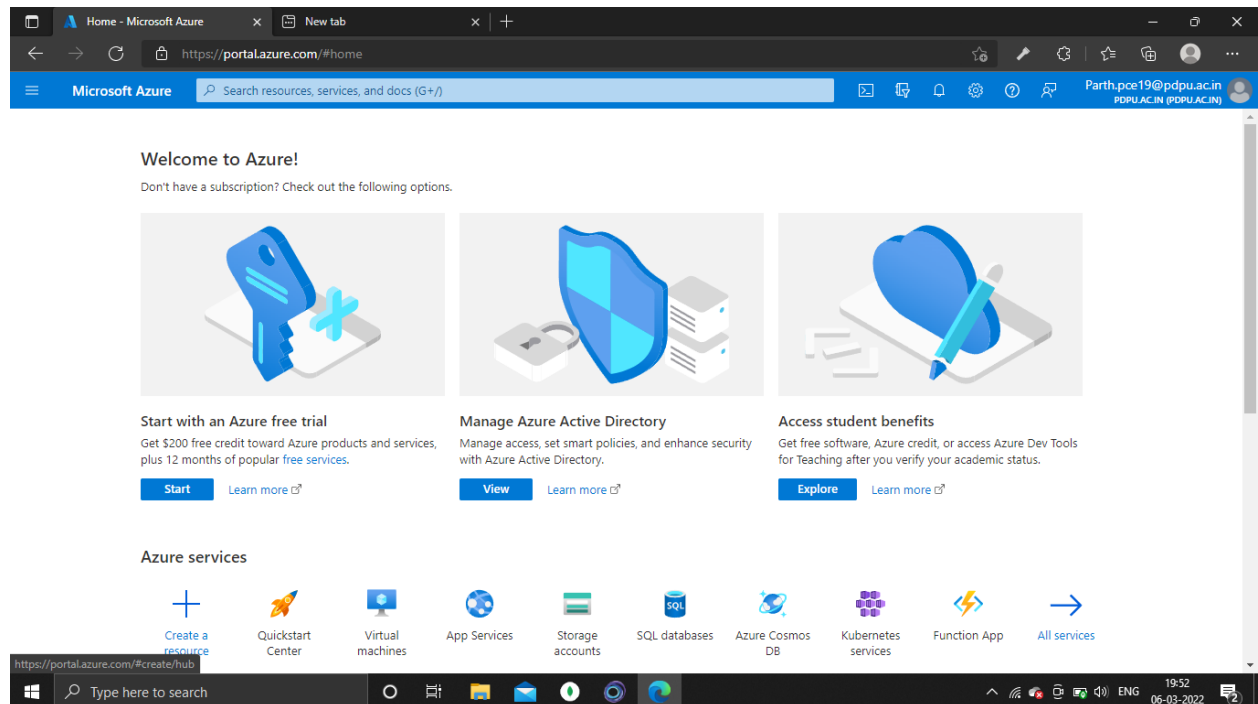


**Pandit Deendayal Energy University, Gandhinagar**  
**School of Technology**  
**Department of Computer Science & Engineering**  
**B.Tech-Computer Science & Engineering (Sem-VI)**  
**Cloud Computing Lab(20CP322P)**

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**Aim:** To Explore Microsoft Azure

**1. Create a student account in Microsoft Azure**



## 2. Create a Virtual Machine with minimum configuration (Don't use the default suggested storage etc.)

### a. Use Standard SSD option

The screenshot shows the 'Create a virtual machine' page in the Microsoft Azure portal. The 'Disks' tab is selected, and a dropdown menu for 'OS disk type' is open, showing options: Standard SSD (locally-redundant storage), Locally-redundant storage (data is replicated within a single datacenter), Premium SSD, Standard SSD, and Standard HDD. The 'Standard SSD' option is highlighted. The page also shows 'Encryption at host' and 'Encryption type' settings.

