



**Mid Term Submission**

**SUBJECT: CLOUD PERFORMANCE TUNING SUBJECT CODE:**

**CSEG3015**

**SUBMITTED TO:**

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School of Computer Science

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Link for video : [https://drive.google.com/file/d/1Q5iWG6TvT0HbQEiV\\_3Xxh-HUK8jNiX-v/view?usp=drivesdk](https://drive.google.com/file/d/1Q5iWG6TvT0HbQEiV_3Xxh-HUK8jNiX-v/view?usp=drivesdk)

## What is Cloud Computing?

Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.



## What is cloud performance tuning?

Cloud performance tuning is the process of optimizing the speed, efficiency, and reliability of cloud-based applications and services. It requires a combination of technical skills, analytical tools, and best practices to identify and resolve bottlenecks, errors, and resource wastage.

## Difference Between AWS and Microsoft Azure

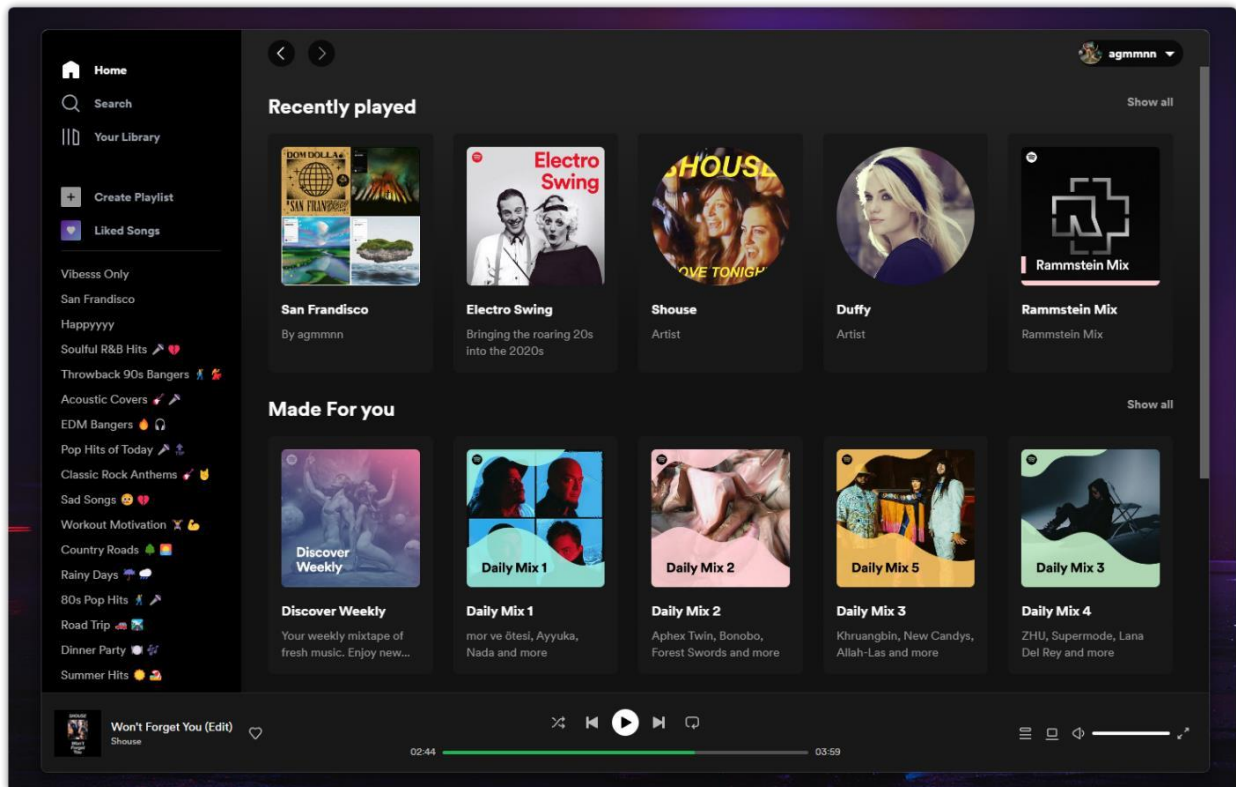
Both Amazon Web Services (AWS) and Microsoft Azure are leading cloud service providers, and they offer various services and tools for cloud performance tuning. While the specific differences between them can change over time as they introduce new features and updates, here are some key points to consider when comparing AWS and Azure in terms of cloud performance tuning:

1. **Cost:** The choice between AWS and Microsoft Azure in terms of cost depends on your specific needs. Both cloud providers have competitive pricing, but the most cost-effective option for you will depend on the services you use, where you use them, and how you use them. It is like comparing prices at different stores – it depends on what you are buying and where you are buying it. To find the best fit, you'll need to analyze your usage, consider any long-term commitments, and keep an eye on data transfer

costs according to me Azure is costly as here if use AMI's the using cost is high here and give less memory for using in free tier as compare to AWS.

2. **Storage:** AWS and Microsoft Azure both offer robust storage solutions. AWS provides Amazon S3, EBS, and Glacier, while Azure offers Blob Storage and Azure Files. The choice depends on your specific storage needs and preferences. Consider factors like performance, scalability, and pricing to determine the best fit for your use case. Largest instance AWS offer 256 GB Ram + 16v CPU while Azure offers 224 GB + 16 vCPUs.
3. **Availability Zone:** Availability Zone: Aws was the first on of its kind which means Aws is hosting in hosting in multiple locations worldwide and it's true for Azure as well but differences occur in the numbers of regions and availability zones talking of numbers Aws has 55 availability zones worldwide with eight more on its weight whereas Azure is having 44 availability zones.
4. **Services:** Aws and Azure both covers 100 plus services like compute, Database, Storage, Security, Networking, and many more Some of the services that Aws covers (Ec2, AWS RDS S3, IAM, VPC, CloudWatch and cloud9 Similarly in Azure covers Vm, SQL, blob Storage, virtual network and Azure monitor and visual studio and many more.
5. **Open Source Integration:** Aws has quite better relations with open source communities leading to more open integration with Aws which includes open source tools like Jenkins Docker, ansible, GitHub and its very friendly when it comes to Linux servers while in Azure it offers native Integrations for windows development tools such as VBS, SQL and more as you all know Microsoft hasn't always embraced this model but recently they have been catching with it and organization can run on RedHat and Hadoop clusters in azure

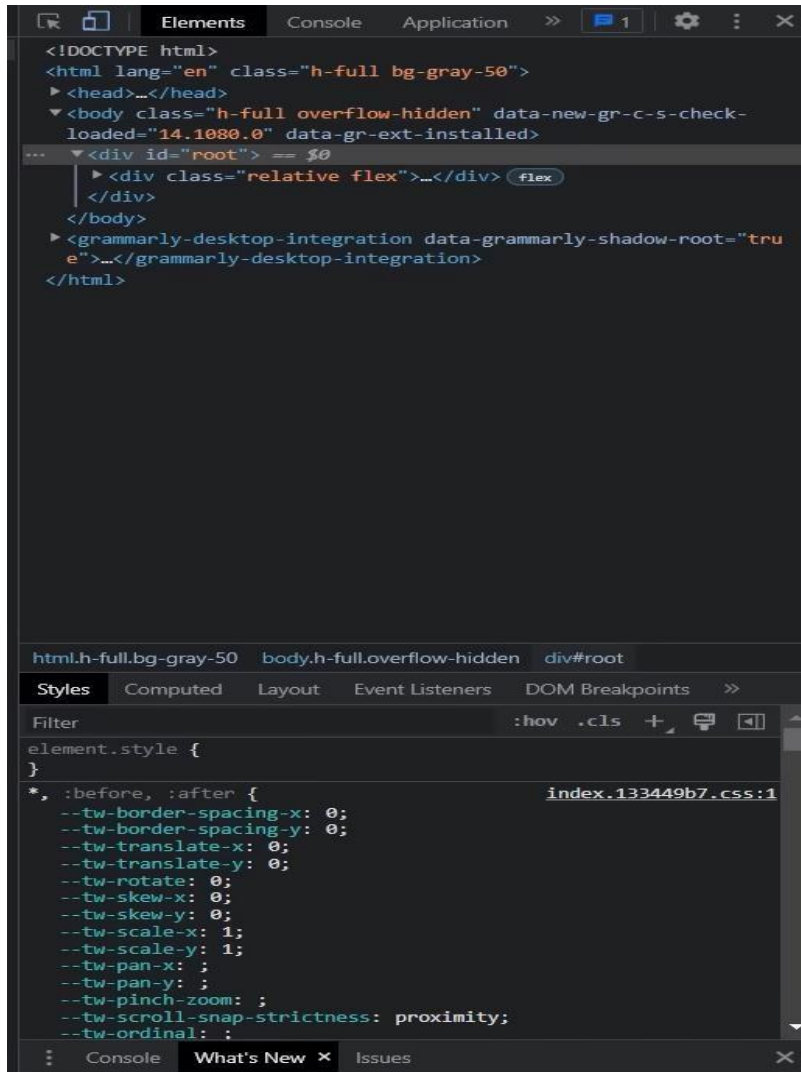
## Project Name: - Spotify Clone-Music Player



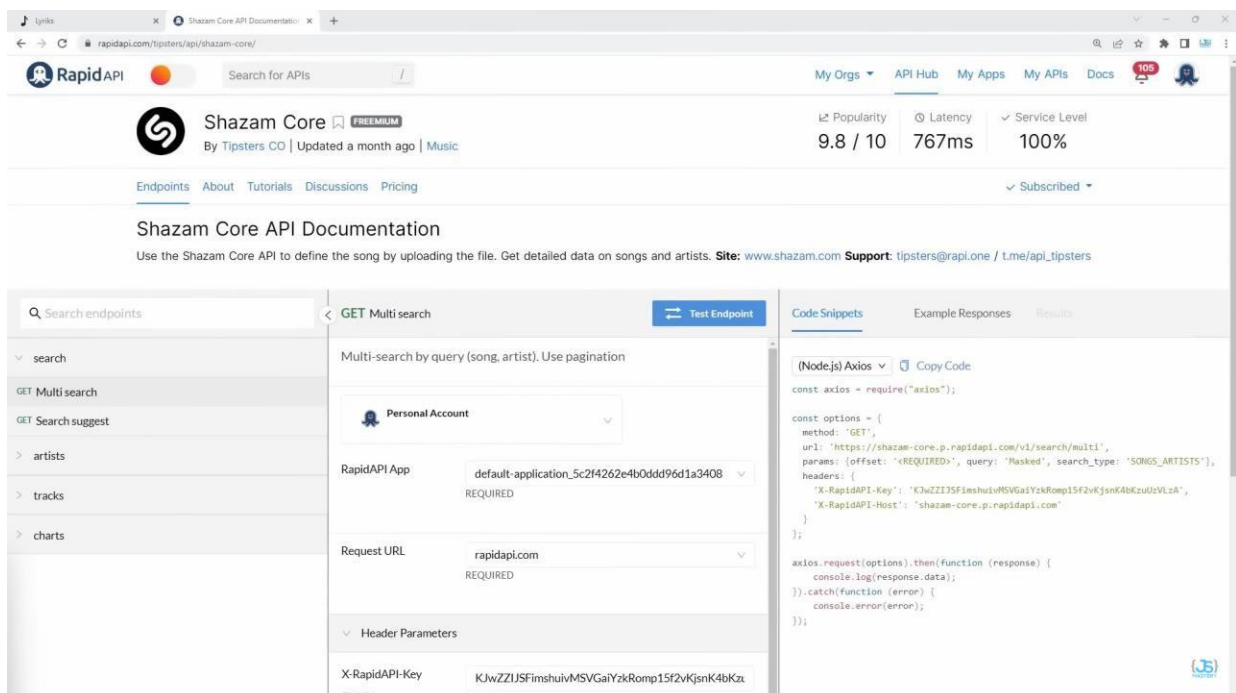
Deploying my project on **Azure**, on **Windows and Ubuntu Virtual Machine** and analyzing performance metrics, **CPU, and Memory Utilization** on Windows and Ubuntu Virtual Machines in OS-specific tools like Task Manager (Windows) or top/htop (Ubuntu).

