

Placement Empowerment Program

Cloud Computing and DevOps Centre

Set Up a Virtual Machine in the Cloud
Create a free tier AWS, Azure, or GCP account. Launch a virtual machine and SSH into it.

Name: Keshika D Department:ADS



Introduction

In this proof of concept (POC), Overview: Hosting a Static Website on Azure Using Apache This task involves deploying a static website on an Azure Virtual Machine (VM) using Apache, a widely used web server. A static website consists of fixed HTML, CSS, and JavaScript files, which do not require backend processing or databases. The process includes setting up a cloud-based VM, installing and configuring Apache, and hosting an HTML webpage accessible via a web browser. Once deployed, the website can be accessed using the public IP address of the Azure VM.

This setup demonstrates fundamental cloud computing, web hosting, networking, and security concepts, providing hands-on experience with server deployment, firewall configuration, and basic web hosting in a cloud environment. It is a foundational step for learning web development, DevOps, and cloud infrastructure.

Step 1: Set Up An Azure Vm

Microsoft Azure

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

Copilot

Home >

Virtual machines

Default Directory

+ Create

Switch to classic

Reservations

Manage view

Refresh

Export to CSV

Open query

Assign tags

Filter for any field...

Subscription equals all

Type equals all

Resource group equals all



Add filter

More (1)

Showing 1 to 2 of 2 records.

No grouping

List view

<input type="checkbox"/>	Name ↑↓	Subscription ↑↓	Resource group ↑↓	Location ↑↓	Status ↑↓	Operating system ↑↓	Size ↑↓
<input type="checkbox"/>	 virtual01	Pay-As-You-Go	azresource	Central India	Running	Windows	Standard D4s v4
<input type="checkbox"/>	 vm01	Pay-As-You-Go	azresource	Central India	Running	Linux	Standard D4s v4


Search for virtual machine in the azure portal


Microsoft Azure


Search resources, services, and docs (G+)

[Home](#) > [Virtual machines](#) >

Create a virtual machine ...

 Help me create a low cost VM

 Help me create a VM optimized for high availability

 Help me

Subscription * ⓘ

Resource group * ⓘ

Pay-As-You-Go (4173158e-75bf-44a6-b72b-9506c5c8d54c) ▼

(New) vm2_group ▼
[Create new](#)

Instance details

Virtual machine name * ⓘ

Region * ⓘ

Availability options ⓘ

Zone options ⓘ


vm2 ✓

(Asia Pacific) Central India ▼

Availability zone ▼

☒ Self-selected zone
Choose up to 3 availability zones, one VM per zone

☐ Azure-selected zone (Preview)
Let Azure assign the best zone for your needs

 Using an Azure-selected zone is not supported in region 'Central India'.

< Previous

Next : Disks >

Review + create

Create a VM with the following configuration and give review +create at the end

Step2: connect to the vm via powershell using SSH or

```

This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '20.197.18.17' (ED25519) to the list of known hosts.
keshika14@20.197.18.17's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1020-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Sat Feb  1 07:02:33 UTC 2025

System load:  0.0               Processes:            131
Usage of /:   5.4% of 28.02GB   Users logged in:     0
Memory usage: 3%               IPv4 address for eth0: 10.0.0.4
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

keshika14@vm01:~$

```

connection via powershell using this command :

ssh username@your-vm-ip

Step 3 : Install apache webserver
after logging into your vm

1)update package :

in the powershell after loggingin give the update package command :**sudo apt update && sudo apt**

upgrade -y

The programs included with the Ubuntu system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.