Microsoft Azure

Home > Virtual machines >

### Create a virtual machine

Basics **Disks** Networking Management 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](#)

**Disk options**

OS disk type \*

Delete with VM ☐

Encryption at host ☐

**Encryption at host is not registered for**

Encryption type \*

Enable Ultra Disk compatibility ☐

Ultra disk is supported in Availability Zone(s) 1,2,3 for the selected VM size Standard\_D2s\_v3.

[Review + create](#) [< Previous](#) [Next : Networking >](#)

## b. Use password for authenticating the VM

Azure - Sign up x Create a virtual machine - Micro x +

portal.azure.com/#create/Microsoft.VirtualMachine

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

Home > Virtual machines >

### Create a virtual machine

Azure Spot instance ☐

Size \*  See all sizes

Administrator account

Authentication type ☐ SSH public key ☒ Password

Username \*  ✓

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

Review + create < Previous Next : Disks >

## 3. Create a Resource Group and assign some resource to it.

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

mitjpatel01@gmail.com DEFAULT DIRECTORY

Home > Resource groups >

### Create a resource group

✓ Validation passed.

Basics Tags Review + create

Basics

Subscription Azure for Students

Resource group new

Region Central India

Tags

None

Create < Previous Next > Download a template for automation

## 4. Create a Virtual Network

Microsoft Azure

Home > Virtual networks > Create virtual network

IPv4 address space

10.3.0.0/16 10.3.0.0 - 10.3.255.255 (65536 addresses)

20.2.0.0/16

The entered address ranges '20.2.0.0/16' may not work correctly. It is recommended to use address ranges within the private, non-routable address space defined in RFC 1918. [Learn more](#)

☐ Add IPv6 address space

The subnet's address range in CIDR notation (e.g. 192.168.1.0/24). It must be contained by the address space of the virtual network.

+ Add subnet - Remove subnet

Subnet name	Subnet address range	NAT gateway
<input type="checkbox"/> default	10.3.0.0/24	-
<input type="checkbox"/> New	20.2.100.0/24	-
<input type="checkbox"/> New2	10.3.20.0/22	-

Review + create < Previous Next : Security > Download a template for automation

**Add subnet**

Subnet name \* new3

Subnet address range \* 20.2.0.0/24

20.2.0.0 - 20.2.15.255 (4091 + 5 Azure reserved addresses)

**NAT GATEWAY**

Simplify connectivity to the internet using a network address translation gateway. Outbound connectivity is possible without a load balancer or public IP addresses attached to your virtual machines. [Learn more](#)

NAT gateway None

**SERVICE ENDPOINTS**

Create service endpoint policies to allow traffic to specific azure resources from your virtual network over service endpoints. [Learn more](#)

Services

Add Cancel

## 5. Create 3 subnets having 256 host in each subnet

Microsoft Azure

Home > Virtual networks > Create virtual network

Basics IP Addresses Security Tags Review + create

The virtual network's address space, specified as one or more address prefixes in CIDR notation (e.g. 192.168.1.0/24).

IPv4 address space

10.1.0.0/16 10.1.0.0 - 10.1.255.255 (65536 addresses)

☐ Add IPv6 address space

The subnet's address range in CIDR notation (e.g. 192.168.1.0/24). It must be contained by the address space of the virtual network.

+ Add subnet - Remove subnet

Subnet name	Subnet address range	NAT gateway
<input type="checkbox"/> default	10.1.0.0/24	-
<input type="checkbox"/> 198CP131_subnet1	10.1.10.0/24	-
<input type="checkbox"/> 198CP131_subnet2	10.1.11.0/24	-
<input type="checkbox"/> 198CP131_subnet3	10.1.12.0/24	-

Review + create < Previous Next : Security > Download a template for automation

## 6. Create a virtual machine in each subnet and identify its public and private id address.

### 1) Virtual machine using subnet1:

The screenshot shows the 'Create a virtual machine' page in the Azure portal, specifically the 'Networking' tab. The page is for creating a new virtual machine. The 'Virtual network' is set to '198CP131\_virtual-network'. The 'Subnet' is set to '198CP131\_subnet1 (10.1.10.0/24)'. The 'Public IP' is set to '(new) VM1-subnet1-ip'. The 'NIC network security group' is set to 'Basic'. The 'Public inbound ports' are set to 'None'. The 'Review + create' button is visible at the bottom.