### Project Implementation:

### CODE:



## Sources for some help:



Index.html:

```
File Edit Selection View Go Run Terminal Help App.jsx - lyrics - Visual Studio Code
SongDetails.jsx TopArtists.jsx TopCharts.jsx store.js playerSlice.js App.jsx x
src > App.jsx > ...
1 import { useSelector } from 'react-redux';
2 import { Route, Routes } from 'react-router-dom';
3
4 import { Searchbar, Sidebar, MusicPlayer, TopPlay } from './components';
5 import { ArtistDetails, TopArtists, AroundYou, Discover, Search, SongDetails, TopCharts } from './
  pages';
6
7 const App = () => {
8   const { activeSong } = useSelector((state) => state.player);
9
10   return (
11     <div className="relative flex">
12       <Sidebar />
13       <div className="flex-1 flex flex-col bg-gradient-to-br from-black to-[#121286]">
14         <Searchbar />
15
16         <div className="px-6 h-[calc(100vh-72px)] overflow-y-scroll hide-scrollbar flex xl:flex-row
          flex-col-reverse">
17           <div className="flex-1 h-fit pb-40">
18             <Routes>
19               <Route path="/" element={ <Discover /> } />
20               <Route path="/top-artists" element={ <TopArtists /> } />
21             </Routes>
22           </div>
23           <TopPlay />
24         </div>
25       </div>
26     </div>
  )
27 }
```

```
src > App.jsx > App
12 <Sidebar />
13 <div className="flex-1 flex flex-col bg-gradient-to-br from-black to-[#121286]">
14   <Searchbar />
15
16   <div className="px-6 h-[calc(100vh-72px)] overflow-y-scroll hide-scrollbar flex xl:flex-row
    flex-col-reverse">
17     <div className="flex-1 h-fit pb-40">
18       <Routes>
19         <Route path="/" element={ <Discover /> } />
20         <Route path="/top-artists" element={ <TopArtists /> } />
21         <Route path="/top-charts" element={ <TopCharts /> } />
22         <Route path="/around-you" element={ <AroundYou /> } />
23         <Route path="/artists/:id" element={ <ArtistDetails /> } />
24         <Route path="/songs/:songid" element={ <SongDetails /> } />
25         <Route path="/search/:searchTerm" element={ <Search /> } />
26       </Routes>
27     </div>
28     <div className="xl:sticky relative top-0 h-fit">
29       <TopPlay />
30     </div>
  </div>
```



```

1  [
2  > { ...
79  },
80  > { ...
157  },
158  > { ...
235  },
236  {
237    "layout": "5",
238    "type": "MUSIC",
239    "key": "628935200",
240    "title": "I'm Good (Blue)",
241    "subtitle": "David Guetta & Bebe Rexha",
242    "share": {
243      "subject": "I'm Good (Blue) - David Guetta & Bebe Rexha"
    }
  }
]

```

```

1  import { Error, Loader, SongCard } from '../components';
2  import { genres } from '../assets/constants';
3  import { useGetTopChartsQuery } from './redux/services/shazamCore';
4
5
6  const Discover = () => {
7    const genreTitle = 'Pop';
8
9    return (
10     <div className="flex flex-col">
11       <div className="w-full flex justify-between items-center sm:flex-row flex-col mt-4 mb-10">
12         <h2 className="font-bold text-3xl text-white text-left">Discover {genreTitle}</h2>
13         <select
14           onChange={() => {}}
15           value=""
16           className="bg-black text-gray-300 p-3 text-sm rounded-lg outline-none sm:mt-0 mt-5">
17           {genres.map((genre) => <option key={genre.value} value={genre.value}>{genre.title}</option>)}
18         </select>
19       </div>
20     </div>
21   );
22 }

```

```

src > components > SongCard.jsx > SongCard
features/playerSlice';
6
7  const SongCard = ({ song, i }) => {
8    const activeSong = 'Test';
9
10   return (
11     <div className="flex flex-col w-[250px] p-4 bg-white/5
12       bg-opacity-80 backdrop-blur-sm animate-slideup
13       rounded-lg cursor-pointer">
14       <div className="relative w-full h-56 group">
15         <div className="absolute inset-0 justify-center
16           items-center bg-black bg-opacity-50
17           group-hover:flex ${activeSong?.title === song.
18             title ? 'flex bg-black bg-opacity-70' : 'hidden'}">
19           <PlayPause
20             </div>
21         </div>
22       </div>
23     </div>
24   );
25 }

```

```

src > components > SongBar.jsx > ...
1  /* eslint-disable no-nested-ternary */
2  import React from 'react';
3  import { Link } from 'react-router-dom';
4
5  import PlayPause from './PlayPause';
6
7  const SongBar = ({ song, i, artistId, isPlaying, activeSong,
  handlePauseClick, handlePlayClick }) => (
8
9    <div className={`w-full flex flex-row items-center hover:bg-
    [#4c426e] ${activeSong?.title === song?.title ? 'bg-[#4c426e]
    ' : 'bg-transparent'} py-2 p-4 rounded-lg cursor-pointer mb-2`}
    >
10     <h3 className="font-bold text-base text-white mr-3">{i + 1}.
    </h3>
11     <div className="flex-1 flex flex-row justify-between
    items-center">
12       <img
13         className="w-20 h-20 rounded-lg"
        src={artistId ? song?.attributes?.artwork?.url.replace('
        {w}', '125').replace('{h}', '125') : song?.images?.
        songart?}

```

## DEPLOYMENT: FOR

## WINDOWS:



# Microsoft Azure portal

Build, manage, and monitor everything from simple web apps to complex cloud applications in a single, unified console.

[Sign in](#)[New to Azure? Start free >](#)

Check out the how-to video series for tips on deploying your cloud workloads from the Azure portal. >

## Azure mobile app

Stay connected to your Azure resources—anytime, anywhere. Now available for iOS and Android.



## Welcome to Azure!

Don't have a subscription? Check out the following options:



### Start with an Azure free trial

Get \$200 free credit toward Azure products and services, plus 12 months of popular [free services](#).

[Start](#)

### Manage Microsoft Entra ID

Azure Active Directory is becoming Microsoft Entra ID. Secure access for everyone.

[View](#)[Learn more](#)

### Access student benefits

Get free software, Azure credit, or access Azure Dev Tools for Teaching after you verify your academic status.

[Explore](#)[Learn more](#)

## Azure services



Create a resource



Virtual machines



Quickstart Center



App Services



Storage accounts



SQL databases



Azure Cosmos DB



Kubernetes services



Function App



More services

## Resources

Home >

## Create a resource

Get Started

 Getting Started? Try our Quickstart center

Recently created

### Categories

AI + Machine Learning

Analytics

Blockchain

Compute

Containers

Databases

Developer Tools

DevOps

Identity

Integration

Internet of Things

IT & Management Tools

Media

Migration

Mixed Reality

### Popular Azure services [See more in All services](#)



Virtual machine

[Create](#) | [Docs](#) | [MS Learn](#)



Web App

[Create](#) | [Docs](#) | [MS Learn](#)



SQL Database

[Create](#) | [Docs](#) | [MS Learn](#)



Function App

[Create](#) | [Docs](#)



Key Vault

[Create](#) | [Docs](#) | [MS Learn](#)



Data Factory

[Create](#) | [Docs](#) | [MS Learn](#)



Template deployment (deploy using custom templates)

[Create](#) | [Docs](#) | [MS Learn](#)



Logic App

[Create](#) | [Docs](#) | [MS Learn](#)

### Popular Marketplace products [See more in Marketplace](#)



Windows Server 2019 Datacenter

[Create](#) | [Learn more](#)



Windows 11 Pro, version 21H2

[Create](#) | [Learn more](#)



Ubuntu Server 20.04 LTS

[Create](#) | [Learn more](#)



Ubuntu Server 22.04 LTS

[Create](#) | [Learn more](#)



Red Hat Enterprise Linux 7.4

[Create](#) | [Learn more](#)



Essentials 50K

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MongoDB Atlas (pay-as-you-go)

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Standard

[Set up + subscribe](#) | [Learn more](#)

Home > Create a resource >

Create a virtual machine

BasicsDisksNetworkingManagementMonitoringAdvancedTagsReview + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

This subscription may not be eligible to deploy VMs of certain sizes in certain regions.

Project details

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

Subscription \*

Azure for Students

Resource group \*

(New) Resource group

Create new

Instance details

Virtual machine name \*

Region \*

(Asia Pacific) Japan East

Availability options

Availability zone

Review + create

< Previous

Next : Disks >

[Give feedback](#)

Home > Create a resource > Create a virtual machine >

Create a virtual machine

Availability zone \*

Zones 1

You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type

Trusted launch virtual machines

Configure security features

Image \*

Windows Server 2019 Datacenter - x64 Gen2

[See all images](#) | [Configure VM generation](#)

VM architecture

Arm64

x64

Arm64 is not supported with the selected image.

Run with Azure Spot discount

Size \*

Standard\_D2s\_v3 - 2 vcpus, 8 GiB memory (¥12,841.96/month)

[See all sizes](#)

## Create a new disk ...



Create a new disk to store applications and data on your VM. Disk pricing varies based on factors including disk size, storage type, and number of transactions. [Learn more](#)

Name *	<input type="text" value="C:\Windows_DataDisk_0"/>
Source type * ⓘ	<input type="text" value="None (empty disk)"/>
Size * ⓘ	<div>256 GiB Premium SSD LRS <a href="#">Change size</a></div>
Key management ⓘ	<input type="text" value="Platform-managed key"/>
Enable shared disk	<input type="radio"/> Yes <input checked="" type="radio"/> No
Delete disk with VM	<input checked="" type="checkbox"/>

OK

[Give feedback](#)

## Create a virtual machine

## OS disk

OS disk size ⓘ Image default (127 GiB) ▼

OS disk type ⓘ Premium SSD (locally-redundant storage) ▼

Delete with VM ⓘ ☒

Key management ⓘ Platform-managed key ▼

Enable Ultra Disk compatibility ⓘ ☐  
Ultra disk is not supported with selected security type.

