Day - 3

Avinash Pandy

Setup Kubernetes Master & Node on Aws

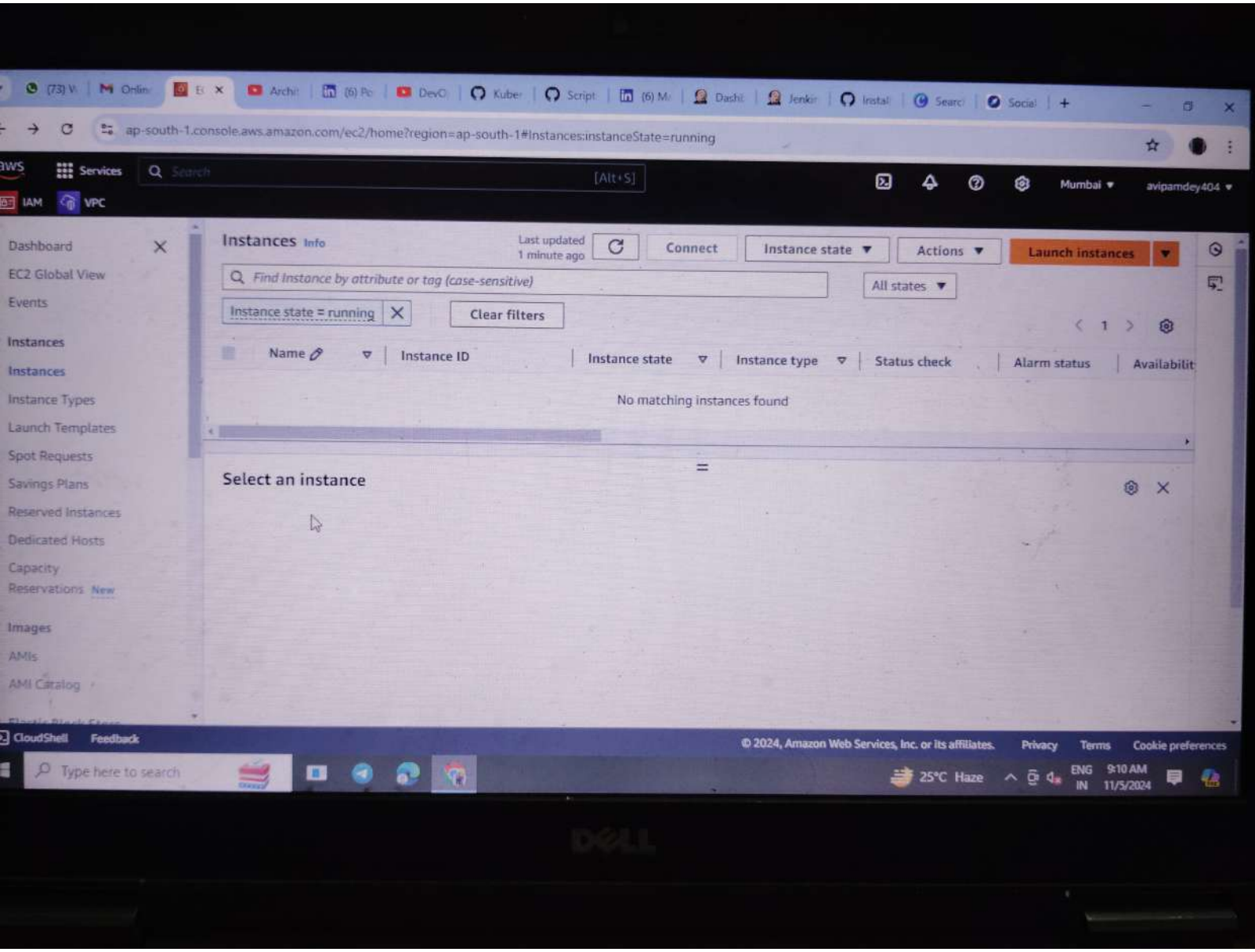
→ Logine into Aws Account → Launch 3 inetance

all the inebuction given fig.

⇒ Commond Common for Master and Node

So we lanch 3 inetance which named is Master , Node 1 and Node 2.

After that Bootstrapping the Master node.


ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#Instances:instanceState=running
Services
Search
[Alt+S]
Mumbai
avipamdey404
IAM
VPC
Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations New
Images
AMIs
AMI Catalog
Instances Info
Last updated 1 minute ago
Connect
Instance state
Actions
Launch instances
Find instance by attribute or tag (case-sensitive)
All states
Instance state = running
Clear filters
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availabilit
No matching instances found
Select an instance
CloudShell
Feedback
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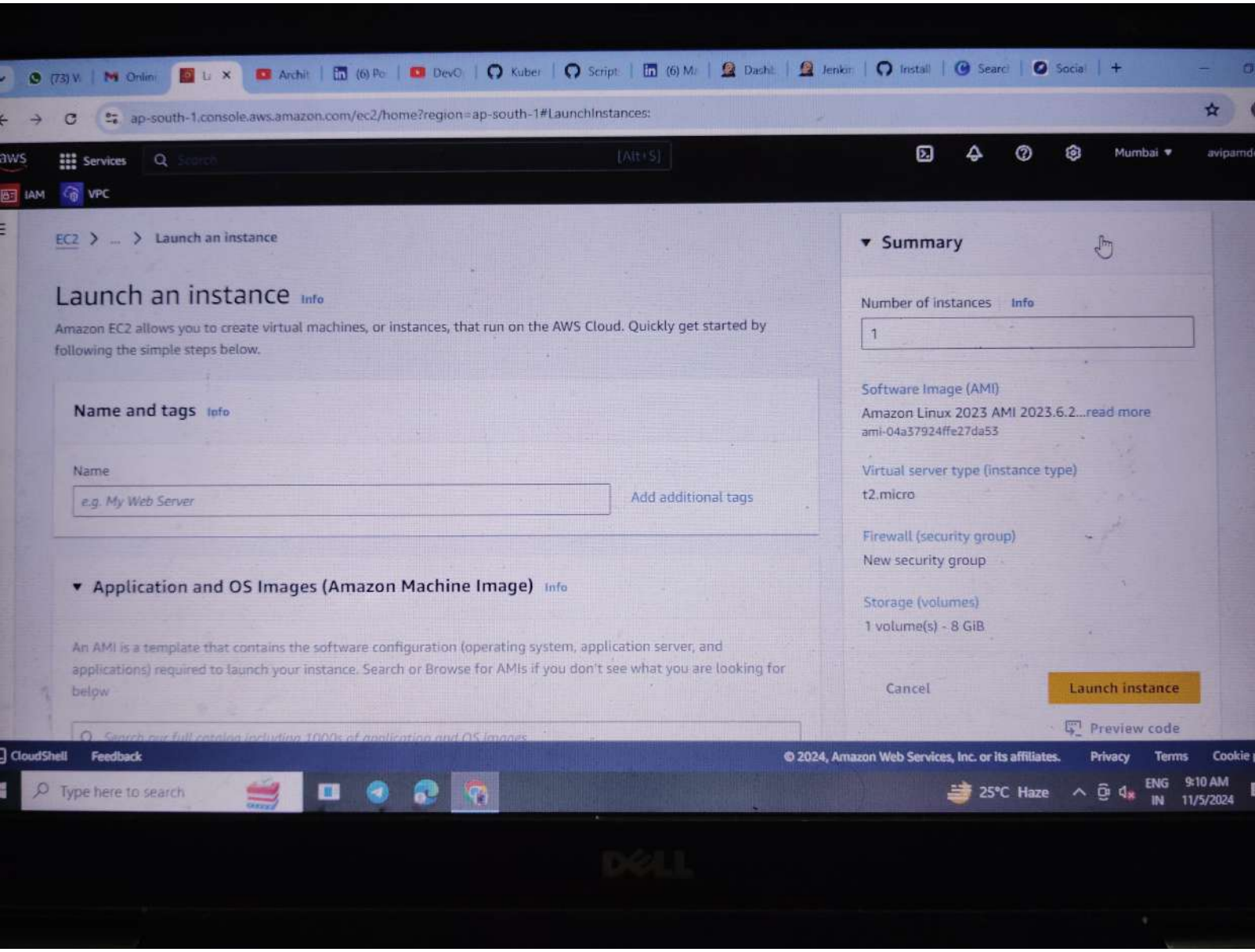
Privacy
Terms
Cookie preferences
Type here to search
25°C Haze
ENG IN
9:10 AM 11/5/2024


ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:
Services
Search
[Alt+S]
Mumbai
IAM
VPC
EC2 > ... > Launch an instance
Launch an instance Info
Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.
Name and tags Info
Name
e.g. My Web Server
Add additional tags
Application and OS Images (Amazon Machine Image) Info
An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.6.2...read more
ami-04a37924ffe27da53
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Cancel
Launch instance
Preview code
CloudShell
Feedback
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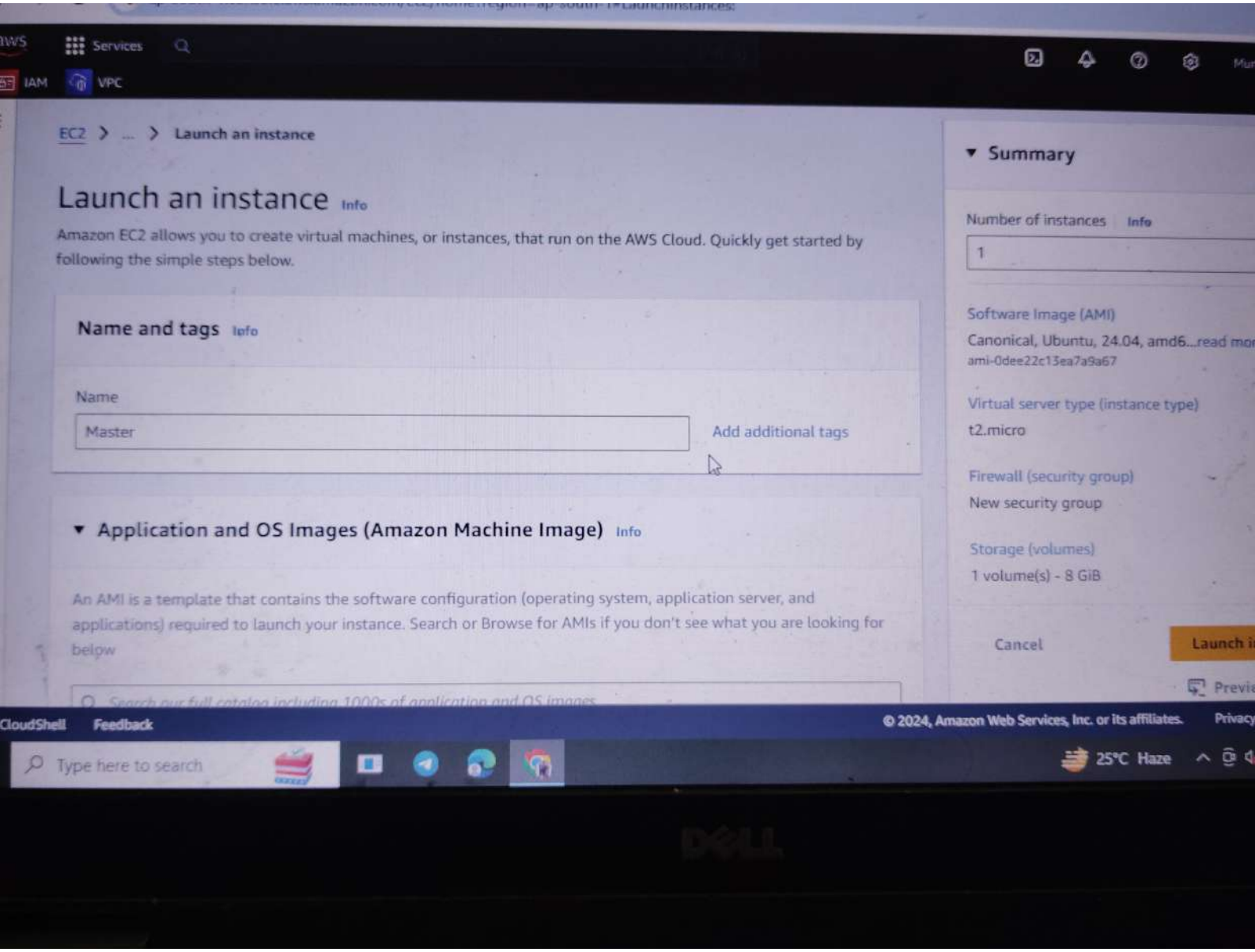
Terms
Cookie
Type here to search
25°C Haze
ENG
IN
9:10 AM
11/5/2024


Services
IAM
VPC
EC2 > ... > Launch an instance
Launch an instance Info
Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.
Name and tags Info
Name
Master
Add additional tags
Application and OS Images (Amazon Machine Image) Info
An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below
Summary
Number of instances Info
1
Software Image (AMI)
Canonical, Ubuntu, 24.04, amd6...read mo
ami-0dee22c13ea7a9a67
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Cancel
Launch i
CloudShell
Feedback
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Privacy
Type here to search
25°C Haze

Services

IAM VPC

Search our full catalog including 1000s of application and OS images

Recents | Quick Start

Amazon Linux | macOS | Ubuntu | Windows | Red Hat | SUSE Li

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type

ami-0dee22c13ea7a9a67 (64-bit (x86)) / ami-0c8eea98010057bd0 (64-bit (Arm))

Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

Description

Ubuntu Server 24.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (http://www.ubuntu.com/cloud/services).

