Ruchika
8606230062

PAGE No.
DATE / /

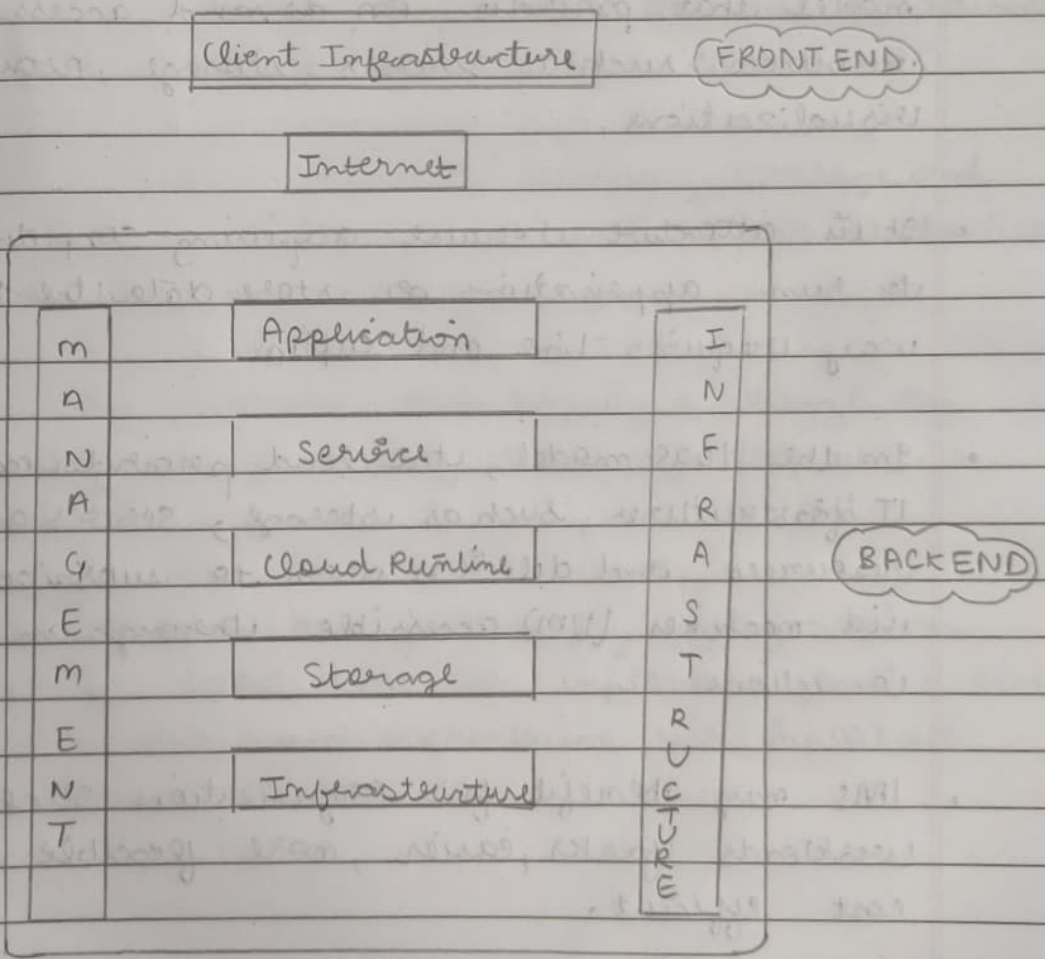
PRACTICAL-1

(1) CLOUD COMPUTING ARCHITECTURE

Cloud computing technology is used by both small and large organizations to store the information in cloud and uses it from anywhere at anytime using the internet connection

- It is a combination of service oriented architecture and event driven architecture.
- It is divided into following 2 parts:

(1) Front end (2) Back end.



- FRONT END : The front end is used by the client. It contains client-side interfaces and applications that are required to access the cloud computing platforms. The front end includes web servers, thick and fat clients, tablets and mobile.

- BACK END :
The back end is used by the service provider. It manages all the resources that are required to provide cloud computing services. It includes a huge amount of data storage, security mechanism etc.

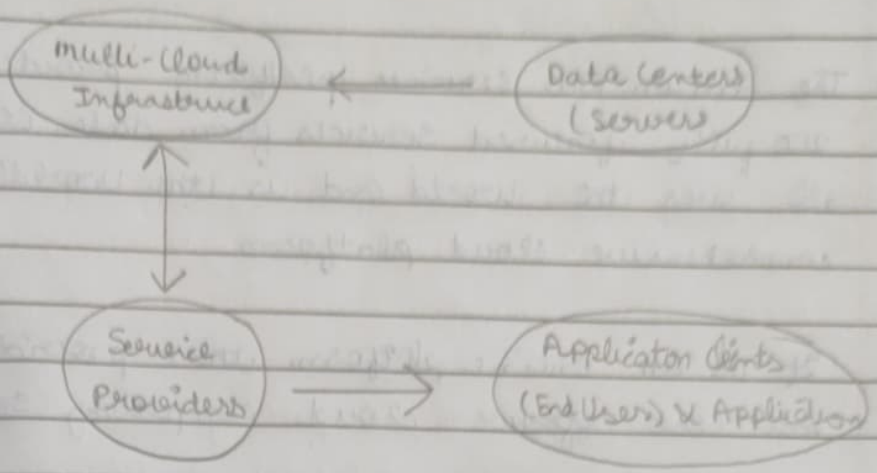
(2) IAAS

Infrastructure as a Service (IAAS) is a cloud computing model that provides on demand access to computing resources such as servers, storage, networking and visualizations.

- It is attractive because acquiring computing resources to run applications or store data the traditional way requires time and capital.

- In the IaaS model, the cloud provider manages IT infrastructures, such as storage, servers and networking resources and delivers them to subscribed organizations via machines (VM) accessible through an internet connections.

- IAAS may benefit for organizations such as making workloads faster, easier, more flexible and more cost efficient.



IAAS architecture

- In an IAAS service model, a cloud provider hosts the infrastructure components that are traditionally present in an on-premises data center.
- This includes physical servers, storage and networking hardware as well as the virtualization layer.
- It only provides also supply a range of services to accompany those infrastructure components.
- These services are increasingly policy-driven, enabling IaaS users to implement greater levels of automation and orchestration for important infrastructure tasks.

(3) AWS

- The Amazon Web services platform provides more than 200 fully featured services from data centers located all over the world and is the world's most comprehensive cloud platform.

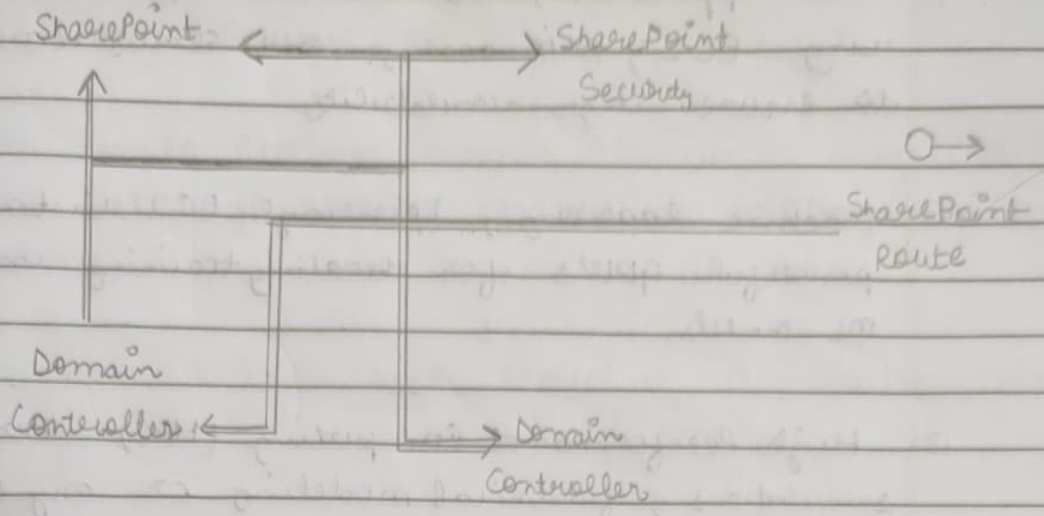
- It is an online platform that provides scalable and cost effective cloud computing solutions.

- It is broadly adopted cloud platform that offers several on demand operations like compute power, database storage, content delivery etc to help corporates scale and grow.

- It provides a user-friendly programming model, architecture, database as well as operating system that has been already known to employers.

- It is a very cost effective service. There is no such thing as long-term commitments for anything you would like to purchase.

- One of the reasons why many businesses use AWS is because it offers multiple types of storage to choose from and is easily accessible as well. It can be used for storage and file indexing as well as to run critical business applications.