To run a command as administrator (user "root"), use "sudo <command>". See "man sudo_root" for details.

```
keshika14@vm01:~$ sudo apt update && sudo apt upgrade -y
Hit:1 http://azure.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://azure.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:6 http://azure.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:13 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [837 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [190 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]
Get:16 http://azure.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1002 kB]
Get:17 http://azure.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [250 kB]
Get:18 http://azure.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [315 kB]
Get:19 http://azure.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [19.9 kB]
Get:20 http://azure.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [631 kB]
Get:21 http://azure.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [121 kB]
Get:22 http://azure.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:23 http://azure.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [16.3 kB]
Get:24 http://azure.archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [3944 B]
Get:25 http://azure.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
```

2)Install apache:

```
sudo apt install apache2 -y
```

3)Start apache:

```
sudo systemctl start apache2
```



```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
keshika14@vm01:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblua5.4-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblua5.4-0 ssl-cert
0 upgraded, 10 newly installed, 0 to remove and 0 not upgraded.
Need to get 2084 kB of archives.
After this operation, 8094 kB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 libapr1t64 amd64 1.7.2-3.1ubuntu0.1 [108 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1t64 amd64 1.6.3-1.1ubuntu7 [91.9 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.3-1.1ubuntu7 [11.2 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-ldap amd64 1.6.3-1.1ubuntu7 [9116 B]
Get:5 http://azure.archive.ubuntu.com/ubuntu noble/main amd64 liblua5.4-0 amd64 5.4.6-3build2 [166 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-bin amd64 2.4.58-1ubuntu8.5 [1329 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-data all 2.4.58-1ubuntu8.5 [163 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-utils amd64 2.4.58-1ubuntu8.5 [97.1 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2 amd64 2.4.58-1ubuntu8.5 [90.2 kB]
```

4) Enable apache to start on Boot:

sudo systemctl enable apache2

command is given after giving the start apache command .refer the above image for reference

5) Check apache status:

```
eshika14@vm01:~$ sudo systemctl start apache2
eshika14@vm01:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
eshika14@vm01:~$ sudo systemctl status apache2
apache2.service - The Apache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
Active: active (running) since Sat 2025-02-01 07:14:02 UTC; 5min ago
Docs: https://httpd.apache.org/docs/2.4/
Main PID: 14148 (apache2)
Tasks: 55 (limit: 9459)
Memory: 5.5M (peak: 5.9M)
CPU: 57ms
CGroup: /system.slice/apache2.service
├─14148 /usr/sbin/apache2 -k start
├─14151 /usr/sbin/apache2 -k start
└─14152 /usr/sbin/apache2 -k start

Feb 01 07:14:02 vm01 systemd[1]: Starting apache2.service - The Apache HTTP Server...
Feb 01 07:14:02 vm01 systemd[1]: Started apache2.service - The Apache HTTP Server.
eshika14@vm01:~$ sudo ufw allow 'Apache'
Rules updated
Rules updated (v6)
eshika14@vm01:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
eshika14@vm01:~$
```

sudo systemctl status apache

configure firewall to
allow HTTP Traffic

Step 4:

- 1) Allow apache through Firewall : **sudo ufw allow'apache'**
- 2) enable firewall: **sudo ufw enable**
- 3) check firewall: **sudo ufw status**

```
keshika14@vm01:~$ sudo systemctl start apache2
keshika14@vm01:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
keshika14@vm01:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Sat 2025-02-01 07:14:02 UTC; 5min ago
     Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 14148 (apache2)
     Tasks: 55 (limit: 9459)
   Memory: 5.5M (peak: 5.9M)
      CPU: 57ms
   CGroup: /system.slice/apache2.service
           └─14148 /usr/sbin/apache2 -k start
             └─14151 /usr/sbin/apache2 -k start
               └─14152 /usr/sbin/apache2 -k start

Feb 01 07:14:02 vm01 systemd[1]: Starting apache2.service - The Apache HTTP Server...
Feb 01 07:14:02 vm01 systemd[1]: Started apache2.service - The Apache HTTP Server.
keshika14@vm01:~$ sudo ufw allow 'Apache'
Rules updated
Rules updated (v6)
keshika14@vm01:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
keshika14@vm01:~$
```

[illegible]

Step 5: html page

Deploy a simple

1)Navigate to web root dictionary:

