
Help me create a low cost VM
Help me create a VM optimized for high availability
Help me choose the right VM size for my workload
Basics Disks Networking Management Monitoring Advanced Tags Review + create
Add additional configuration, agents, scripts or applications via virtual machine extensions or cloud-init.
Extensions
Extensions provide post-deployment configuration and automation.
Extensions
Select an extension to install
VM applications
VM applications contain application files that are securely and reliably downloaded on your VM after deployment. In addition to the application files, an install and uninstall script are included in the application. You can easily add or remove applications on your VM after create. Learn more
Select a VM application to install
Custom data and cloud init
Pass a cloud-init script, configuration file, or other data into the virtual machine while it is being provisioned. The data will be saved on the VM in a known location. Learn more about custom data for VMs
Custom data
Custom data on the selected image will be processed by cloud-init.
Learn more about custom data for VMs
User data
Pass a script, configuration file, or other data that will be accessible to your applications throughout the lifetime of the virtual machine. Don't use user data for storing your secrets or passwords. Learn more about user data for VMs
Enable user data
Performance (NVMe)
< Previous
Next : Tags >
Review + create
Give feedback

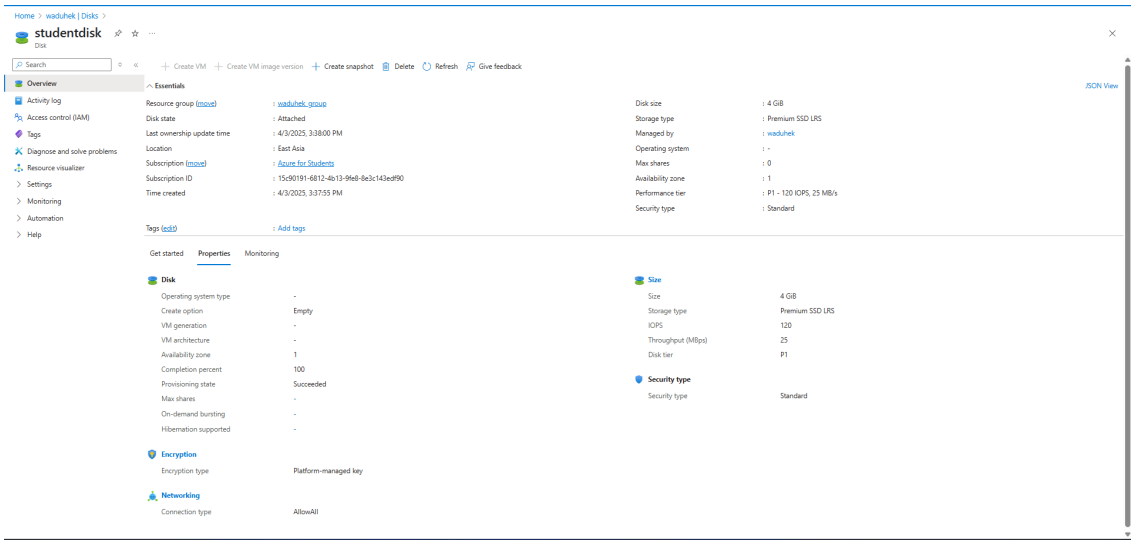

Microsoft Azure
Copilot
CreateVm-canonical.0001-com-ubuntu-server-jammy-2-20250403152958 | Overview
Your deployment is complete
Deployment details
Resource
Type
Status
Operation details
waduhek
Microsoft.Compute/virtualMachines
OK
waduhek209_z1
Microsoft.Network/networkInterfaces
waduhek-vnet
Microsoft.Network/virtualNetworks
waduhek-ip
Microsoft.Network/publicIpAddresses
Next steps
Setup auto-shutdown
Monitor VM health, performance and network dependencies
Run a script inside the virtual machine
Go to resource
Create another VM
Notifications
Updated virtual machine
Successfully updated virtual machine 'waduhek'.
Successfully created disk
Successfully created disk 'studentDISK'.
Deployment succeeded
Go to resource
Pin to dashboard
Cost Management
Microsoft Defender for Cloud
Free Microsoft tutorials
Work with an expert


Microsoft Azure
Copilot
waduhek_group
Resource group
Essentials
Resources
Recommendations
Name
Type
Location
studentdisk
Disk
East Asia
waduhek
Virtual machine
waduhek-ip
Public IP address
waduhek-vnet
Virtual network
waduhek209_z1
Network Interface


Microsoft Azure
waduhek
Virtual machine
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Resource visualizer
Connect
Networking
Settings
Disks
Extensions + applications
Operating system
Configuration
Advisor recommendations
Properties
Locks
Availability + scale
Security
Backup + disaster recovery
Operations
Monitoring
Automation
Help
Connect
Start
Restart
Stop
Hibernate
Capture
Delete
Refresh
Open in mobile
Feedback
CLI / PS
Essentials
JSON View
Resource group (move) : waduhek_group
Status : Running
Location : East Asia (Zone 1)
Subscription (move) : Azure for Students
Subscription ID : 15c90191-6812-4b13-9fe8-8e3c143edf90
Availability zone : 1
Operating system : Linux (ubuntu 22.04)
Size : Standard D4s v3 (4 vcpus, 16 GiB memory)
Public IP address : 20.2.232.254
Virtual network/subnet : waduhek-vnet/default
DNS name : Not configured
Health state : -
Time created : 4/3/2025, 10:02 AM UTC
Tags (edit) : Add tags
Properties
Monitoring
Capabilities (7)
Recommendations
Tutorials
Virtual machine
Computer name waduhek
Operating system Linux (ubuntu 22.04)
VM generation V2
VM architecture x64
Agent status Ready
Agent version 2.13.1.1
Hibernation Disabled
Host group -
Host -
Proximity placement group -
Colocation status N/A
Capacity reservation group -
Disk controller type SCSI
Azure Spot
Azure Spot -
Networking
Public IP address 20.2.232.254 (Network interface waduhek209_z1)
Public IP address (IPv6) -
Private IP address 10.0.0.4
Private IP address (IPv6) -
Virtual network/subnet waduhek-vnet/default
DNS name Configure
Size
Size Standard D4s v3
vCPUs 4
RAM 16 GiB
Source image details
Source image publisher canonical
Source image offer 0001-com-ubuntu-server-jammy
Source image plan 22_04-lts-gen2


Microsoft Azure
Home > waduhek
waduhek | Disks
Virtual machine
Refresh
Additional settings
Feedback
Troubleshoot
OS disk
Swap OS disk
Disk name
Storage type
Size (GiB)
Max IOPS
Max throughput (...
Encryption
Host caching
waduhek_OsDisk_1_6643c9acac5e4166914b18daddccf723
Premium SSD LRS
30
120
25
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
Host caching
0
studentDISK
Premium SSD (locally-r...
4
120
25
Platform-managed key
Read/write
Apply
Discard changes


Updated virtual machine
Successfully updated virtual machine 'waduhek'.
a few seconds ago
Successfully created disk
Successfully created disk 'studentDISK'.
a few seconds ago



Conclusion:- Understood the creation and management of VM in Microsoft Azure