(4) EC2

- Amazon Elastic Compute Cloud (Amazon EC2) provides on-demand, scalable computing capacity in the Amazon Web Services (AWS) cloud.
- Using EC2 reduces hardware costs so you can develop and deploy applications faster.
- EC2 lets you launch as many or as few virtual servers as you need, configure security and networking and manage storage.
- An EC2 instance is a virtual server in the AWS cloud. Each instance type offers a different balance of compute, memory, network and storage resources.
- It supports the processing, storage and transmission of credit card data by a merchant or service provider.

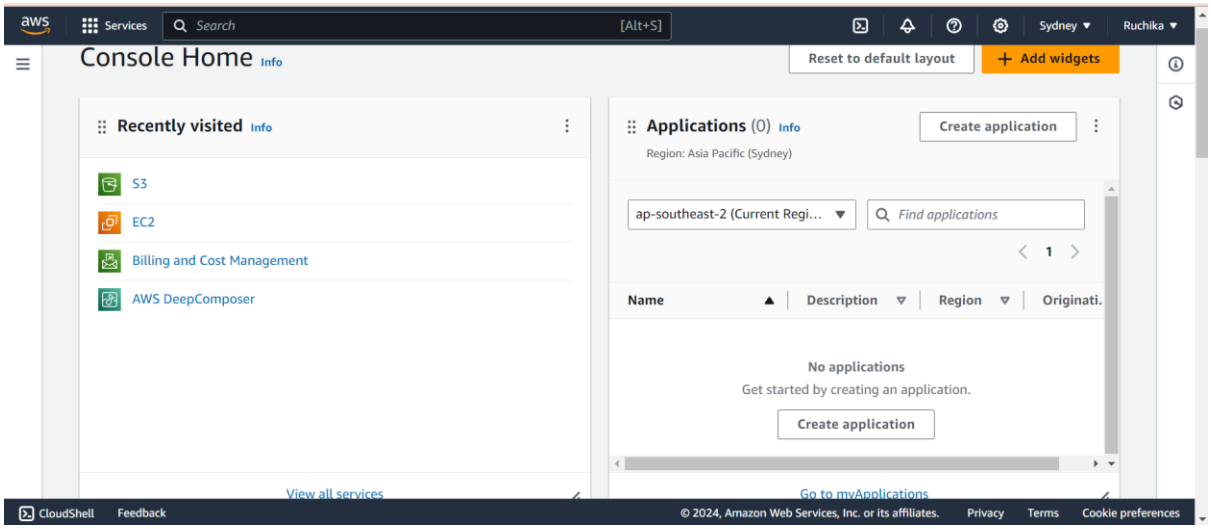
(1) Web Applications ; host scalable and resilient applications using EC2, Auto scaling and Elastic load Balancing to ensure high availability.

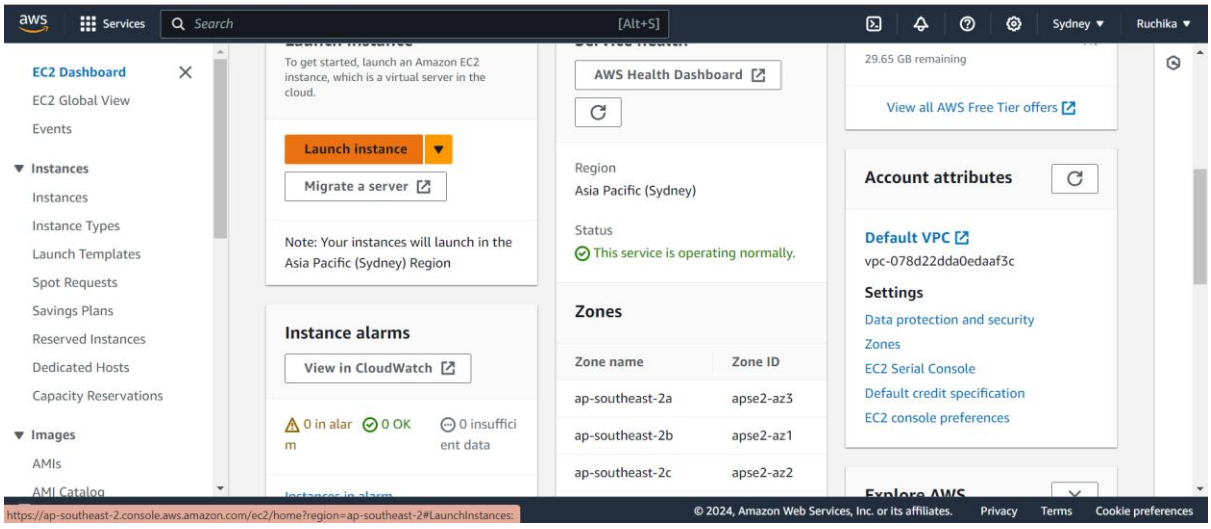
(2) Machine learning, Leverage EC2 instances with powerful GPU's for ~~treating~~ training and deploying ML models.

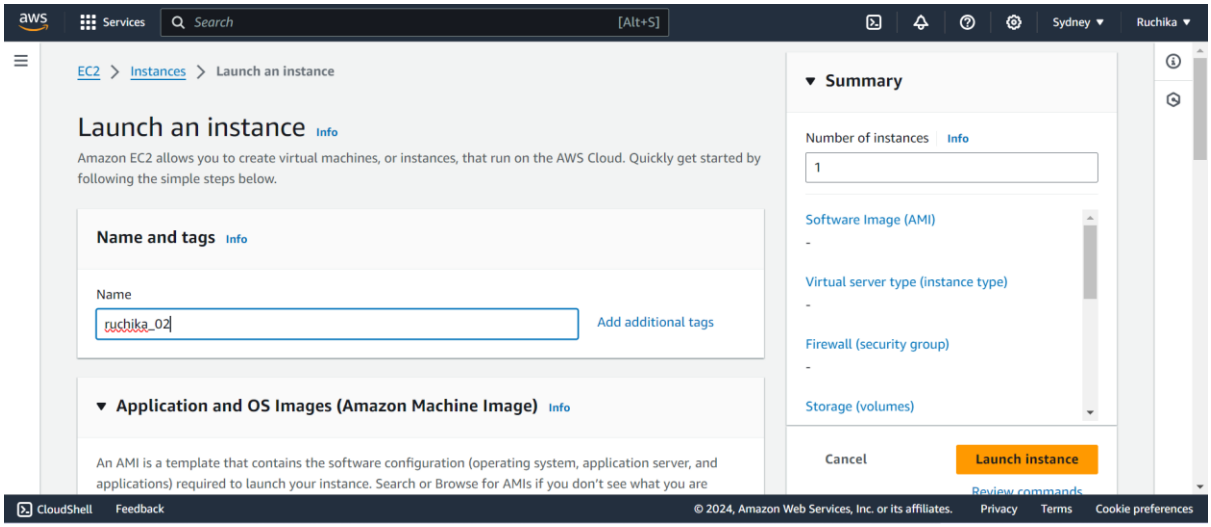
(3) High Performance Computing (HPC): Perform complex simulations, financial modeling or any other compute-intensive tasks using compute optimized instances.