Cd/var/www/html

2)create new Html page:

sudo nano index.html

This command directly navigates to the html file so that you can paste or type in your html code there for your static website

```
<!DOCTYPE html>
<html>
<head>
  <title>My First Web Page</title>
</head>
<body>
  <h1>Welcome to My Website!</h1>
  <p>This is a test page hosted on Apache.</p>
</body>
</html>
```

once you have finished typing in our content give **Ctrl+X** then **Y**

press enter example content:


Step 6:

- 1) restart the apache to apply changes:

```
sudo systemctl restart apache2
```

```
keshika14@vm01: /var/www/html$
keshika14@vm01: /var/www/html$ sudo systemctl restart apache2
keshika14@vm01: /var/www/html$ curl -4 ifconfig.co
<!DOCTYPE html><html lang="en-US"><head><title>Just a moment...</title><meta http-equiv="Content-Type" content="text/html; charset=UTF-8"><meta http-equiv="X-UA-Compatible" content="IE=Edge"><meta name="robots" content="noindex,nofollow"><viewport content="width=device-width,initial-scale=1"><style>*{box-sizing:border-box;margin:0;padding:0}html{line-height:1.5}body{background-color:#fff;font-family:sans-serif;font-size:16px;font-weight:normal;color:#333}h1,h2,h3,h4,h5,h6,h7,h8,h9,h10,h11,h12,h13,h14,h15,h16,h17,h18,h19,h20,h21,h22,h23,h24,h25,h26,h27,h28,h29,h30,h31,h32,h33,h34,h35,h36,h37,h38,h39,h40,h41,h42,h43,h44,h45,h46,h47,h48,h49,h50,h51,h52,h53,h54,h55,h56,h57,h58,h59,h60,h61,h62,h63,h64,h65,h66,h67,h68,h69,h70,h71,h72,h73,h74,h75,h76,h77,h78,h79,h80,h81,h82,h83,h84,h85,h86,h87,h88,h89,h90,h91,h92,h93,h94,h95,h96,h97,h98,h99,h100,h101,h102,h103,h104,h105,h106,h107,h108,h109,h110,h111,h112,h113,h114,h115,h116,h117,h118,h119,h120,h121,h122,h123,h124,h125,h126,h127,h128,h129,h130,h131,h132,h133,h134,h135,h136,h137,h138,h139,h140,h141,h142,h143,h144,h145,h146,h147,h148,h149,h150,h151,h152,h153,h154,h155,h156,h157,h158,h159,h160,h161,h162,h163,h164,h165,h166,h167,h168,h169,h170,h171,h172,h173,h174,h175,h176,h177,h178,h179,h180,h181,h182,h183,h184,h185,h186,h187,h188,h189,h190,h191,h192,h193,h194,h195,h196,h197,h198,h199,h200,h201,h202,h203,h204,h205,h206,h207,h208,h209,h210,h211,h212,h213,h214,h215,h216,h217,h218,h219,h220,h221,h222,h223,h224,h225,h226,h227,h228,h229,h230,h231,h232,h233,h234,h235,h236,h237,h238,h239,h240,h241,h242,h243,h244,h245,h246,h247,h248,h249,h250,h251,h252,h253,h254,h255,h256,h257,h258,h259,h260,h261,h262,h263,h264,h265,h266,h267,h268,h269,h270,h271,h272,h273,h274,h275,h276,h277,h278,h279,h280,h281,h282,h283,h284,h285,h286,h287,h288,h289,h290,h291,h292,h293,h294,h295,h296,h297,h298,h299,h300,h301,h302,h303,h304,h305,h306,h307,h308,h309,h310,h311,h312,h313,h314,h315,h316,h317,h318,h319,h320,h321,h322,h323,h324,h325,h326,h327,h328,h329,h330,h331,h332,h333,h334,h335,h336,h337,h338,h339,h340,h341,h342,h343,h344,h345,h346,h347,h348,h349,h350,h351,h352,h353,h354,h355,h356,h357,h358,h359,h360,h361,h362,h363,h364,h365,h366,h367,h368,h369,h370,h371,h372,h373,h374,h375,h376,h377,h378,h379,h380,h381,h382,h383,h384,h385,h386,h387,h388,h389,h390,h391,h