Home > Virtual machines >

### Create a virtual machine

Basics Disks **Networking** Management 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 \*  [Create new](#)

Subnet \*  [Manage subnet configuration](#)

Public IP  [Create new](#)

NIC network security group ☒ None ☒ Basic ☐ Advanced

Public inbound ports \* ☐ None

[Review + create](#) < Previous Next: Management >

The screenshot shows the 'VM1-subnet1' page in the Azure portal, specifically the 'Overview' tab. The page displays the details of the virtual machine, including its resource group, location, subscription, and various properties.

Home > Virtual machines >

### VM1-subnet1

Virtual machine

Search (Ctrl+/)

Connect Start Restart Stop Capture Delete Refresh Open in mobile CLI / PS Feedback

**Overview**

Activity log Access control (IAM) Tags Diagnose and solve problems

**Settings**

Networking Connect Disks Size Security Advisor recommendations Extensions + applications Continuous delivery Availability + scaling Configuration Identity

**Essentials**

Resource group (move): 198CP131\_Cloud-Lab

Status: Running

Location: South India

Subscription (move): Azure for Students

Subscription ID: 9ca7395d-c4be-45f2-b758-4fec971b4cd

Tags (edit): [Click here to add tags](#)

Operating system: Linux (ubuntu 20.04)

Size: Standard B1s (1 vcpu, 1 GiB memory)

Public IP address: 13.71.95.90

Virtual network/subnet: 198CP131\_virtual-network/198CP131\_subnet1

DNS name: Not configured

**Properties** Monitoring Capabilities (7) Recommendations Tutorials

**Virtual machine**

Computer name: VM1-subnet1

Health state: -

Operating system: Linux (ubuntu 20.04)

Publisher: canonical

Offer: 0001-com-ubuntu-server-focal

Plan: 20\_04-lts-gen2

VM generation: V2

Agent status: Ready

Agent version: 2.6.0.2

**Networking**

Public IP address: 13.71.95.90

Public IP address (IPv6): -

Private IP address: 10.1.10.4

Private IP address (IPv6): -

Virtual network/subnet: 198CP131\_virtual-network/198CP131\_subnet1

DNS name: Configure

**Size**

Size: Standard B1s

## 2) Virtual machine using subnet1:

The screenshot shows the 'Create a virtual machine' page in the Azure portal, specifically the 'Networking' tab. The page is for creating a virtual machine named 'VM1-subnet2'. The 'Virtual network' is set to '198CP131\_virtual-network' and the 'Subnet' is '198CP131\_subnet2 (10.1.11.0/24)'. The 'Public IP' is '(new) VM1-subnet2-ip'. The 'NIC network security group' is set to 'Basic'. The 'Public inbound ports' are set to 'None'. The 'Review + create' button is visible at the bottom.

Home > Virtual machines > Create a virtual machine

Basics Disks **Networking** Management 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 \* 198CP131\_virtual-network  
[Create new](#)

Subnet \* 198CP131\_subnet2 (10.1.11.0/24)  
[Manage subnet configuration](#)

Public IP (new) VM1-subnet2-ip  
[Create new](#)

NIC network security group ☐ None ☒ Basic ☐ Advanced

Public inbound ports \* ☐ None

[Review + create](#) < Previous Next: Management >

The screenshot shows the 'VM1-subnet2' page in the Azure portal, specifically the 'Overview' tab. The page displays the virtual machine's status, configuration, and networking details. The 'Essentials' section shows the resource group, status, location, subscription, and tags. The 'Properties' section lists the computer name, health state, operating system, publisher, offer, plan, VM generation, agent status, and agent version. The 'Networking' section shows the public IP address, private IP address, and virtual network/subnet. The 'Size' section shows the VM size as 'Standard B1s'.