Canonical, Ubuntu, 24.04, amd64 noble image

Architecture AMI ID Username

Summary

Number of instance

1

Software Image (AM

Canonical, Ubuntu,

ami-0dee22c13ea7a9a

Virtual server type (

t2.micro

Firewall (security gro

New security group

Storage (volumes)

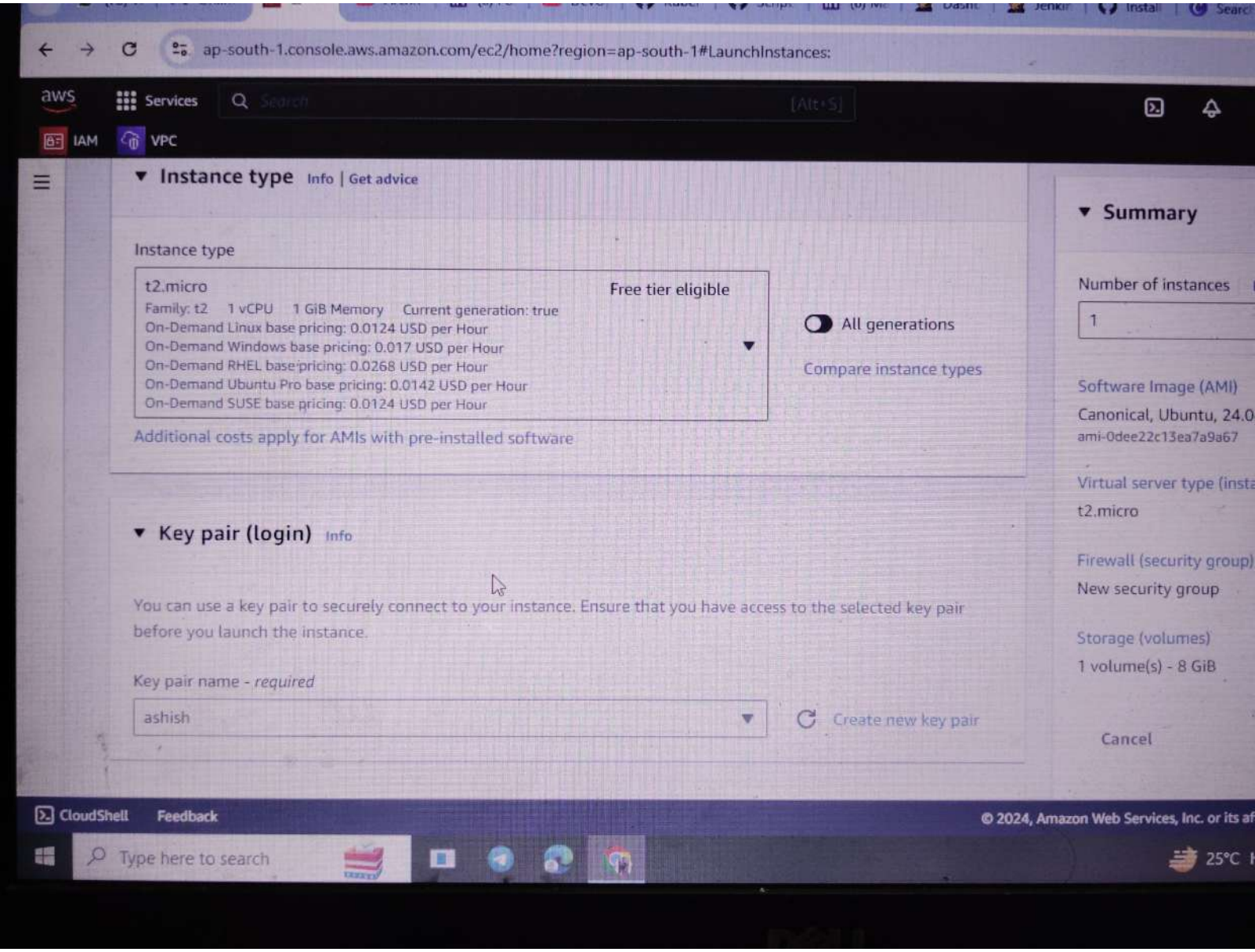
1 volume(s) - 8 GiB

Cancel

CloudShell Feedback

Type here to search

25°C


ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:
aws
Services
Search
[Alt+S]
IAM
VPC
Instance type Info | Get advice
Instance type
t2.micro
Free tier eligible
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Linux base pricing: 0.0124 USD per Hour
On-Demand Windows base pricing: 0.017 USD per Hour
On-Demand RHEL base pricing: 0.0268 USD per Hour