392,h393,h394,h395,h396,h397,h398,h399,h400,h401,h402,h403,h404,h405,h406,h407,h408,h409,h410,h411,h412,h413,h414,h415,h416,h417,h418,h419,h420,h421,h422,h423,h424,h425,h426,h427,h428,h429,h430,h431,h432,h433,h434,h435,h436,h437,h438,h439,h440,h441,h442,h443,h444,h445,h446,h447,h448,h449,h450,h451,h452,h453,h454,h455,h456,h457,h458,h459,h460,h461,h462,h463,h464,h465,h466,h467,h468,h469,h470,h471,h472,h473,h474,h475,h476,h477,h478,h479,h480,h481,h482,h483,h484,h485,h486,h487,h488,h489,h490,h491,h492,h493,h494,h495,h496,h497,h498,h499,h500,h501,h502,h503,h504,h505,h506,h507,h508,h509,h510,h511,h512,h513,h514,h515,h516,h517,h518,h519,h520,h521,h522,h523,h524,h525,h526,h527,h528,h529,h530,h531,h532,h533,h534,h535,h536,h537,h538,h539,h540,h541,h542,h543,h544,h545,h546,h547,h548,h549,h550,h551,h552,h553,h554,h555,h556,h557,h558,h559,h560,h561,h562,h563,h564,h565,h566,h567,h568,h569,h570,h571,h572,h573,h574,h575,h576,h577,h578,h579,h580,h581,h582,h583,h584,h585,h586,h587,h588,h589,h590,h591,h592,h593,h594,h595,h596,h597,h598,h599,h600,h601,h602,h603,h604,h605,h606,h607,h608,h609,h610,h611,h612,h613,h614,h615,h616,h617,h618,h619,h620,h621,h622,h623,h624,h625,h626,h627,h628,h629,h630,h631,h632,h633,h634,h635,h636,h637,h638,h639,h640,h641,h642,h643,h644,h645,h646,h647,h648,h649,h650,h651,h652,h653,h654,h655,h656,h657,h658,h659,h660,h661,h662,h663,h664,h665,h666,h667,h668,h669,h670,h671,h672,h673,h674,h675,h676,h677,h678,h679,h680,h681,h682,h683,h684,h685,h686,h687,h688,h689,h690,h691,h692,h693,h694,h695,h696,h697,h698,h699,h700,h701,h702,h703,h704,h705,h706,h707,h708,h709,h710,h711,h712,h713,h714,h715,h716,h717,h718,h719,h720,h721,h722,h723,h724,h725,h726,h727,h728,h729,h730,h731,h732,h733,h734,h735,h736,h737,h738,h739,h740,h741,h742,h743,h744,h745,h746,h747,h748,h749,h750,h751,h752,h753,h754,h755,h756,h757,h758,h759,h760,h761,h762,h763,h764,h765,h766,h767,h768,h769,h770,h771,h772,h773,h774,h775,h776,h777,h778,h779,h780,h781,h782,h783,h784,h785,h786,h787,h788,h789,h790,h791,h792,h793,h794,h795,h796,h797,h798,h799,h800,h801,h802,h803,h804,h805,h806,h807,h808,h809,h810,h811,h812,h813,h814,h815,h816,h817,h818,h819,h820,h821,h822,h823,h824,h825,h826,h827,h828,h829,h830,h831,h832,h833,h834,h835,h836,h837,h838,h839,h840,h841,h842,h843,h844,h845,h846,h847,h848,h849,h850,h851,h852,h853,h854,h855,h856,h857,h858,h859,h860,h861,h862,h863,h864,h865,h866,h867,h868,h869,h870,h871,h872,h873,h874,h875,h876,h877,h878,h879,h880,h881,h882,h883,h884,h885,h886,h887,h888,h889,h890,h891,h892,h893,h894,h895,h896,h897,h898,h899,h900,h901,h902,h903,h904,h905,h906,h907,h908,h909,h910,h911,h912,h913,h914,h915,h916,h917,h918,h919,h920,h921,h922,h923,h924,h925,h926,h927,h928,h929,h930,h931,h932,h933,h934,h935,h936,h937,h938,h939,h940,h941,h942,h943,h944,h945,h946,h947,h948,h949,h950,h951,h952,h953,h954,h955,h956,h957,h958,h959,h960,h961,h962,h963,h964,h965,h966,h967,h968,h969,h970,h971,h972,h973,h974,h975,h976,h977,h978,h979,h980,h981,h982,h983,h984,h985,h986,h987,h988,h989,h990,h991,h992,h993,h994,h995,h996
```