Home > Virtual machines > VM1-subnet2

Virtual machine

Search (Ctrl+/)

Connect Start Restart Stop Capture Delete Refresh Open in mobile CLI / PS Feedback

**Overview**

Activity log Access control (IAM) Tags Diagnose and solve problems Settings Networking Connect Disks Size Security Advisor recommendations Extensions + applications Continuous delivery Availability + scaling Configuration Identity

**Essentials**

Resource group (move): 198CP131\_Cloud-Lab  
Status: Running  
Location: South India  
Subscription (move): Azure for Students  
Subscription ID: 9ca7395d-c4be-45f2-b758-4fec971b4cd  
Tags (edit): [Click here to add tags](#)

Operating system: Linux (ubuntu 20.04)  
Size: Standard B1s (1 vcpu, 1 GiB memory)  
Public IP address: 52.140.19.167  
Virtual network/subnet: 198CP131\_virtual-network/198CP131\_subnet2  
DNS name: [Not configured](#)

**Properties** Monitoring Capabilities (7) Recommendations Tutorials

**Virtual machine**

Computer name: VM1-subnet2  
Health state: -  
Operating system: Linux (ubuntu 20.04)  
Publisher: canonical  
Offer: 0001-com-ubuntu-server-focal  
Plan: 20\_04-its-gen2  
VM generation: V2  
Agent status: Ready  
Agent version: 2.6.0.2

**Networking**

Public IP address: 52.140.19.167  
Public IP address (IPv6): -  
Private IP address: 10.1.11.4  
Private IP address (IPv6): -  
Virtual network/subnet: 198CP131\_virtual-network/198CP131\_subnet2  
DNS name: [Configure](#)

**Size**

Size: Standard B1s

### 3) Virtual machine using subnet1:

The screenshot shows the 'Create a virtual machine' page in the Azure portal, specifically the 'Networking' tab. The page is titled 'Create a virtual machine' and has tabs for Basics, Disks, Networking, Management, Advanced, Tags, and Review + create. The Networking tab is active, showing instructions on how to define network connectivity for the virtual machine by configuring the network interface card (NIC) settings. Below the instructions, there are several configuration options:

- Virtual network:** A dropdown menu showing '198CP131\_virtual-network' with a 'Create new' link below it.
- Subnet:** A dropdown menu showing '198CP131\_subnet3 (10.1.12.0/24)' with a 'Manage subnet configuration' link below it.
- Public IP:** A dropdown menu showing '(new) VM1-subnet3-ip' with a 'Create new' link below it.
- NIC network security group:** Radio buttons for 'None', 'Basic' (selected), and 'Advanced'.
- Public inbound ports:** Radio buttons for 'None' and 'Basic'.

At the bottom of the form, there are three buttons: 'Review + create', '< Previous', and 'Next : Management >'.

The screenshot shows the 'Virtual machines' page in the Azure portal, specifically the details for 'VM1-subnet3'. The page is titled 'Virtual machines' and has a sidebar with a list of virtual machines: VM1-198CP131, VM1-subnet1, VM1-subnet2, and VM1-subnet3. The 'VM1-subnet3' virtual machine is selected, and its details are shown in the main area. The details are organized into several sections:

- Overview:** Includes a search bar, a list of actions (Connect, Start, Restart, Stop, Capture, Delete, Refresh, Open in mobile, CLI / PS, Feedback), and a 'JSON View' link.
- Essentials:** Includes a 'Resource group' link, 'Status' (Running), 'Location' (South India), 'Subscription' link, 'Subscription ID' (9ca7395d-c4be-45f2-b758-4fec971b4cd), 'Tags' (edit), and a 'Click here to add tags' link.
- Properties:** Includes a 'Virtual machine' section with details like 'Computer name' (VM1-subnet3), 'Health state' (-), 'Operating system' (Linux (ubuntu 20.04)), 'Publisher' (canonical), and 'Offer' (0001-com-ubuntu-server-focal). It also includes a 'Networking' section with details like 'Public IP address' (52.172.5.240), 'Public IP address (IPv6)' (-), 'Private IP address' (10.1.12.4), 'Private IP address (IPv6)' (-), and 'Virtual network/subnet' (198CP131\_virtual-network/198CP131\_subnet3).