On-Demand Ubuntu Pro base pricing: 0.0142 USD per Hour
On-Demand SUSE base pricing: 0.0124 USD per Hour
All generations
Compare instance types
Additional costs apply for AMIs with pre-installed software
Key pair (login) Info
You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.
Key pair name - required
ashish
Create new key pair
Summary
Number of instances
1
Software Image (AMI)
Canonical, Ubuntu, 24.0
ami-0dee22c13ea7a9a67
Virtual server type (insta
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Cancel
CloudShell
Feedback
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Type here to search
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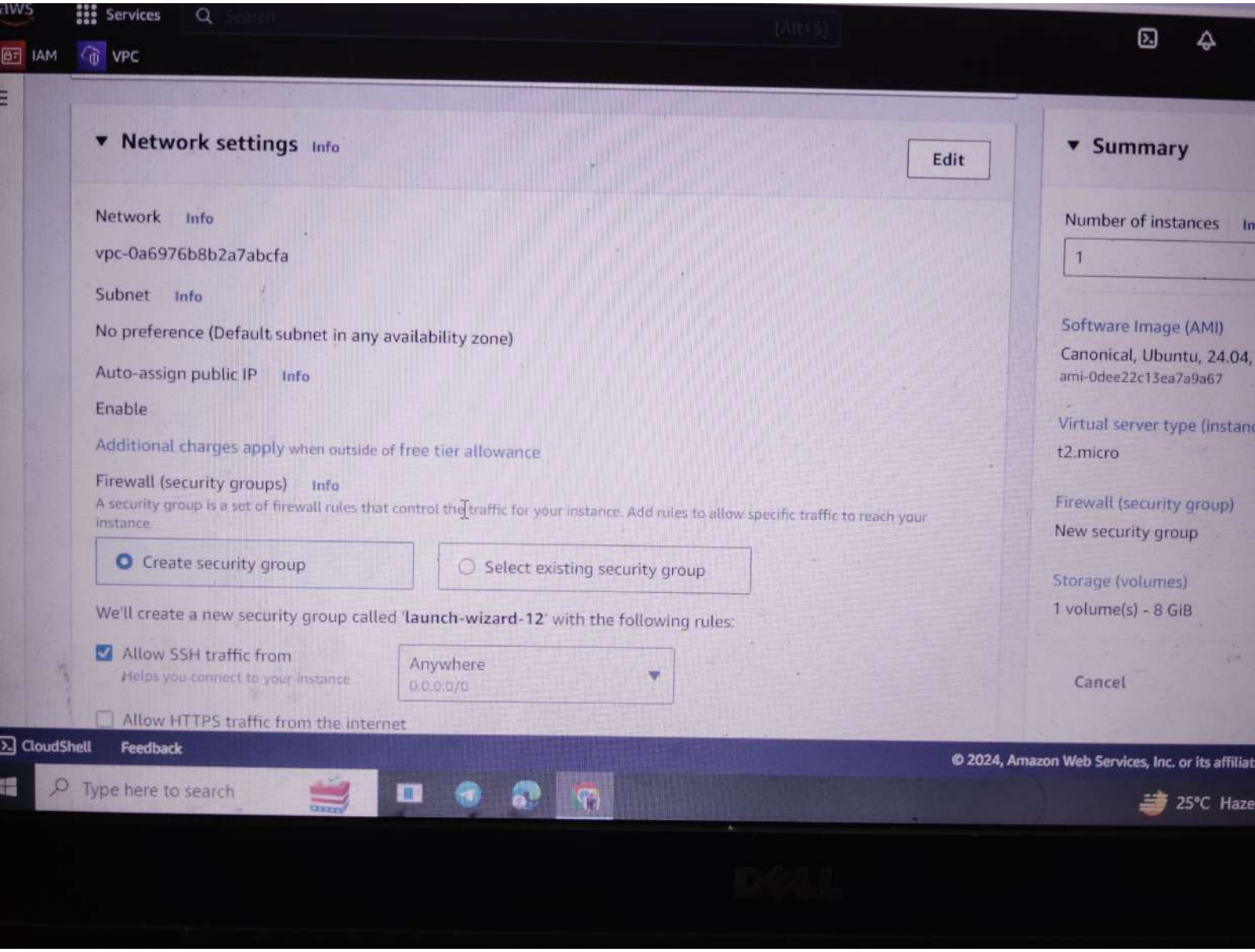
Services
Search