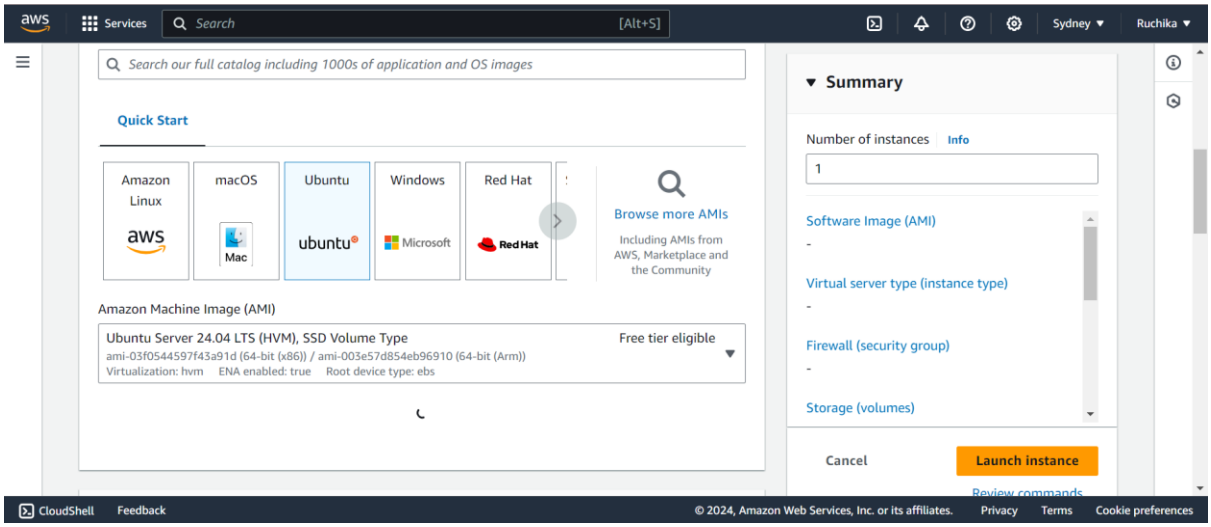
CLOUD COMPUTING
PRACTICAL-1

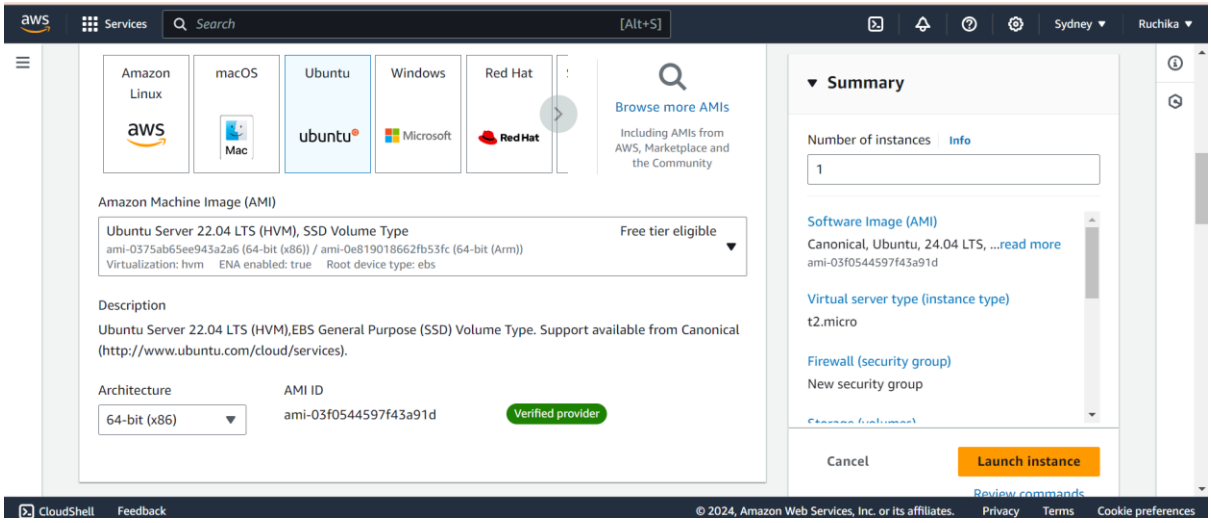
Ruchika (RollNo-19)
86062300062
Msc. Statistics and Data Science



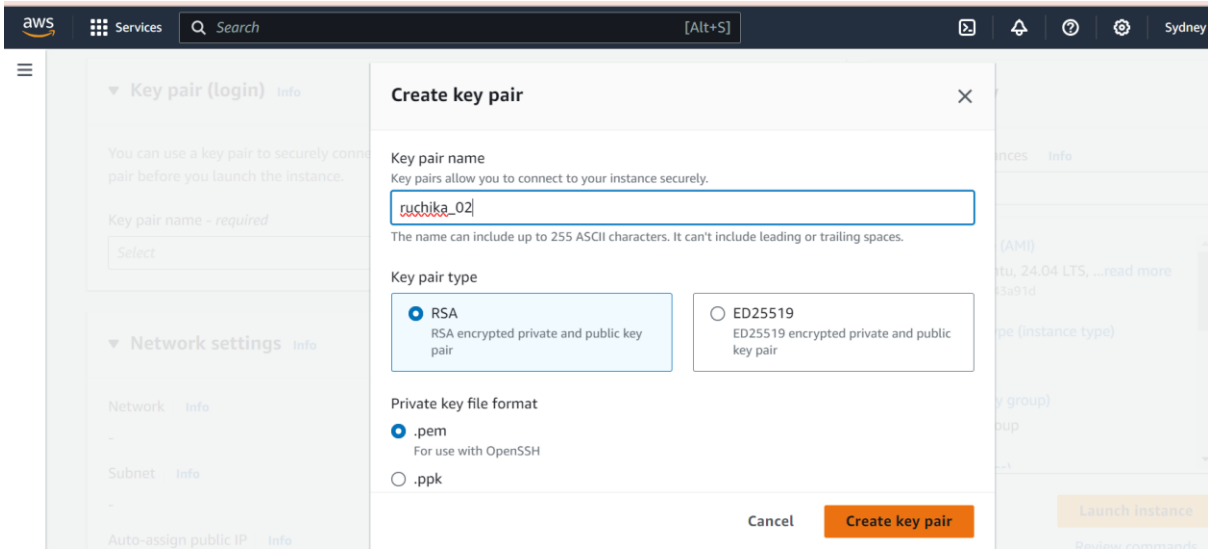


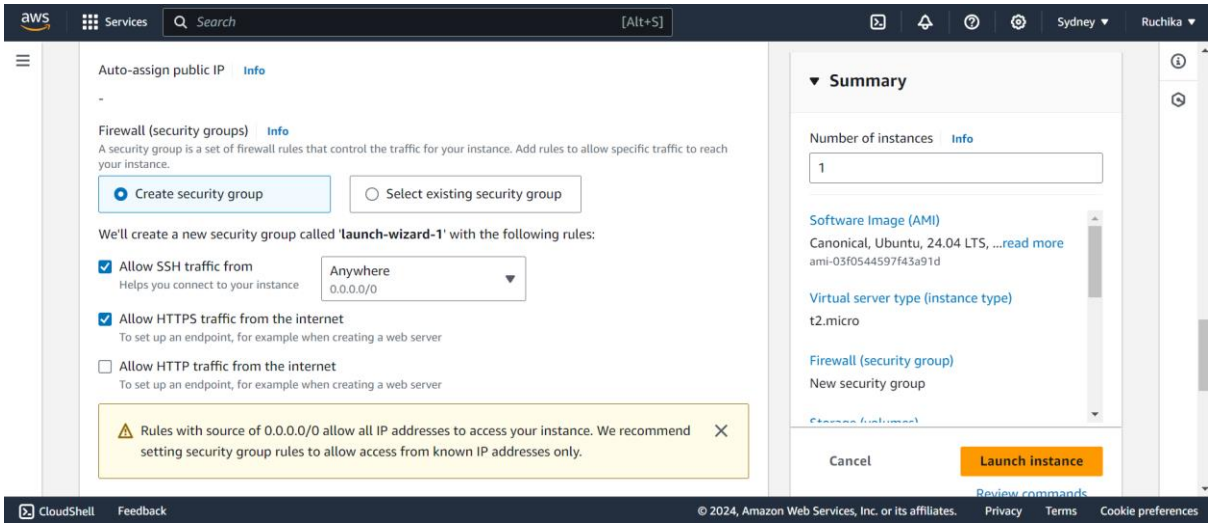






Create new key pair


aws
Services
Search
[Alt+S]
Sydney
Key pair (login) Info
Create key pair
Key pair name
Key pairs allow you to connect to your instance securely.
ruchika_02
The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.
Key pair type
RSA
RSA encrypted private and public key pair
ED25519
ED25519 encrypted private and public key pair
Private key file format
.pem
For use with OpenSSH
.ppk
Cancel
Create key pair
Network settings Info
Network Info
Subnet Info
Auto-assign public IP Info
Launch instance