Home > CreateVm-MicrosoftWindowsServer.WindowsServer-202-20250206045704 | Overview >


vm2
Virtual machine

Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Connect
Networking
Settings
Availability + scale
Security
Backup + disaster recovery
Operations
Monitoring
Automation
Help

vm2 virtual machine agent status is not ready. Troubleshoot the issue →

Help me copy this VM in any region

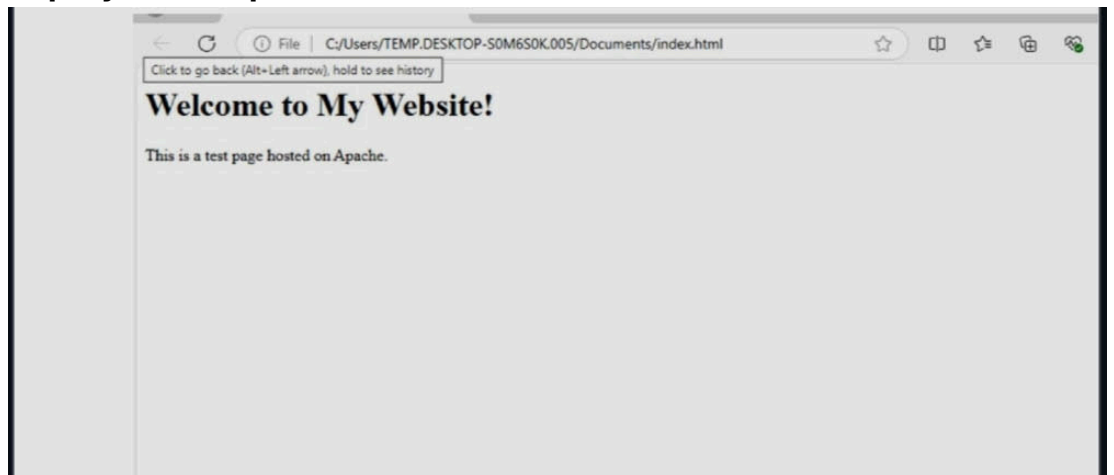
Connect Start Restart Stop Hibernate Capture Delete Refresh

Essentials

Resource group (move)	Operating system
vm2_group	Windows
Status	Size
Running	Standard D2s v3 (2 vcpus, 8 GiB memory)
Location	Public IP address
Central India (Zone 1)	20.193.130.68
Subscription (move)	Virtual network/subnet
Pay-As-You-Go	vm2-vnet/default
Subscription ID	DNS name
4173158e-75bf-44a6-b72b-9506c5c8d54c	Not configured
Availability zone	Health state
1	-
	Time created
	2/5/2025, 11:28 PM UTC

- 2)Get your ip address: Get it from the over view page of your azure vm
3) access your page by opening a web browser and visit:

http://your-vm-ip



Outcomes of the Task

- 1) Set up a virtual machine on Azure to act as a web server.
- 2) Installed and configured Apache to serve web pages.
- 3) Created and deployed a simple static HTML page.
- 4) Configured firewall settings to allow HTTP traffic.
- 5) Accessed the hosted website using the virtual machine's public IP address.