## Data disks for CPTWindows

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 ⓘ
0	CPTWindows_DataDis...	512	Premium SSD LRS	None ▼	<input checked="" type="checkbox"/>  

[Create and attach a new disk](#) [Attach an existing disk](#)

## Advanced

[Review + create](#)

&lt; Previous

Next: Networking &gt;

 Give feedback

## Create a virtual machine

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 \* ⓘ (new) CPTWindows-vnet  
[Create new](#)

Subnet \* ⓘ (new) default (10.0.0.0/24) ▼

Public IP ⓘ (new) CPTWindows-ip  
[Create new](#)

NIC network security group ⓘ ☐ None  
☒ Basic  
☐ Advanced

Public inbound ports \* ⓘ ☐ None  
☒ Allow selected ports

Select inbound ports \* RDP (3389) ▼

[Review + create](#)

&lt; Previous

Next: Management &gt;

 Give feedback

Home > Create a resource >

## Create a virtual machine ...

### Identity

Enable system assigned managed identity ⓘ

☐

### Azure AD

Login with Azure AD ⓘ

☐

**i** RBAC role assignment of Virtual Machine Administrator Login or Virtual Machine User Login is required when using Azure AD login. [Learn more](#) ⓘ

### Auto-shutdown

Enable auto-shutdown ⓘ

☐

### Backup

Enable backup ⓘ

☐

### Guest OS updates

Enable hotpatch ⓘ

☐

**i** Hotpatch is not available for this image. [Learn more](#) ⓘ

Patch orchestration options ⓘ

Automatic by OS (Windows Automatic Updates) ▼

**i** Some patch orchestration options are not available for this image. [Learn more](#) ⓘ

[Review + create](#)

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[Next : Monitoring >](#)

Microsoft Azure

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

Home > Create a resource >

## Create a virtual machine ...

✓ Validation passed

Basics Disks Networking Management Monitoring Advanced Tags [Review + create](#)

**i** Cost given below is an estimate and not the final price. Please use [Pricing calculator](#) ⓘ for all your pricing needs.

### Price

1 X Standard B1s

by Microsoft

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Subscription credits apply ⓘ

**1.4607 INR/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 above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

**⚠ You have set RDP port(s) open to the internet.** This is only recommended for testing. If you want to change this setting, go

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Microsoft Azure

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## Create a virtual machine ...

✓ Validation passed

Basics Disks Networking Management Monitoring Advanced Tags [Review + create](#)

**i** Cost given below is an estimate and not the final price. Please use [Pricing calculator](#) ⓘ for all your pricing needs.

### Price

1 X Standard B1s

by Microsoft

[Terms of use](#) | [Privacy policy](#)

Subscription credits apply ⓘ

**1.4607 INR/hr**

[Pricing for other VM sizes](#)

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[Create](#)

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Home > **CreateVm-MicrosoftWindowsServer.WindowsServer-201-20231106185339** | Overview

Deployment

Search Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

**✓ Your deployment is complete**

Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe... Start time: 11/6/2023, 7:07:27 PM  
Subscription: Azure for Students Correlation ID: eea15950-2aea-4de9-8efa-bda36f18178d

Deployment details

Next steps

Setup auto-shutdown Recommended

Monitor VM health, performance and network dependencies Recommended

Run a script inside the virtual machine Recommended

[Go to resource](#) [Create another VM](#)

Give feedback

Tell us about your experience with deployment

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Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.  
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**Run**

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open:

[OK](#) [Cancel](#) [Browse...](#)

**Remote Desktop Connection**

**Remote Desktop Connection**

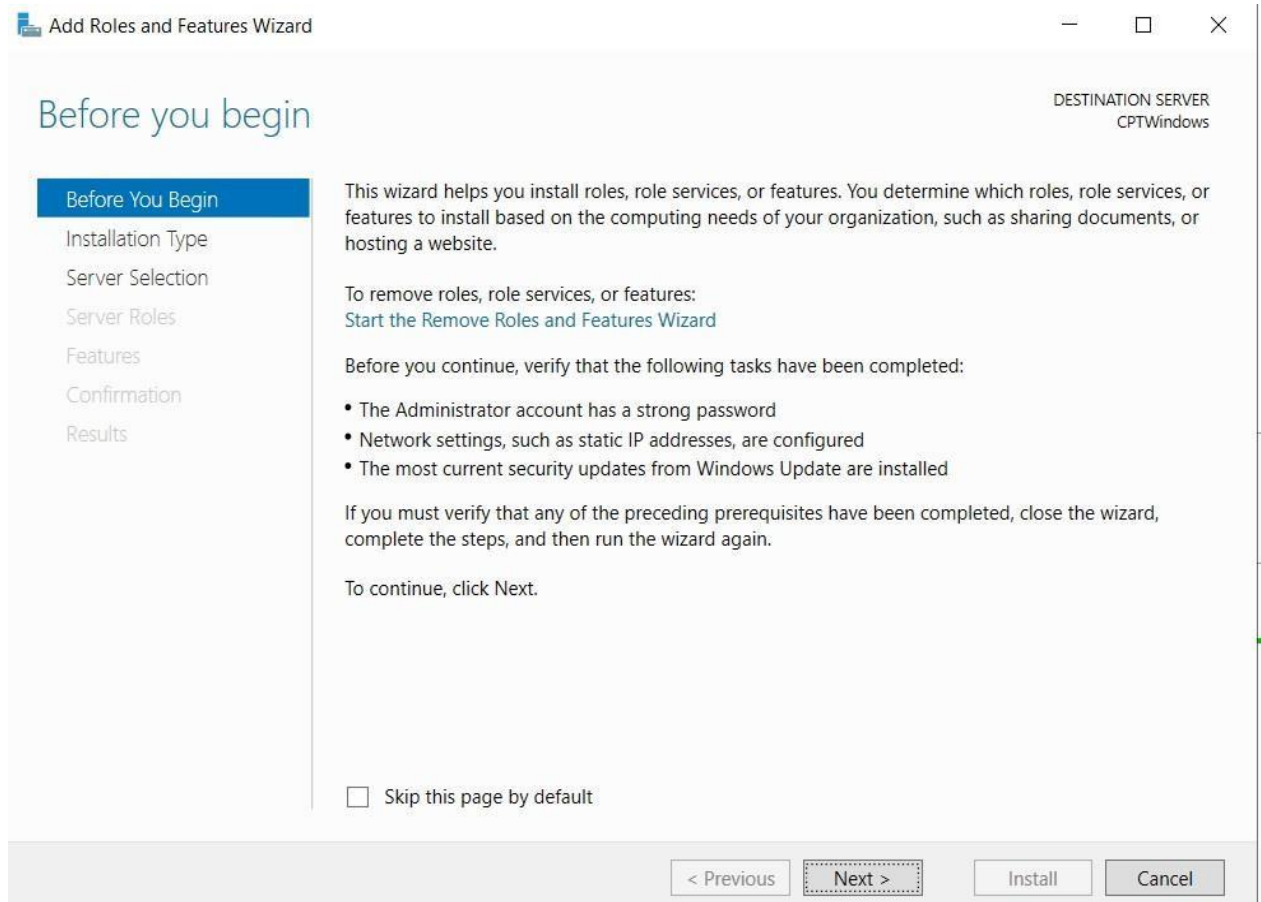
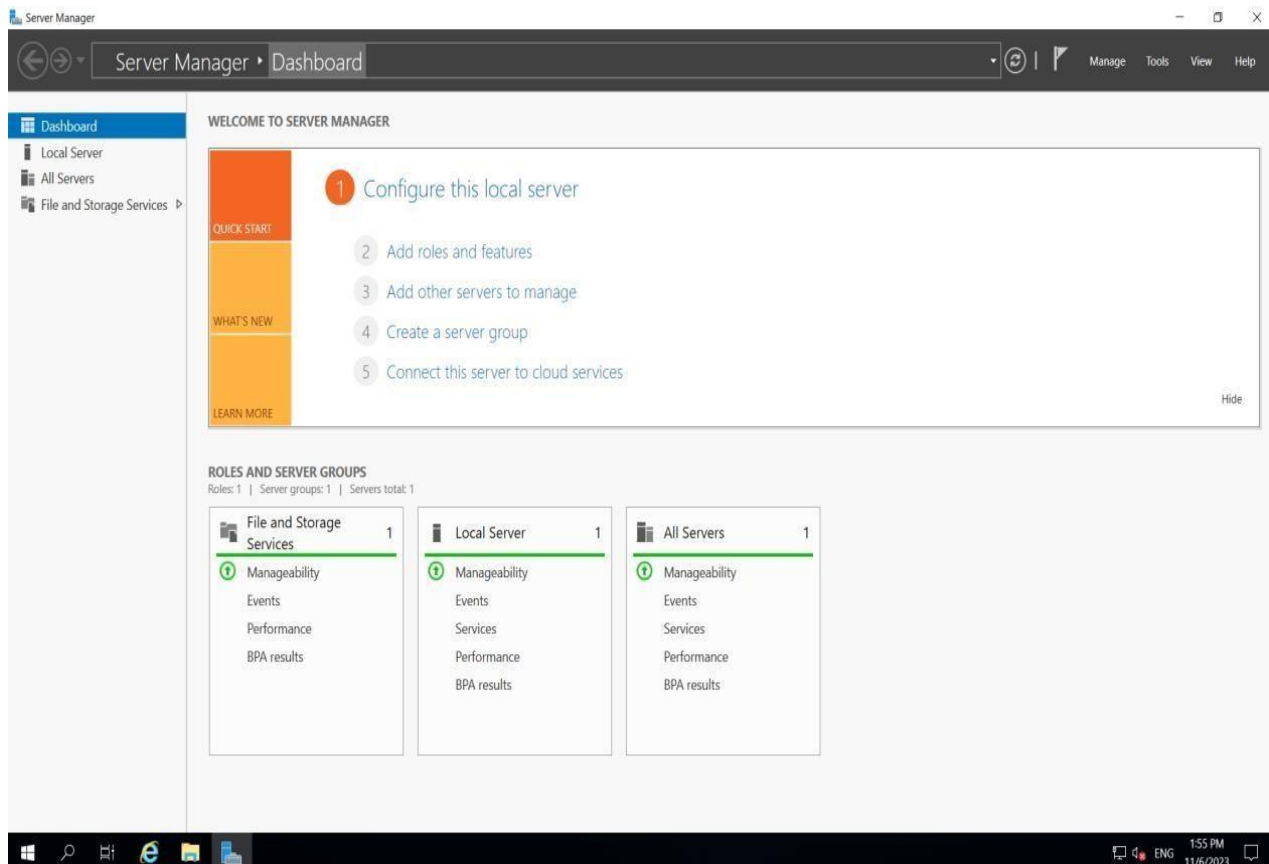
Computer:

User name: None specified

You will be asked for credentials when you connect.