aws
Services
Search
[Alt+S]
Sydney
Ruchika
Auto-assign public IP Info
Firewall (security groups) Info
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.
Create security group
Select existing security group
We'll create a new security group called 'launch-wizard-1' with the following rules:
Allow SSH traffic from
Helps you connect to your instance
Anywhere
0.0.0.0/0
Allow HTTPS traffic from the internet
To set up an endpoint, for example when creating a web server
Allow HTTP traffic from the internet
To set up an endpoint, for example when creating a web server
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.
Summary
Number of instances Info
1
Software Image (AMI)
Canonical, Ubuntu, 24.04 LTS, ...read more
ami-03f0544597f43a91d
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Cancel
Launch instance
Review commands
CloudShell
Feedback
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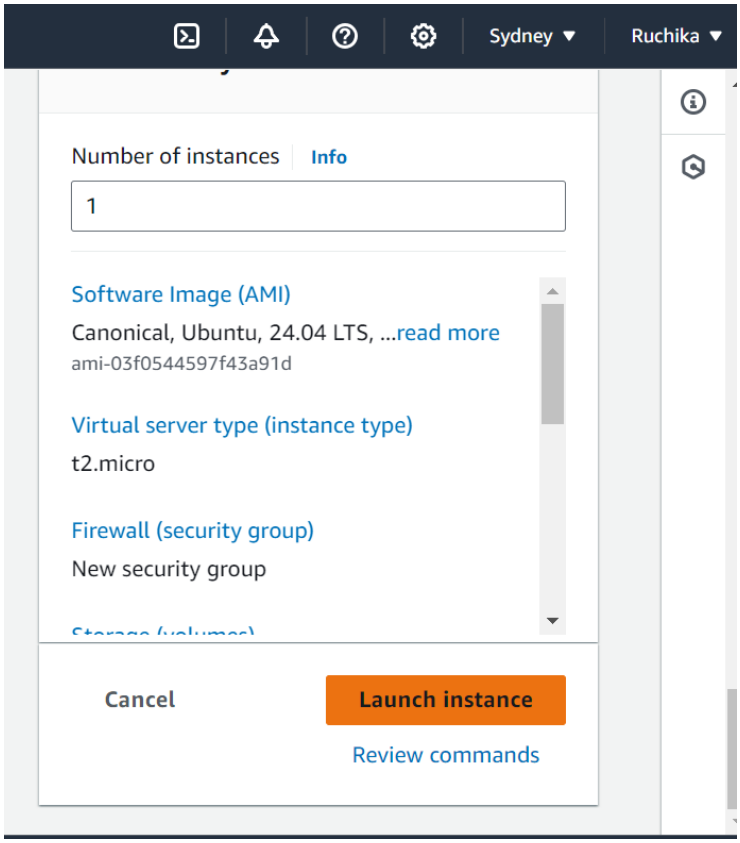
Sydney
Ruchika
Number of instances
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Canonical, Ubuntu, 24.04 LTS, ...read more
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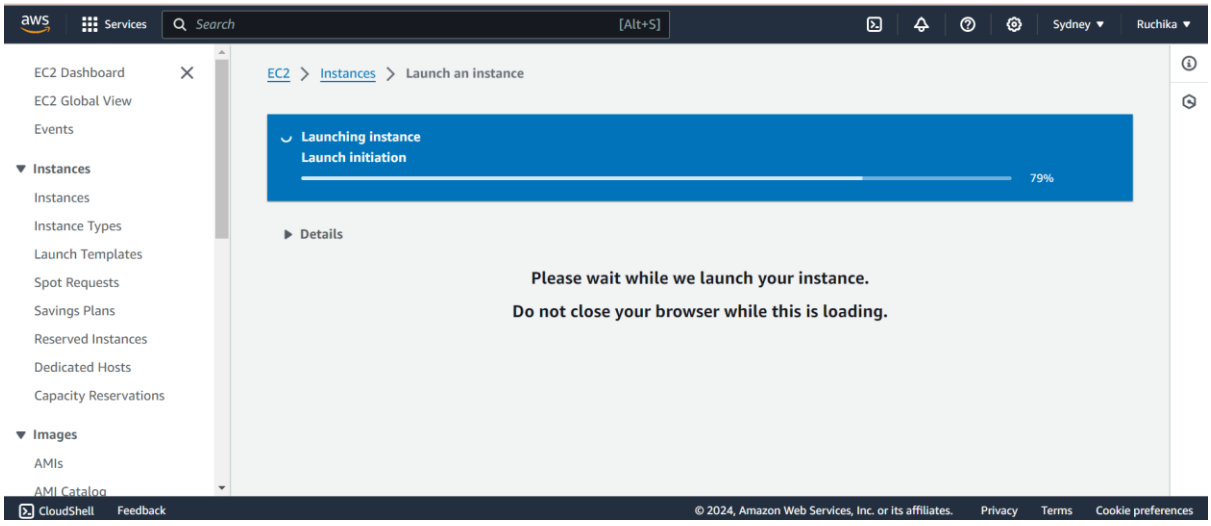
Launch instance
Review commands