[Alt+S]
IAM
VPC
Network settings Info
Edit
Network Info
vpc-0a6976b8b2a7abcfa
Subnet Info
No preference (Default subnet in any availability zone)
Auto-assign public IP Info
Enable
Additional charges apply when outside of free tier allowance
Firewall (security groups) Info
A security group 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-12' 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
Summary
Number of instances
1
Software Image (AMI)
Canonical, Ubuntu, 24.04,
ami-0dee22c13ea7a9a67
Virtual server type (instanc
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Cancel
CloudShell
Feedback
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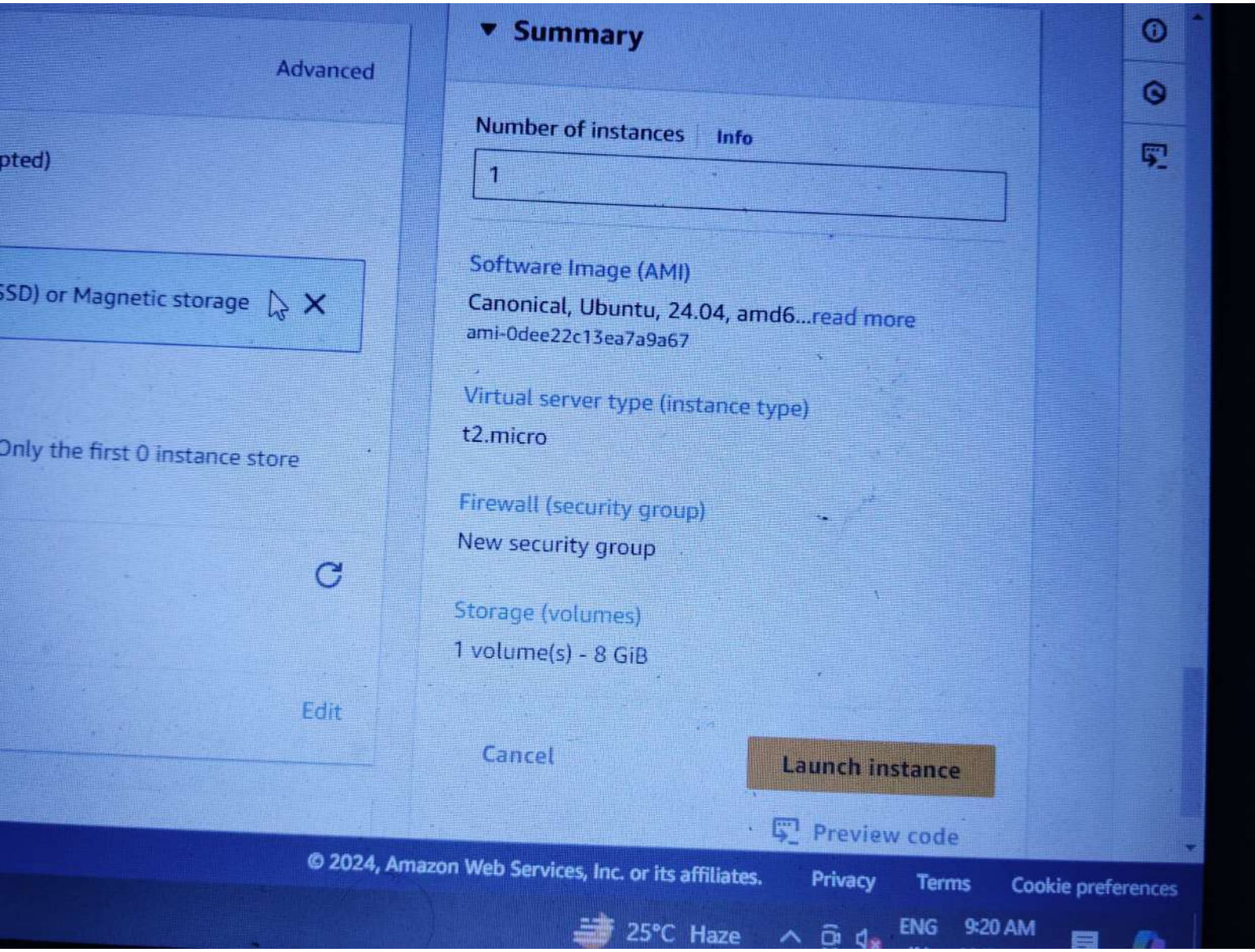
Type here to search
25°C Haze