[Show Options](#) [Connect](#) [Help](#)

abc



Add Roles and Features Wizard

Select installation type

DESTINATION SERVER  
CPTWindows

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Confirmation

Results

Select the installation type. You can install roles and features on a running physical computer or virtual machine, or on an offline virtual hard disk (VHD).

☒ **Role-based or feature-based installation**

Configure a single server by adding roles, role services, and features.

☐ **Remote Desktop Services installation**

Install required role services for Virtual Desktop Infrastructure (VDI) to create a virtual machine-based or session-based desktop deployment.

< Previous

Next >

Install

Cancel

Add Roles and Features Wizard

Select destination server

DESTINATION SERVER  
CPTWindows

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Confirmation

Results

Select a server or a virtual hard disk on which to install roles and features.

☒ Select a server from the server pool

☐ Select a virtual hard disk

Server Pool

Filter:

Name	IP Address	Operating System
CPTWindows	10.0.0.4	Microsoft Windows Server 2019 Datacenter

1 Computer(s) found

This page shows servers that are running Windows Server 2012 or a newer release of Windows Server, and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.

< Previous

Next >

Install

Cancel

Add Roles and Features Wizard

Select server roles

Before You Begin
Installation Type
Server Selection
**Server Roles**
Features
Web Server Role (IIS)
Role Services
Confirmation
Results

DESTINATION SERVER

CPTWindows

Select one or more roles to install on the selected server.

Roles

☐ Active Directory Certificate Services
☐ Active Directory Domain Services
☐ Active Directory Federation Services
☐ Active Directory Lightweight Directory Services
☐ Active Directory Rights Management Services
☐ Device Health Attestation
☐ DHCP Server
☐ DNS Server
☐ Fax Server
☒ File and Storage Services (1 of 12 installed)
☐ Host Guardian Service
☐ Hyper-V
☐ Network Controller
☐ Network Policy and Access Services
☐ Print and Document Services
☐ Remote Access
☐ Remote Desktop Services
☐ Volume Activation Services
☒ **Web Server (IIS)**
☐ Windows Deployment Services

Description

Web Server (IIS) provides a reliable, manageable, and scalable Web application infrastructure.

< Previous

Next >

Install

Cancel

Add Roles and Features Wizard

Select features

Before You Begin
Installation Type
Server Selection
Server Roles
**Features**
Web Server Role (IIS)
Role Services
Confirmation
Results

DESTINATION SERVER

CPTWindows

Select one or more features to install on the selected server.

Features

☐ .NET Framework 3.5 Features
☒ .NET Framework 4.7 Features (2 of 7 installed)
☐ Background Intelligent Transfer Service (BITS)
☒ BitLocker Drive Encryption (Installed)
☐ BitLocker Network Unlock
☐ BranchCache
☐ Client for NFS
☐ Containers
☐ Data Center Bridging
☐ Direct Play
☒ Enhanced Storage (Installed)
☐ Failover Clustering
☐ Group Policy Management
☐ Host Guardian Hyper-V Support
☐ I/O Quality of Service
☐ IIS Hostable Web Core
☐ Internet Printing Client
☐ IP Address Management (IPAM) Server
☐ iSNS Server service

Description

.NET Framework 3.5 combines the power of the .NET Framework 2.0 APIs with new technologies for building applications that offer appealing user interfaces, protect your customers' personal identity information, enable seamless and secure communication, and provide the ability to model a range of business processes.

< Previous

Next >

Install

Cancel

Add Roles and Features Wizard

DESTINATION SERVER  
CPTWindows

## Select role services

Before You Begin  
Installation Type  
Server Selection  
Server Roles  
Features  
Web Server Role (IIS)  
**Role Services**  
Confirmation  
Results

Select the role services to install for Web Server (IIS)

Role services

- ☒ Web Server
  - ☒ Common HTTP Features
    - ☒ Default Document
    - ☒ Directory Browsing
    - ☒ HTTP Errors
    - ☒ Static Content
    - ☐ HTTP Redirection
    - ☐ WebDAV Publishing
  - ☒ Health and Diagnostics
    - ☒ HTTP Logging
    - ☐ Custom Logging
    - ☐ Logging Tools
    - ☐ ODBC Logging
    - ☐ Request Monitor
    - ☐ Tracing
  - ☒ Performance
    - ☒ Static Content Compression
    - ☐ Dynamic Content Compression
  - ☒ Security

Description

Web Server provides support for HTML Web sites and optional support for ASP.NET, ASP, and Web server extensions. You can use the Web Server to host an internal or external Web site or to provide an environment for developers to create Web-based applications.

< Previous Next > Install Cancel

Add Roles and Features Wizard

DESTINATION SERVER  
CPTWindows

## Confirm installation selections

Before You Begin  
Installation Type  
Server Selection  
Server Roles  
Features  
Web Server Role (IIS)  
Role Services  
**Confirmation**  
Results

To install the following roles, role services, or features on selected server, click Install.

☐ Restart the destination server automatically if required

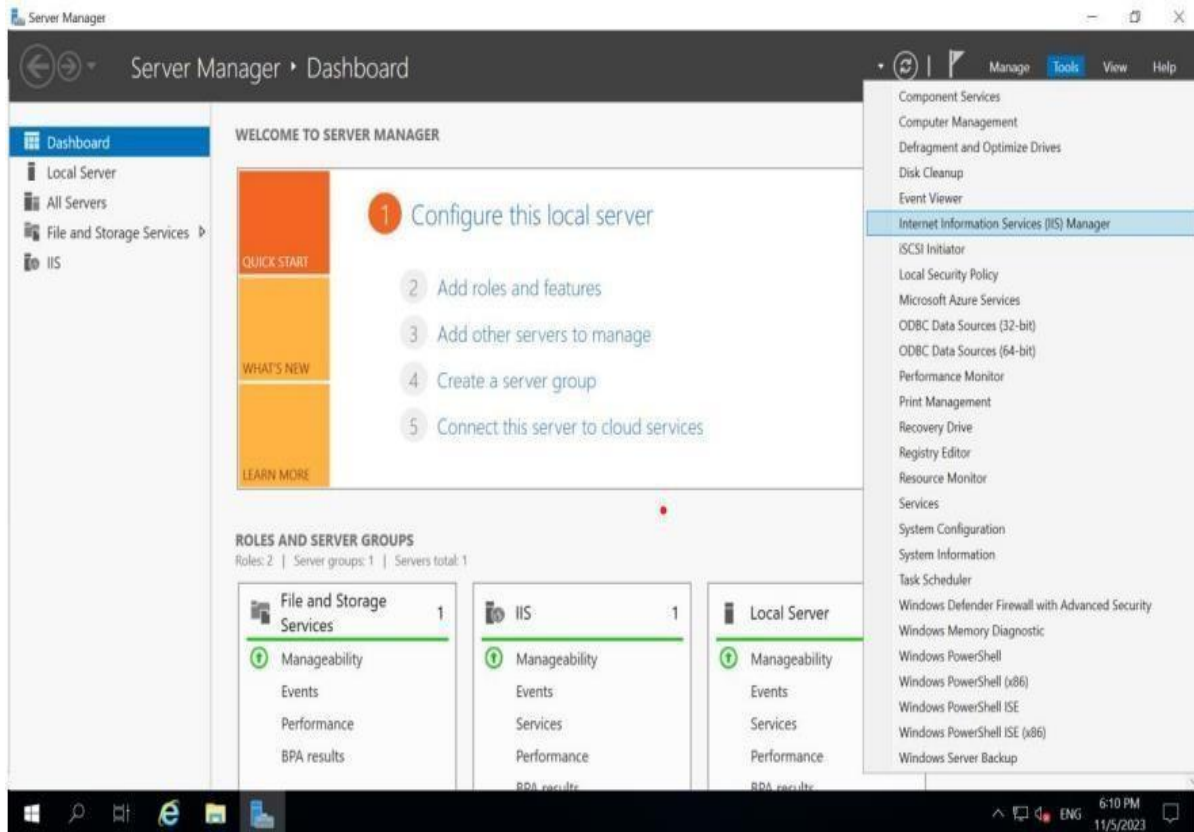
Optional features (such as administration tools) might be displayed on this page because they have been selected automatically. If you do not want to install these optional features, click Previous to clear their check boxes.

Web Server (IIS)

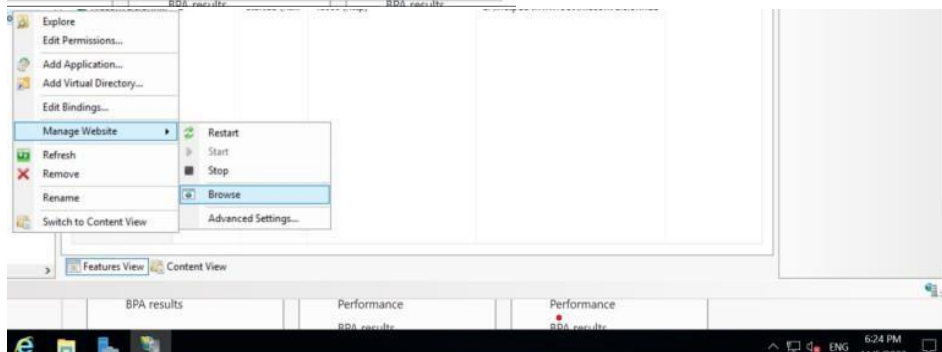
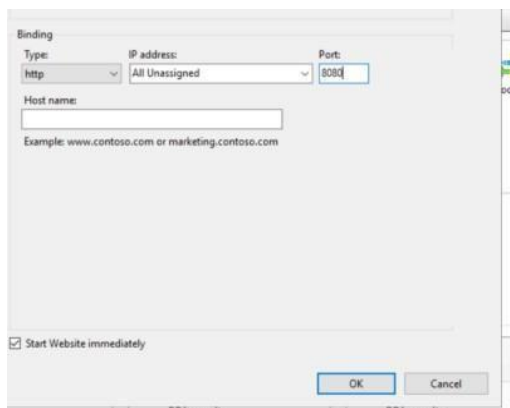
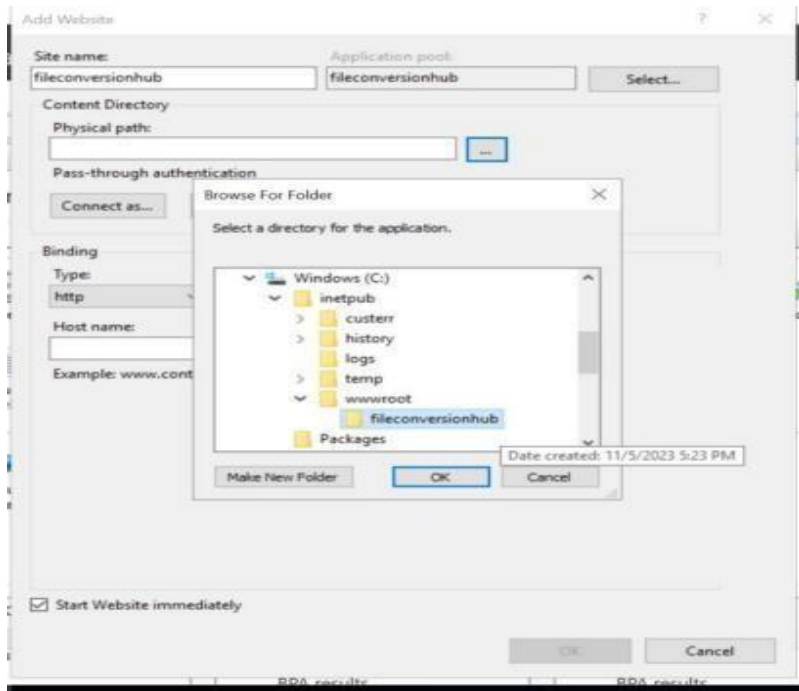
- Management Tools
  - IIS Management Console
- Web Server
  - Common HTTP Features
    - Default Document
    - Directory Browsing
    - HTTP Errors
    - Static Content
  - Health and Diagnostics
    - HTTP Logging