aws
Services
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Ruchika
EC2 Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
EC2 > Instances > Launch an instance
Launching instance
Launch initiation
79%
Details
Please wait while we launch your instance.
Do not close your browser while this is loading.
CloudShell
Feedback
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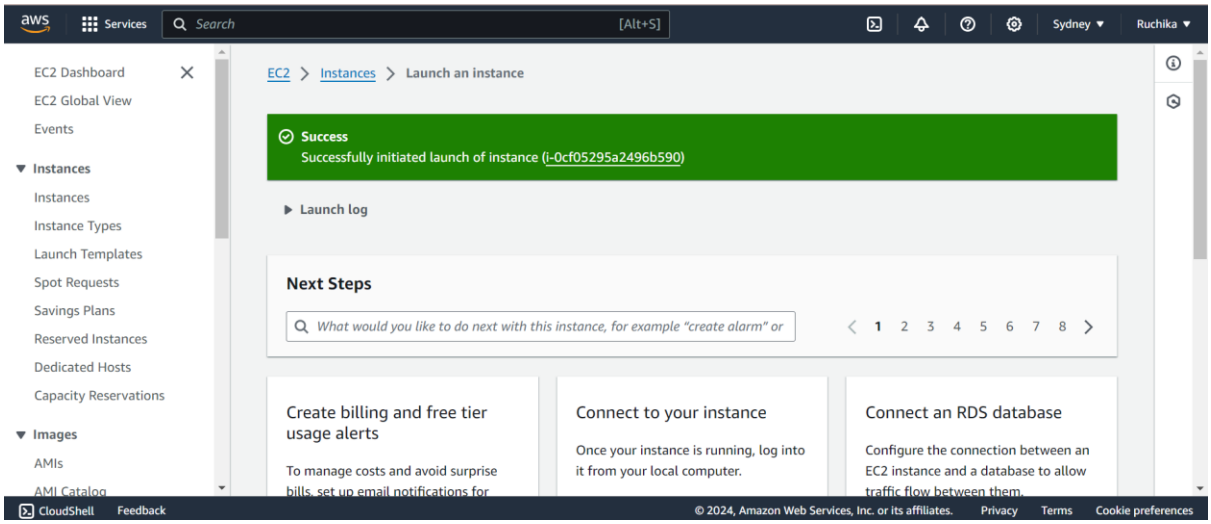
aws
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Instance Types
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Spot Requests
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Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
EC2 > Instances > Launch an instance
Success
Successfully initiated launch of instance (i-0cf05295a2496b590)
Launch log
Next Steps
What would you like to do next with this instance, for example "create alarm" or
1 2 3 4 5 6 7 8
Create billing and free tier usage alerts
To manage costs and avoid surprise bills, set up email notifications for
Connect to your instance
Once your instance is running, log into it from your local computer.
Connect an RDS database
Configure the connection between an EC2 instance and a database to allow traffic flow between them.
CloudShell
Feedback
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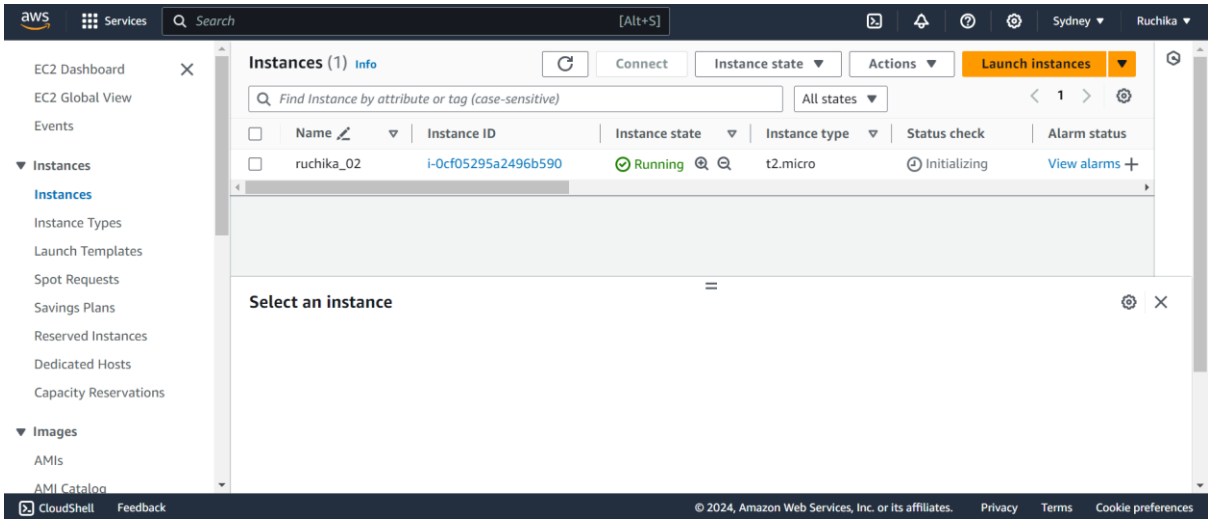
Services
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Sydney
Ruchika
EC2 Dashboard
EC2 Global View
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Instances
Instance Types
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Instances (1) Info
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
ruchika_02
i-0cf05295a2496b590
Running
t2.micro
Initializing
View alarms
Select an instance
CloudShell
Feedback
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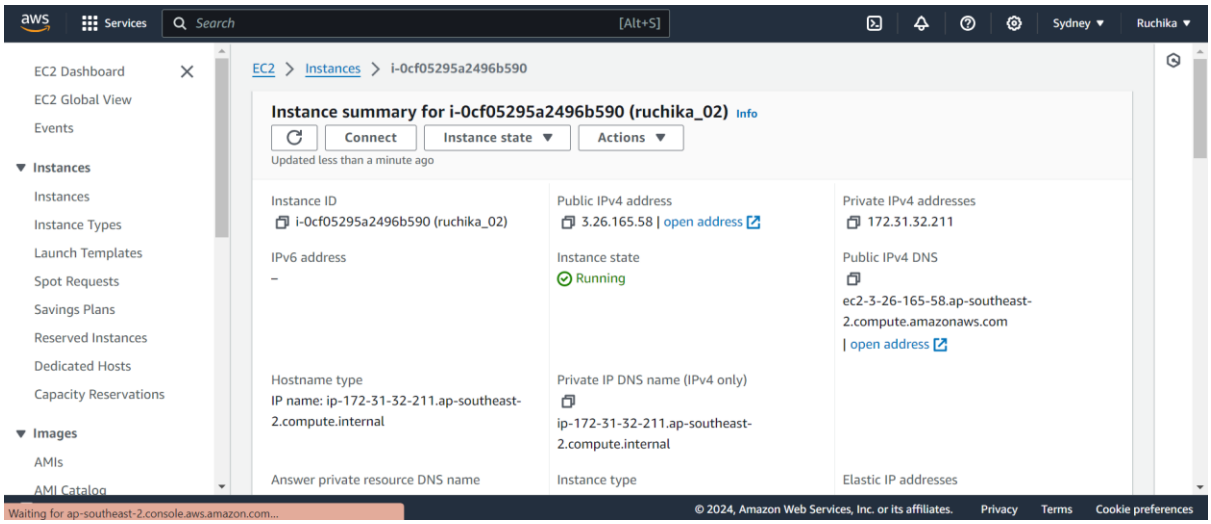
Services
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Sydney