Export configuration settings  
Specify an alternate source path

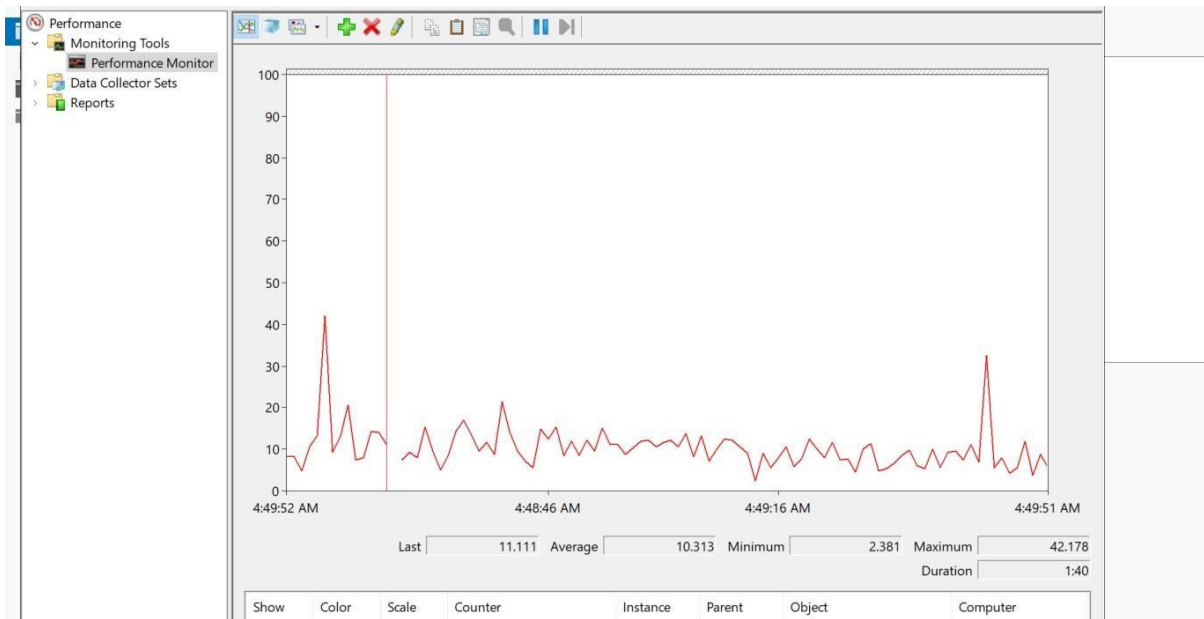
< Previous Next > Install Cancel



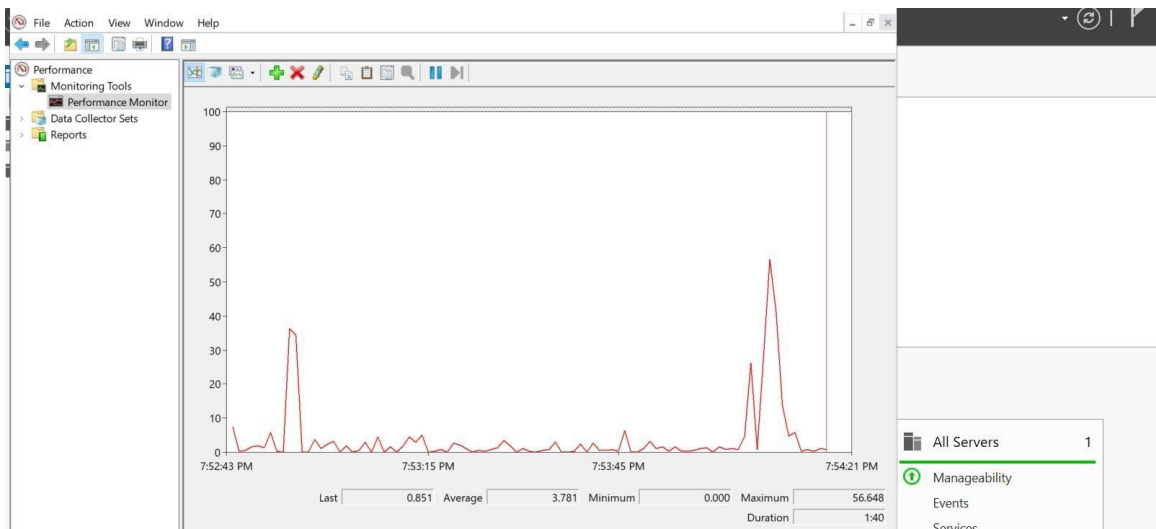




# Checking Performance using Performance Monitor

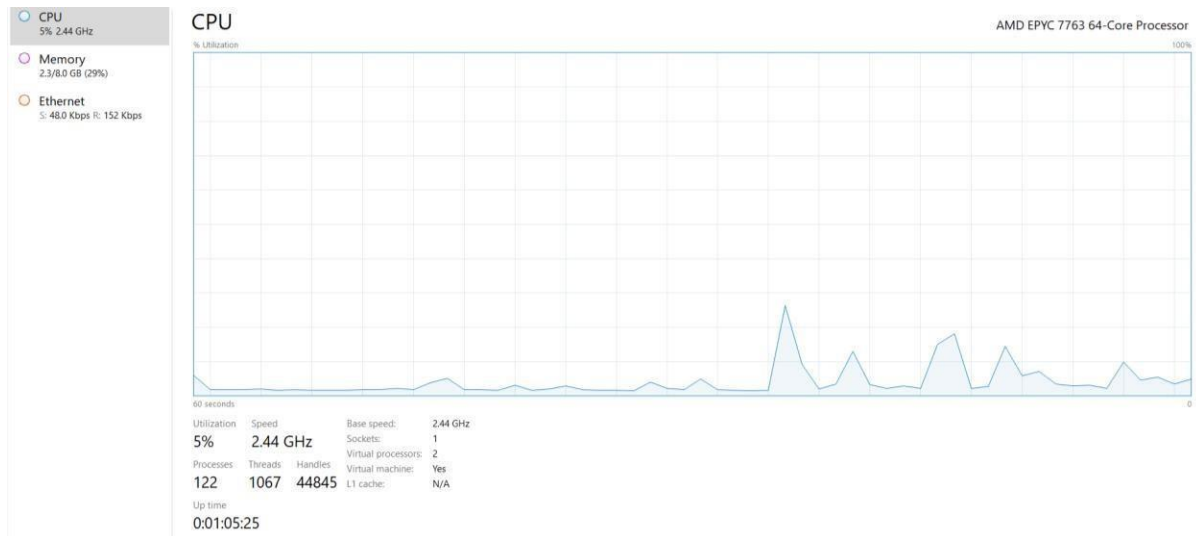


## After Removing Deployed Website:

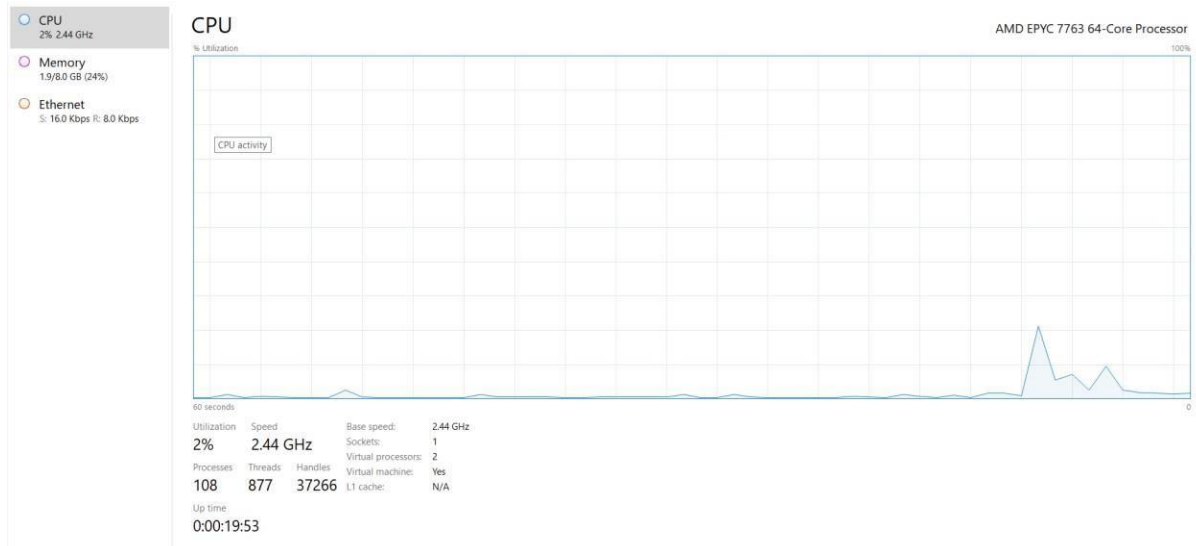


## CPU Utilization

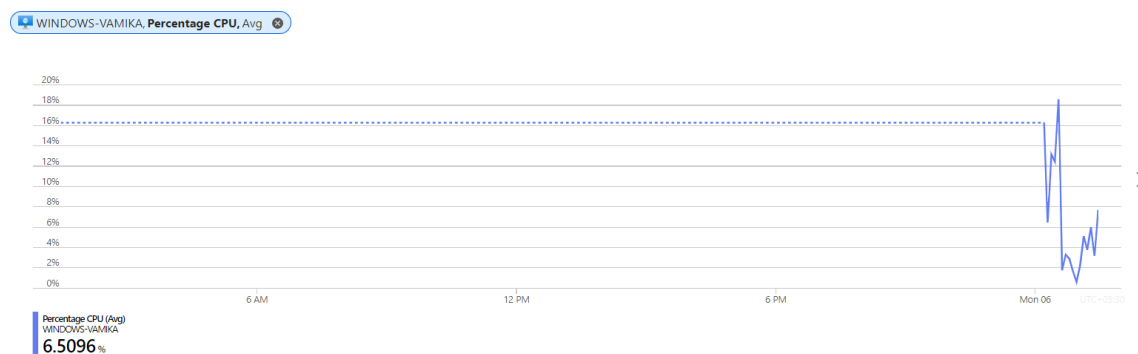
Graph 1: Inside VM



After Removing Deployed Website.

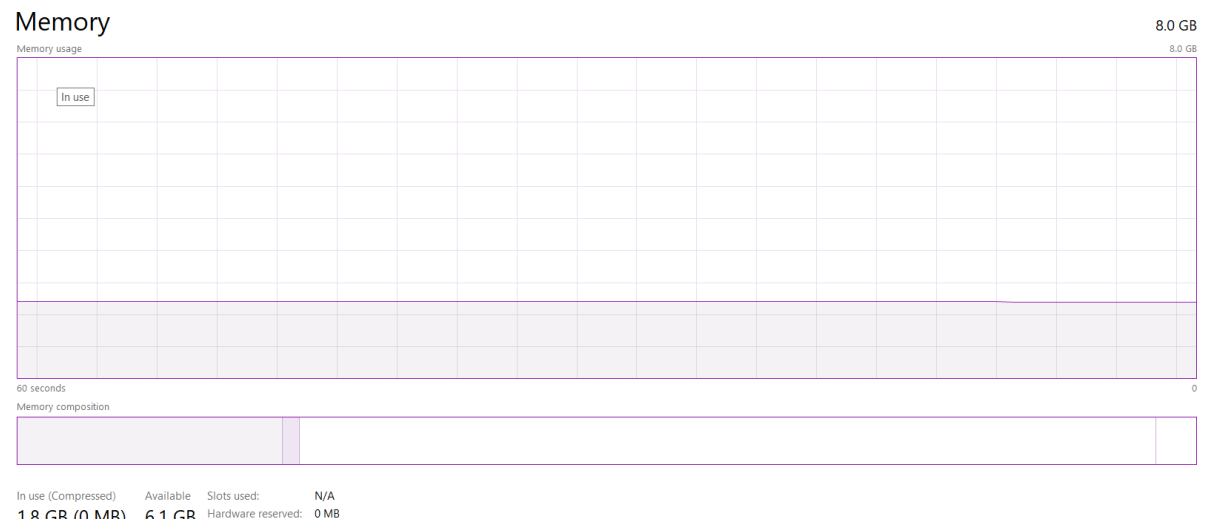


Graph 2: Azure's Graph

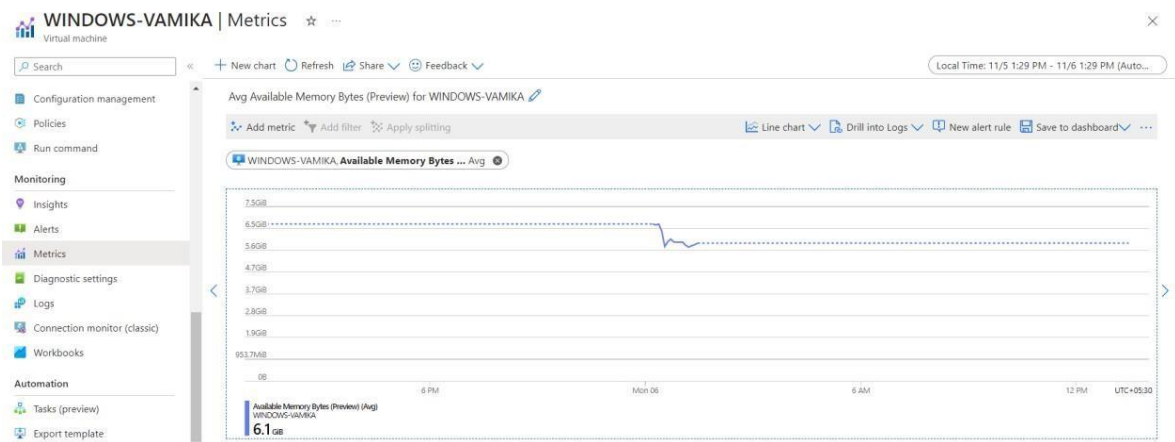


# Memory Utilization

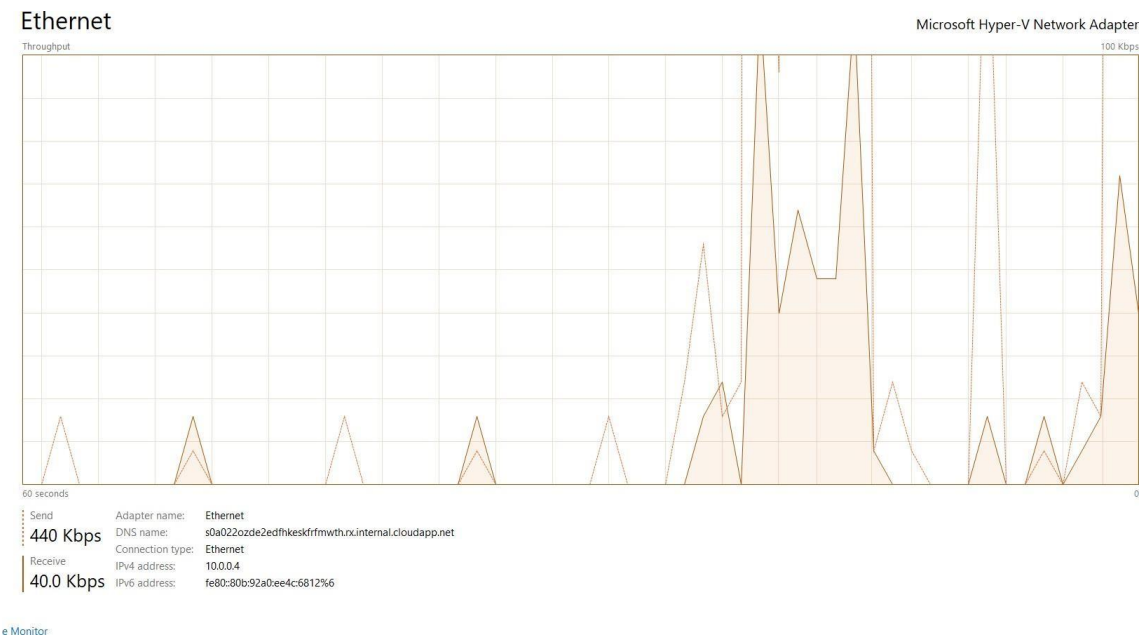
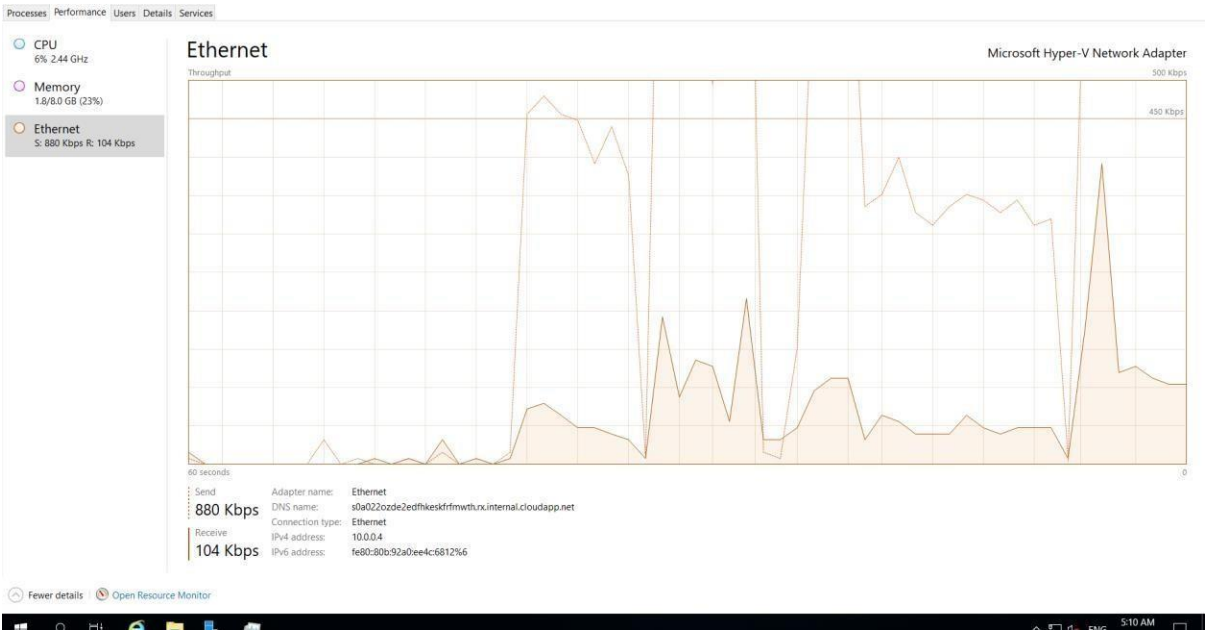
Graph 1: Inside VM



Graph 2: Azure's Graph

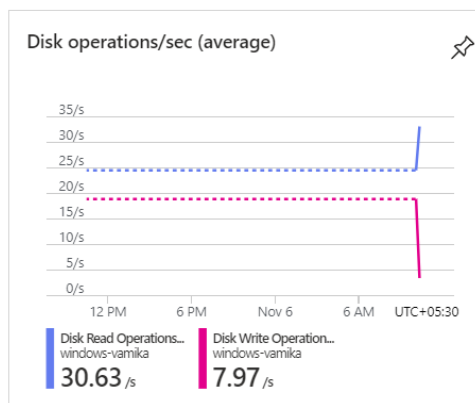
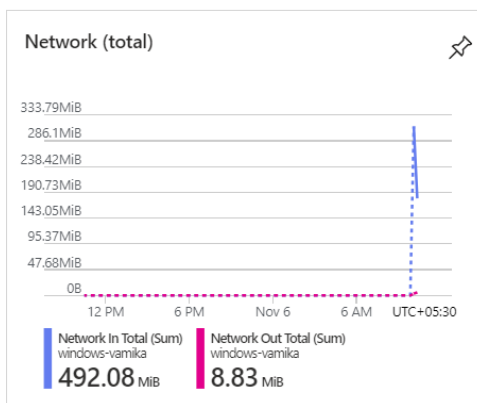


# Network Monitoring:



## Other metrics:

Name	Status	20% CPU	30% Memory
Apps (5)			
IIS Manager		0%	33.1 MB
Internet Explorer (2)		0%	18.2 MB
Server Manager		0%	69.3 MB
Task Manager		0%	15.5 MB
Windows Explorer (2)		0.8%	49.8 MB
Background processes (28)			
Antimalware Service Executable		0%	192.6 MB
AppHealthExtension		0%	12.6 MB
COM Surrogate		0%	2.5 MB
CTF Loader		0%	3.0 MB
DiagnosticsPlugin		0%	18.2 MB
EngSys-MDA-CloudAgent rel_m...		0%	3.5 MB
EngSys-MDA-CloudAgent rel_m...		0%	1.1 MB
EngSys-MDA-CloudAgent rel_m...		0%	13.5 MB
Host Process for Windows Task...		0%	2.7 MB
Host Process for Windows Task...		0%	3.1 MB
IIS Worker Process		0%	4.7 MB
IIS Worker Process		0%	4.4 MB
Microsoft Azure®		0%	35.1 MB
Microsoft Distributed Transactio...		0%	2.3 MB
Microsoft Network Realtime Ins...		0%	3.2 MB