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Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
EC2 > Instances > i-0cf05295a2496b590
Instance summary for i-0cf05295a2496b590 (ruchika_02) Info
Connect
Instance state
Actions
Updated less than a minute ago
Instance ID
i-0cf05295a2496b590 (ruchika_02)
Public IPv4 address
3.26.165.58 | open address
Private IPv4 addresses
172.31.32.211
IPv6 address
–
Instance state
Running
Public IPv4 DNS
ec2-3-26-165-58.ap-southeast-2.compute.amazonaws.com | open address
Hostname type
IP name: ip-172-31-32-211.ap-southeast-2.compute.internal
Private IP DNS name (IPv4 only)
ip-172-31-32-211.ap-southeast-2.compute.internal
Answer private resource DNS name
Instance type
Elastic IP addresses
Waiting for ap-southeast-2.console.aws.amazon.com...
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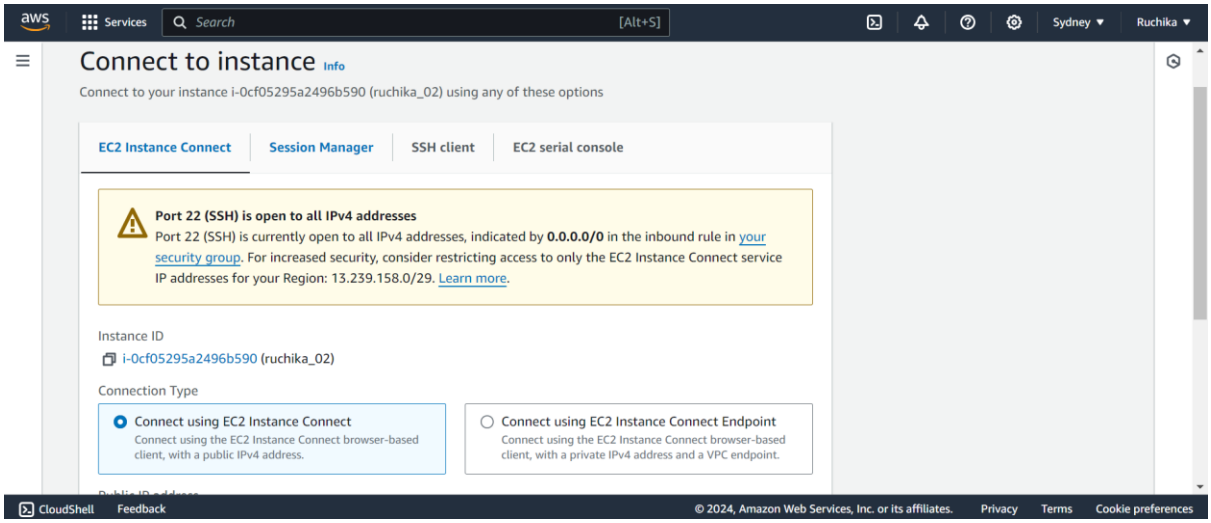
Services
Search
[Alt+S]
Sydney
Ruchika
Connect to instance Info
Connect to your instance i-0cf05295a2496b590 (ruchika_02) using any of these options
EC2 Instance Connect
Session Manager
SSH client
EC2 serial console
Port 22 (SSH) is open to all IPv4 addresses
Port 22 (SSH) is currently open to all IPv4 addresses, indicated by 0.0.0.0/0 in the inbound rule in your security group. For increased security, consider restricting access to only the EC2 Instance Connect service IP addresses for your Region: 13.239.158.0/29. Learn more.
Instance ID
i-0cf05295a2496b590 (ruchika_02)
Connection Type
Connect using EC2 Instance Connect
Connect using the EC2 Instance Connect browser-based client, with a public IPv4 address.
Connect using EC2 Instance Connect Endpoint
Connect using the EC2 Instance Connect browser-based client, with a private IPv4 address and a VPC endpoint.
CloudShell
Feedback
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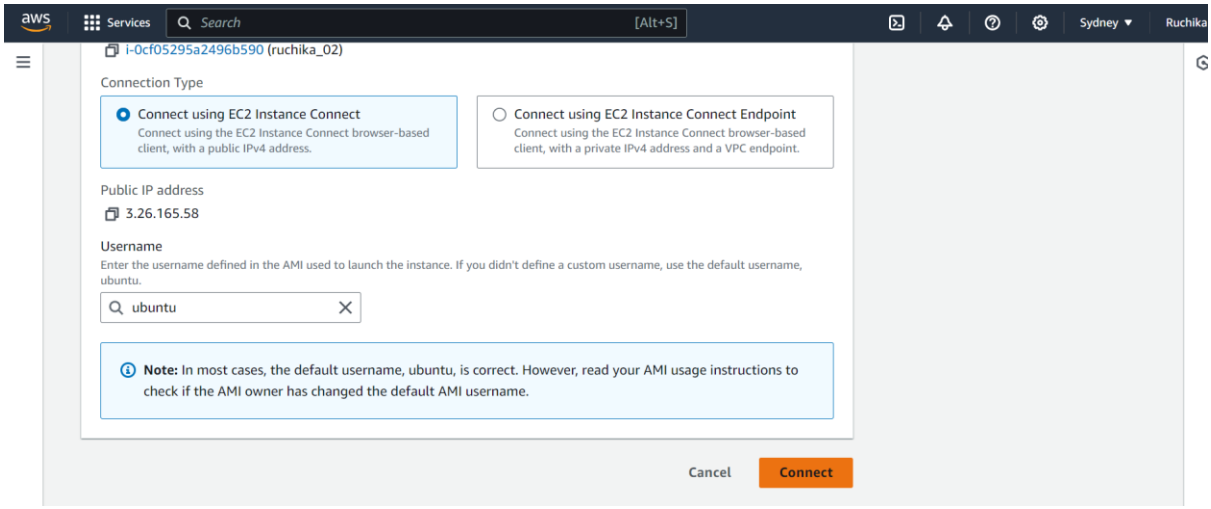
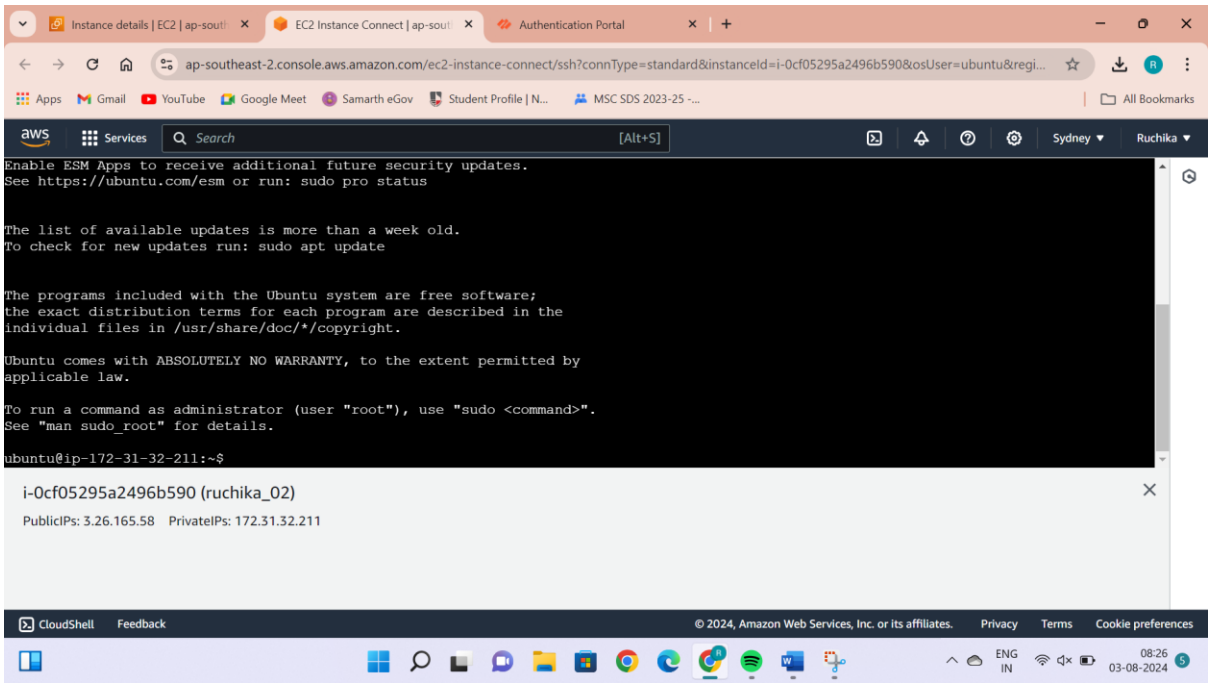