## Response Time: For Web Server Response Time:

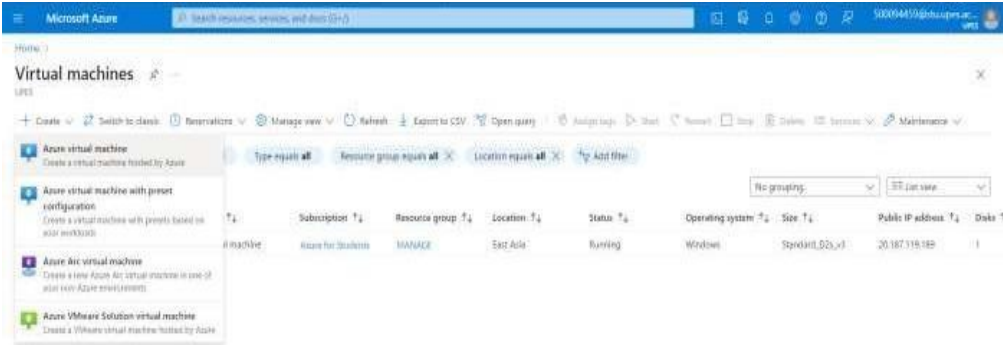
1. Start Time (t1): Note the time when the request is initiated. This is the starting point.
2. End Time (t2): Note the time when the response is fully received or when the requested operation is completed.
3. Response Time Calculation:  $\text{Response Time} = t2 - t1$

**15 minutes 47 seconds.**

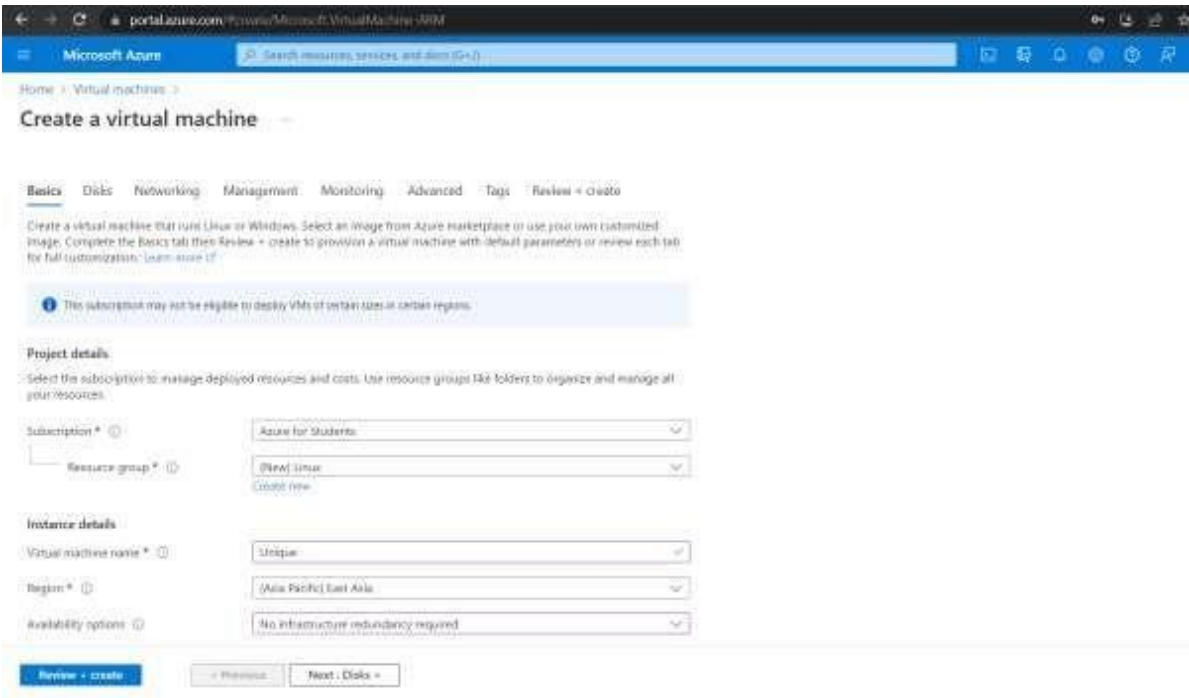


# Deploying on ubuntu VM

Click on new Virtual machine.



Enter the required details for the machine.




portal.azure.com / Home / Microsoft VirtualMachine ARM


Microsoft Azure Search resources, services, and docs (0+)


Home > Virtual machines >


## Create a virtual machine

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


Image  Red Hat Enterprise Linux 8.7 (VM) - x64 Gen1  
[See all images](#) | [Configure VM generation](#)


VM architecture   
☐ ARM64  
☒ x64  
ARM64 is not supported with the selected image.


Run with Azure Spot discount  ☐


Size  Standard\_D2s\_v3 - 2 vcpus, 8 GB memory (17.567.56/mo)  
[See all sizes](#)

Administrator account

Authentication type   
☐ SSH public key  
☒ Password

Username  saif

Password  XXXXXXXXXX

Create key command  XXXXXXXXXX

[Review + create](#) [Previous](#) [Next: Disks](#)

Review the details.

portal.azure.com / Home / Microsoft VirtualMachine ARM

Microsoft Azure Search resources, services, and docs (0+)

Home > Virtual machines >

## Create a virtual machine


✔ Validation passed

Basics | Disks | Networking | Management | Monitoring | Advanced | Tags | [Review + create](#)

ⓘ Cost given below is an estimate and not the final price. Please use [Pricing calculator](#) if for all your pricing needs.

Price

1 X Standard D2s\_v3 by Microsoft [Terms of use](#) | [Privacy policy](#)

Subscription offers apply   
**19.3866 INR/hr**  
[Clicking for other VM sizes](#)

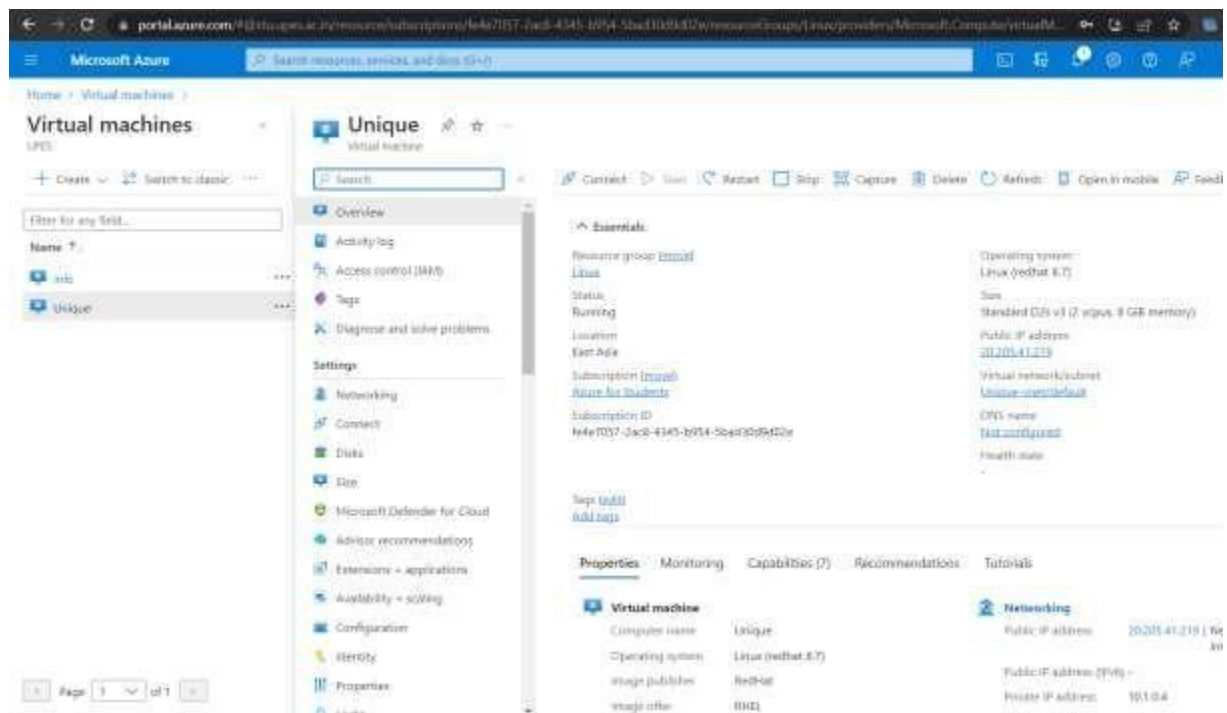
TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statements(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the Azure Marketplace Terms for additional details.

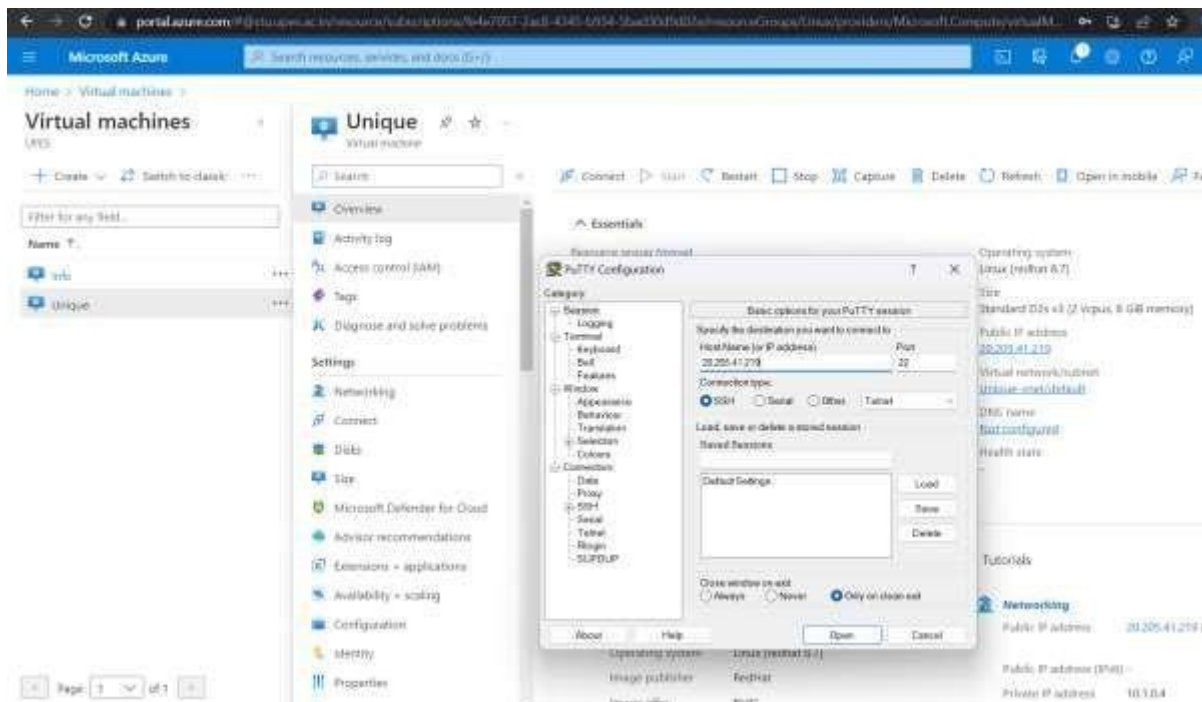
Name

[Create](#) [Previous](#) [Next](#) [Download a template for automation](#)

Virtual machine is created and open it.