i-0cf05295a2496b590 (ruchika_02)
Connection Type
Connect using EC2 Instance Connect
Connect using the EC2 Instance Connect browser-based client, with a public IPv4 address.
Connect using EC2 Instance Connect Endpoint
Connect using the EC2 Instance Connect browser-based client, with a private IPv4 address and a VPC endpoint.
Public IP address
3.26.165.58
Username
Enter the username defined in the AMI used to launch the instance. If you didn't define a custom username, use the default username, ubuntu.
ubuntu
Note: In most cases, the default username, ubuntu, is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.
Cancel
Connect


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.
ubuntu@ip-172-31-32-211:~$
i-0cf05295a2496b590 (ruchika_02)
PublicIPs: 3.26.165.58 PrivateIPs: 172.31.32.211
CloudShell
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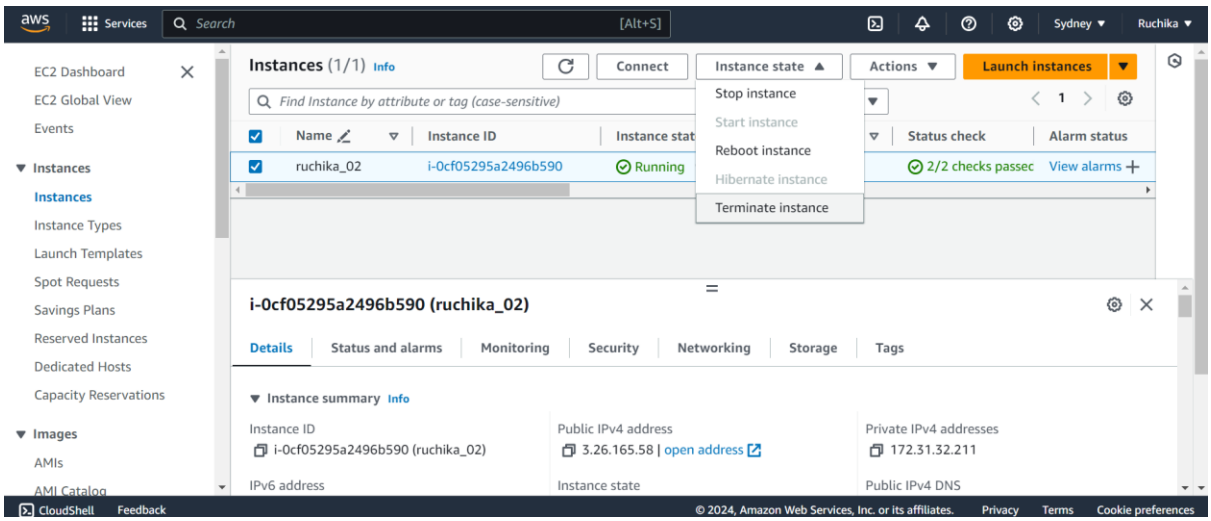
EC2 Dashboard
EC2 Global View
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Instance Types
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Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
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Instances (1/1) Info
Connect
Instance state
Actions
Launch instances
Stop instance
Start instance
Reboot instance
Hibernate instance
Terminate instance
Name
Instance ID
Status check
Alarm status
ruchika_02
i-0cf05295a2496b590
Running
2/2 checks passec
View alarms
i-0cf05295a2496b590 (ruchika_02)
Details
Status and alarms
Monitoring
Security
Networking
Storage
Tags
Instance summary Info
Instance ID
i-0cf05295a2496b590 (ruchika_02)
Public IPv4 address
3.26.165.58 | open address
Private IPv4 addresses
172.31.32.211
IPv6 address
Instance state
Public IPv4 DNS
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Feedback
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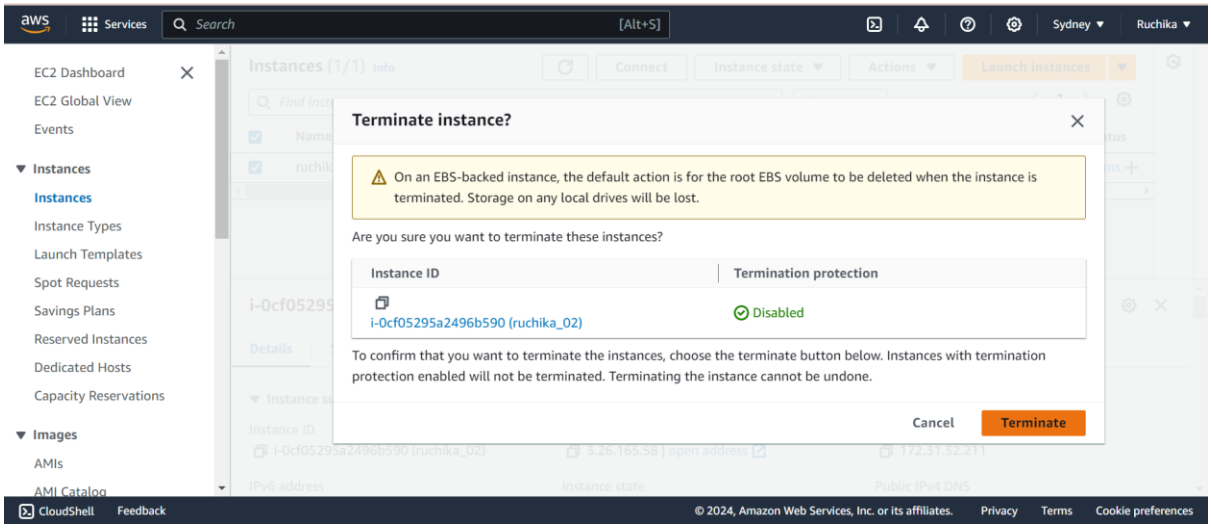
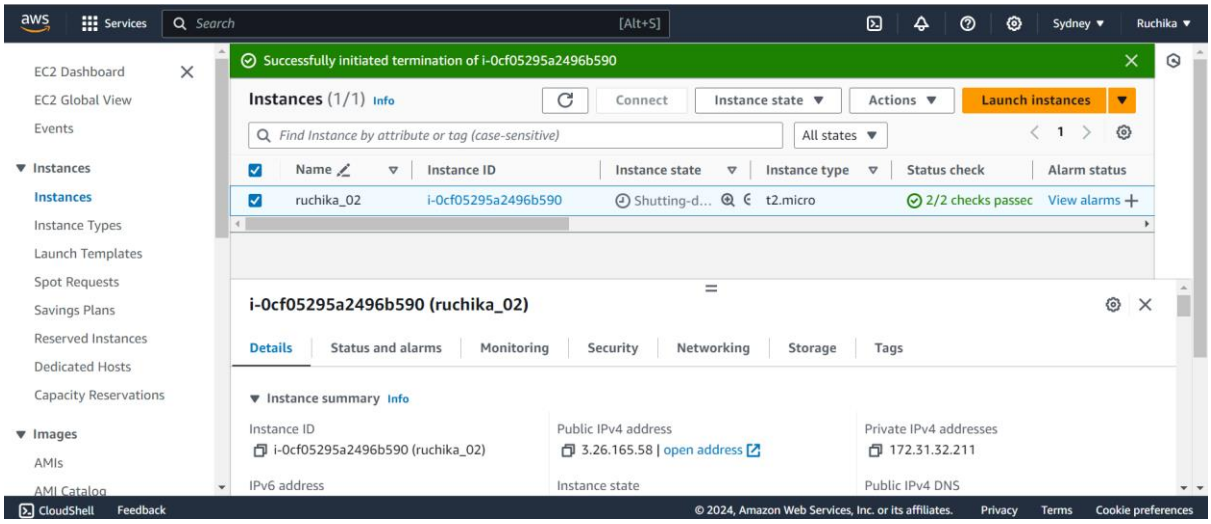
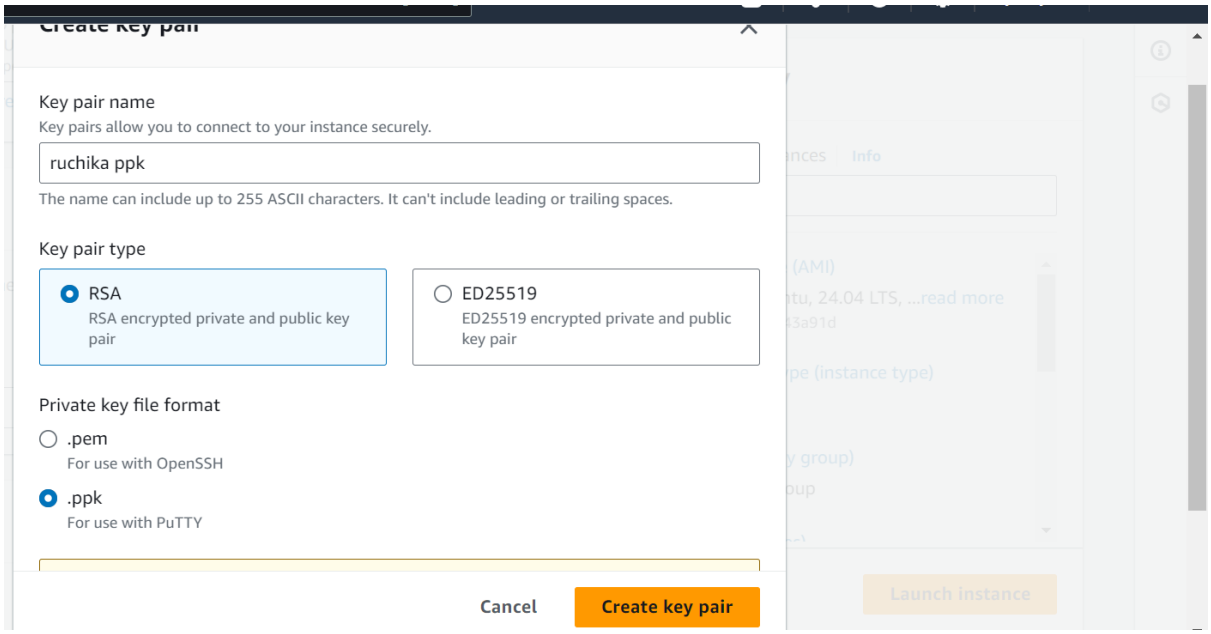
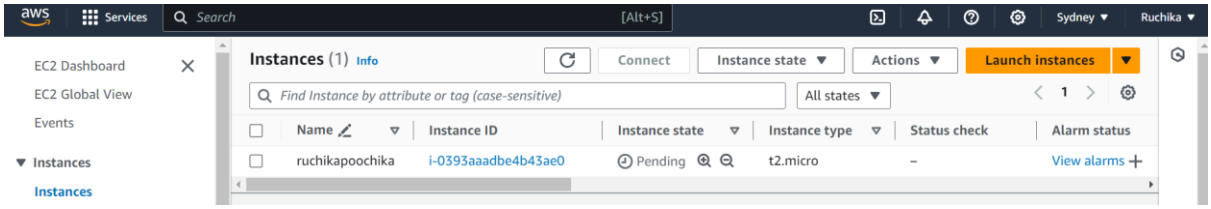

Terminate instance?
On an EBS-backed instance, the default action is for the root EBS volume to be deleted when the instance is terminated. Storage on any local drives will be lost.
Are you sure you want to terminate these instances?
Instance ID
Termination protection
i-0cf05295a2496b590 (ruchika_02)
Disabled
To confirm that you want to terminate the instances, choose the terminate button below. Instances with termination protection enabled will not be terminated. Terminating the instance cannot be undone.
Cancel
Terminate


Successfully initiated termination of i-0cf05295a2496b590
Instances (1/1) Info
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
ruchika_02
i-0cf05295a2496b590
Shutting-d...
t2.micro
2/2 checks passec
View alarms
i-0cf05295a2496b590 (ruchika_02)
Details
Status and alarms
Monitoring
Security
Networking
Storage
Tags
Instance summary Info
Instance ID
i-0cf05295a2496b590 (ruchika_02)
Public IPv4 address
3.26.165.58 | open address
Private IPv4 addresses
172.31.32.211
IPv6 address
Instance state
Public IPv4 DNS

USING PUTTY


Key pair name
Key pairs allow you to connect to your instance securely.
ruchika ppk
The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.
Key pair type
RSA
RSA encrypted private and public key pair
ED25519
ED25519 encrypted private and public key pair
Private key file format
.pem
For use with OpenSSH
.ppk
For use with PuTTY
Cancel
Create key pair

,


aws
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Instances (1) Info
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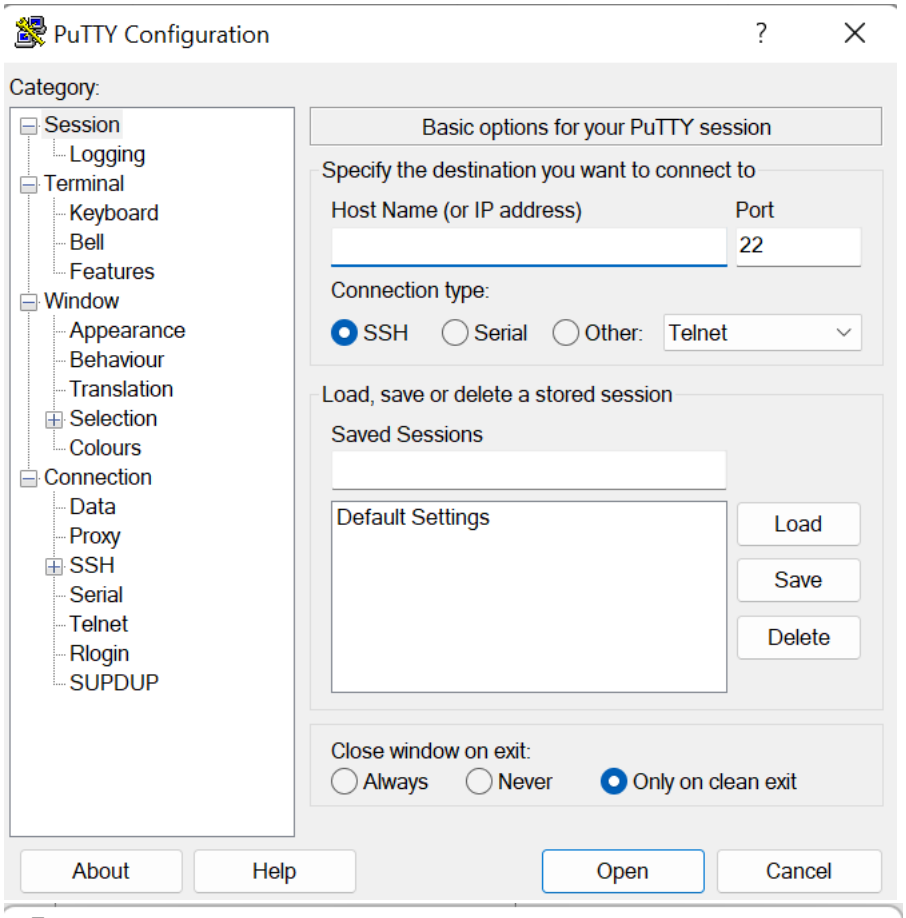
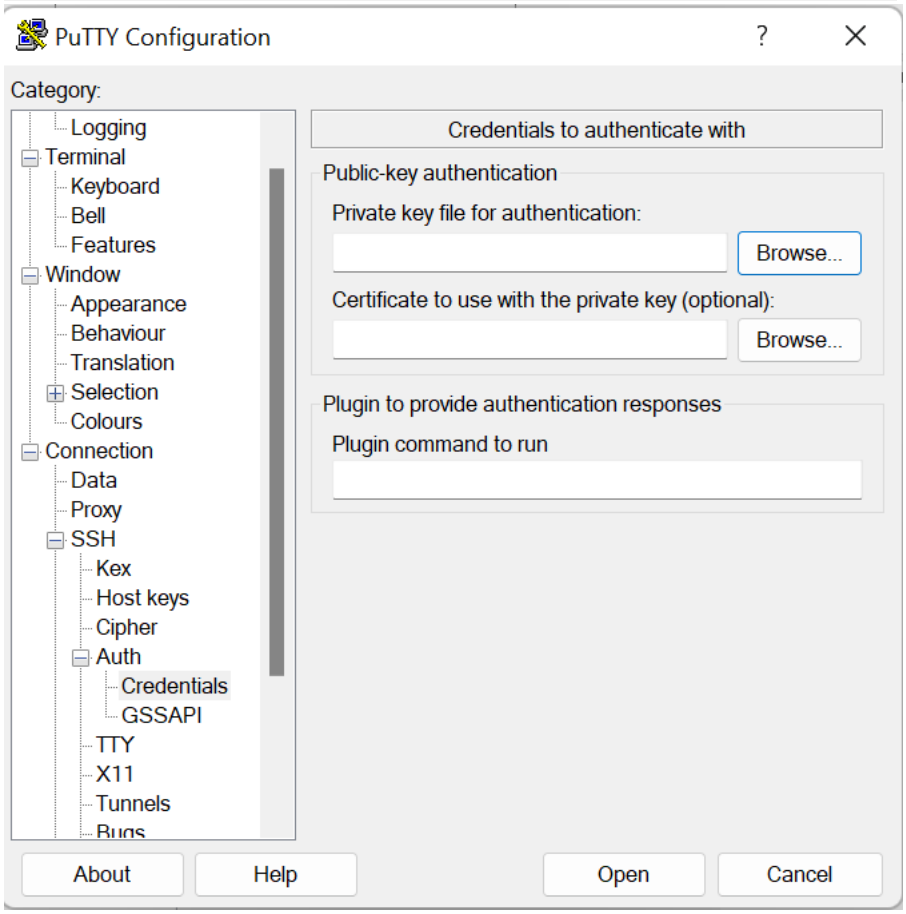
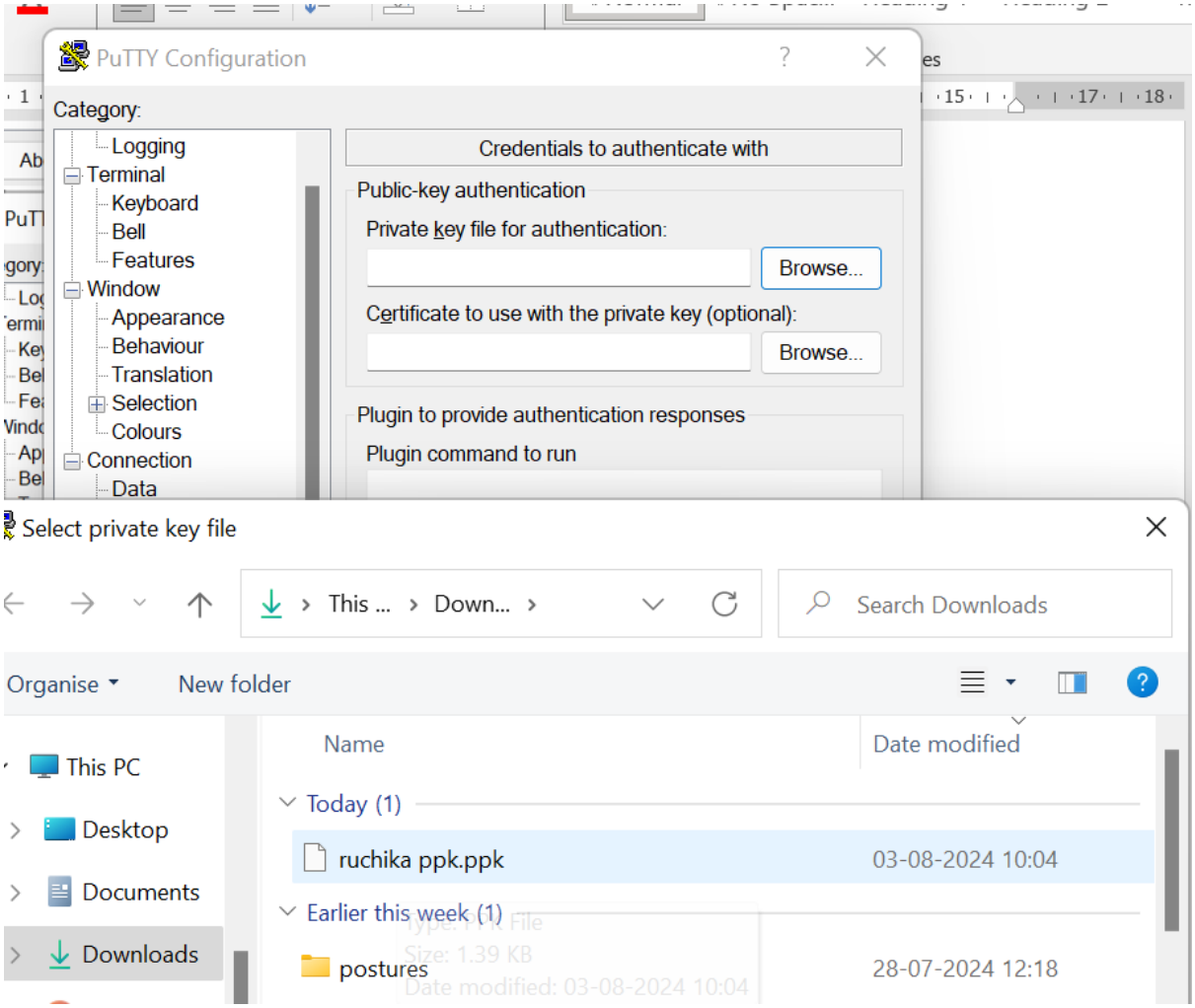
Find Instance by attribute or tag (case-sensitive)
All states
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
ruchikapoochika
i-0393aaadbe4b43ae0
Pending
t2.micro
View alarms


PuTTY Configuration
Category:
Session
Logging
Terminal
Keyboard
Bell
Features
Window
Appearance
Behaviour
Translation
Selection
Colours
Connection
Data
Proxy
SSH
Serial
Telnet
Rlogin
SUPDUP
Basic options for your PuTTY session
Specify the destination you want to connect to
Host Name (or IP address)
Port
22
Connection type:
SSH
Serial
Other:
Telnet
Load, save or delete a stored session
Saved Sessions
Default Settings
Load
Save
Delete
Close window on exit:
Always
Never
Only on clean exit
About
Help
Open
Cancel


PuTTY Configuration
Category:
Logging
Terminal
Keyboard
Bell
Features
Window
Appearance
Behaviour
Translation
Selection
Colours
Connection
Data
Proxy
SSH
Kex
Host keys
Cipher
Auth
Credentials
GSSAPI
TTY
X11
Tunnels
Bugs
Credentials to authenticate with
Public-key authentication
Private key file for authentication:
Browse...
Certificate to use with the private key (optional):
Browse...
Plugin to provide authentication responses
Plugin command to run
About
Help
Open
Cancel



Then launch it and terminate server later