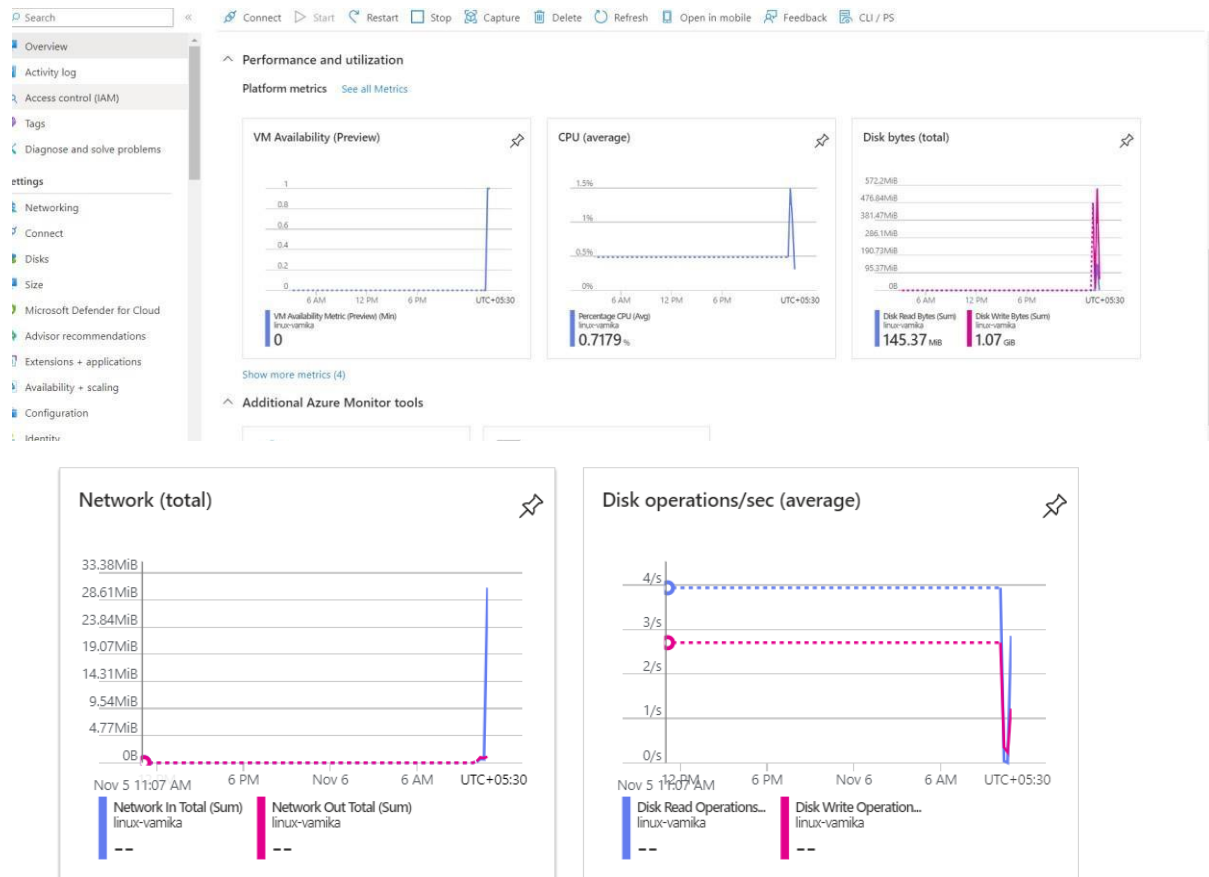
Copy the IP address and paste it on putty software.



## Memory utilization

Graph for Azure:

## All 3 graphs in Azure in Monitoring Metrics Tab.



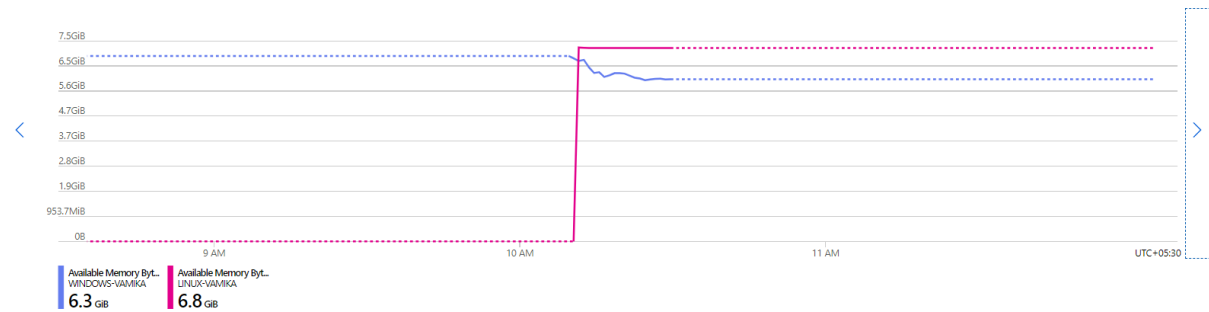
Response Time: For Web Server Response Time:

1. Start Time (t1): Note the time when the request is initiated. This is the starting point.
2. End Time (t2): Note the time when the response is fully received or when the requested operation is completed.
3. Response Time Calculation:  $\text{Response Time} = t2 - t1$

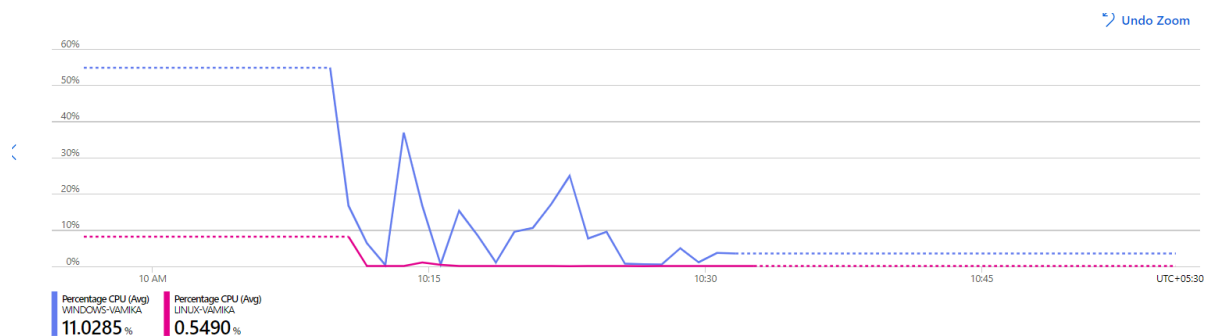
Response Time: 12 minutes and 34 seconds.

## Comparison between both Virtual Machines

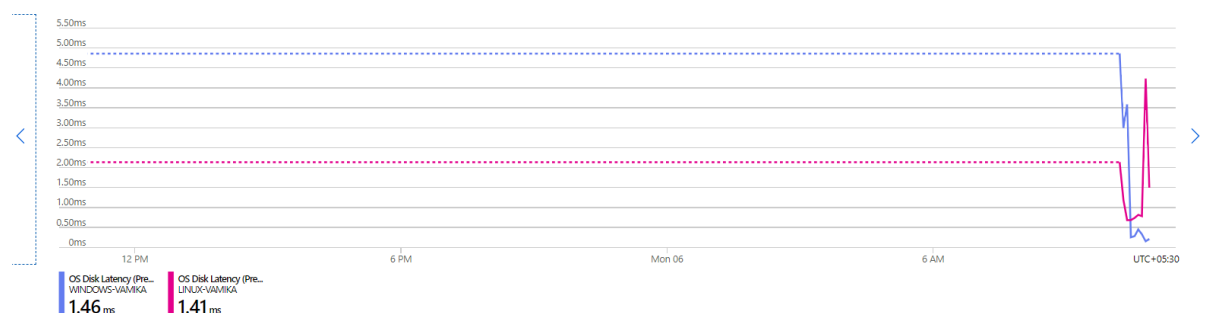
Memory Utilization: Linux uses **less memory** thus has more available space than windows.



CPU Utilization: Linux has **less CPU Utilization**.



Performance: Linux is faster than Windows and has **less latency**.



The choice between Linux and Windows for virtual machines (VMs) and their respective response times depends on various factors, including your specific use case, requirements, and familiarity with the operating systems. Both Linux and Windows can be optimized for performance, but the optimal choice may differ.

**1. Resource Efficiency:** Linux is often considered more resource-efficient than Windows. Linux distributions typically have lower system requirements and consume fewer resources, which can contribute to better performance, especially on VMs with limited resources.

**2. Specific Application Requirements:** Consider the specific applications or workloads you plan to run on the VM. Some applications are better suited for a particular operating system. For example, if you are running applications that are designed for Windows, then a Windows VM would be the logical choice.

**3. Cost:** Linux is often chosen for VMs in cloud environments due to its open-source nature, which can result in lower licensing costs compared to Windows. If cost is a significant factor, this might influence your decision.

**4. Administration and Management:** Choose an operating system that your team is familiar with in terms of administration and management. If your team has expertise in Linux, it might be more efficient to stick with Linux VMs.

: Both Linux and Windows have robust security features, but the security landscape can vary.

In summary, there is not a one-size-fits-all answer to whether Linux or Windows will have better response time for VMs. The choice depends on your specific needs and considerations. After Testing on both operating systems:

#### **Response Time:**

Both Linux and Windows can provide good response times. but Linux, due to its efficiency and minimal resource usage, we have seen in this case Linux have less response time compared to windows.

Response Time Windows: 15 minutes and 47 seconds.

Response Time Linux: 12 minutes and 34 seconds.

**Fast OS Performance:** Linux ubuntu are often known for their fast performance due to their lightweight nature and efficient resource handling. They generally have lower overhead and tend to **be very responsive, making them favourable in terms of quick performance.**

**CPU Utilization:** As we have seen in both the cases, the **CPU Utilization is less in Ubuntu in comparison to Windows.** Windows might tend to use more CPU resources for its background services and GUI, potentially leading to slightly higher CPU utilization in some cases.

**Memory Utilization:** Ubuntu generally has a reputation for efficient memory management. It tends to use less memory for the operating system itself, leaving more available for applications and services. **So, Ubuntu uses less memory as compared to Windows.**