Advanced
pted)
SSD) or Magnetic storage
Only the first 0 instance store
Edit
Summary
Number of instances Info
1
Software Image (AMI)
Canonical, Ubuntu, 24.04, amd6...read more
ami-0dee22c13ea7a9a67
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Cancel
Launch instance
Preview code
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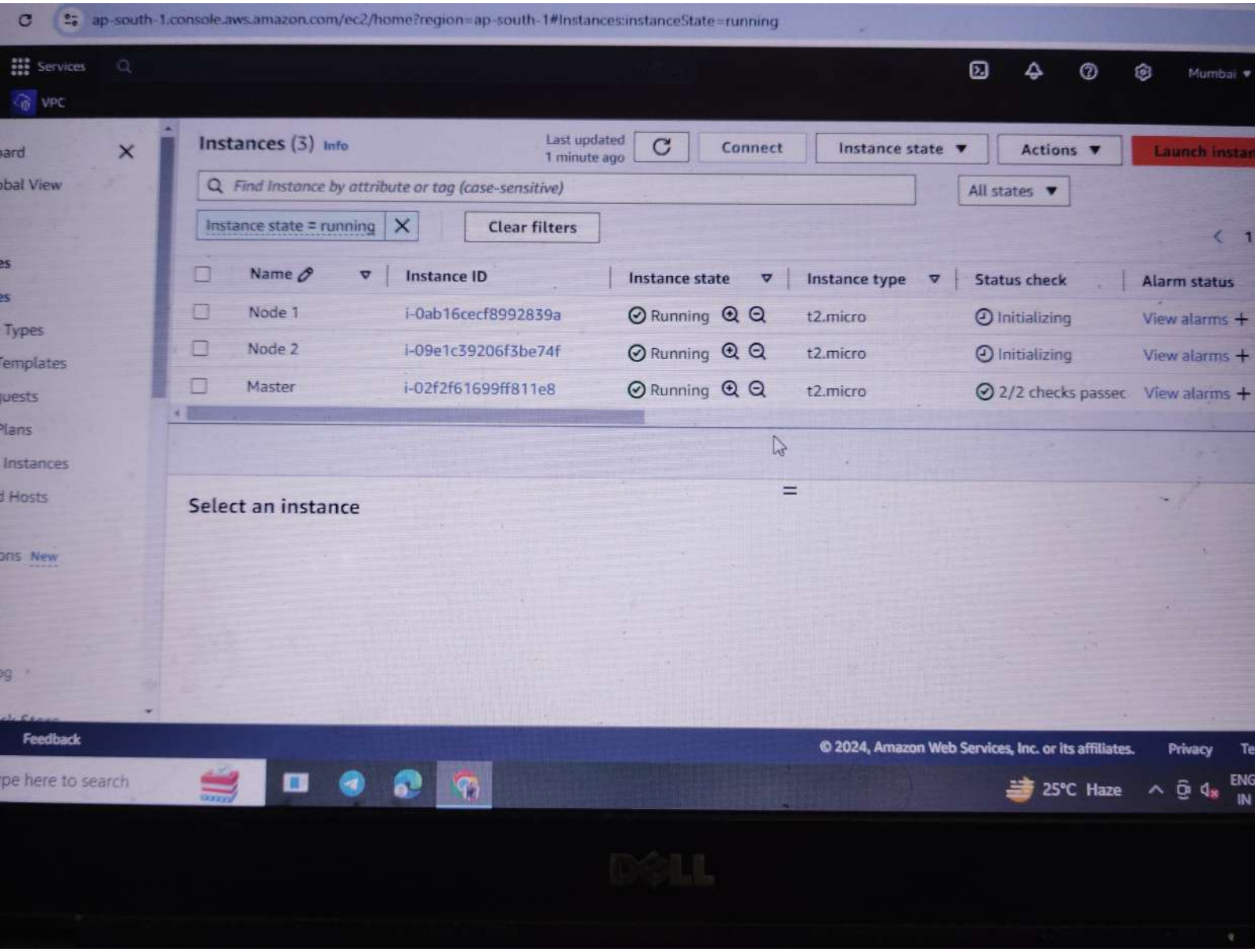
Terms
Cookie preferences
25°C Haze
ENG
9:20 AM


ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#Instances:instanceState=running
Services
VPC
Mumbai
Instances (3) Info
Last updated
1 minute ago
Connect
Instance state
Actions
Launch instar
Find Instance by attribute or tag (case-sensitive)
All states
Instance state = running
Clear filters
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Node 1
i-0ab16cecf8992839a
Running
t2.micro
Initializing
View alarms
Node 2
i-09e1c39206f3be74f
Running
t2.micro
Initializing
View alarms
Master
i-02f2f61699ff811e8
Running
t2.micro
2/2 checks passec
View alarms
Select an instance
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
25°C Haze

(73) WhatsApp | Online Assesment - a | Launch an instance | Connec

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#ConnectToIns

Services

IAM VPC

Connect to instance Info

Connect to your instance i-0ab16cecf8992839a (Node 1) 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: 13.233.177.0/29. Learn more.

Instance ID

i-0ab16cecf8992839a (Node 1)

Connection Type

- Connect using EC2 Instance Connect
  Connect using the EC2 Instance Connect browser-based client, with a public IPv4 or IPv6 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 IPv4 address
  15.206.84.37
- IPv6 address

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.

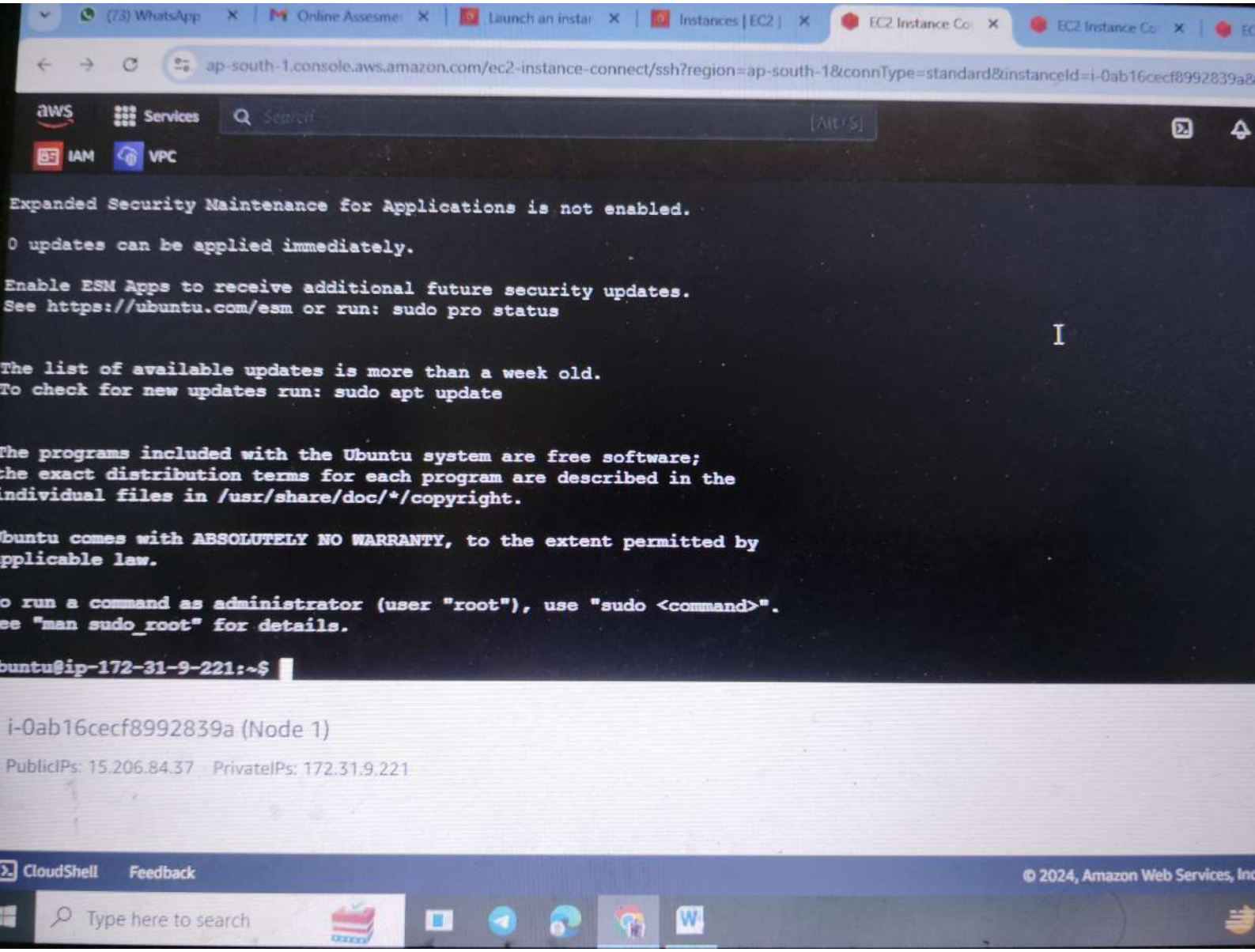
ubuntu

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

CloudShell Feedback

Type here to search


(73) WhatsApp
Online Assesme
Launch an instar
Instances | EC2 |
EC2 Instance Co
EC2 Instance Co
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId=i-0ab16cecf8992839a8
aws
Services
Search
[Alt+S]
IAM
VPC
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.
buntu@ip-172-31-9-221:~$
i-0ab16cecf8992839a (Node 1)
PublicIPs: 15.206.84.37 PrivateIPs: 172.31.9.221
CloudShell
Feedback
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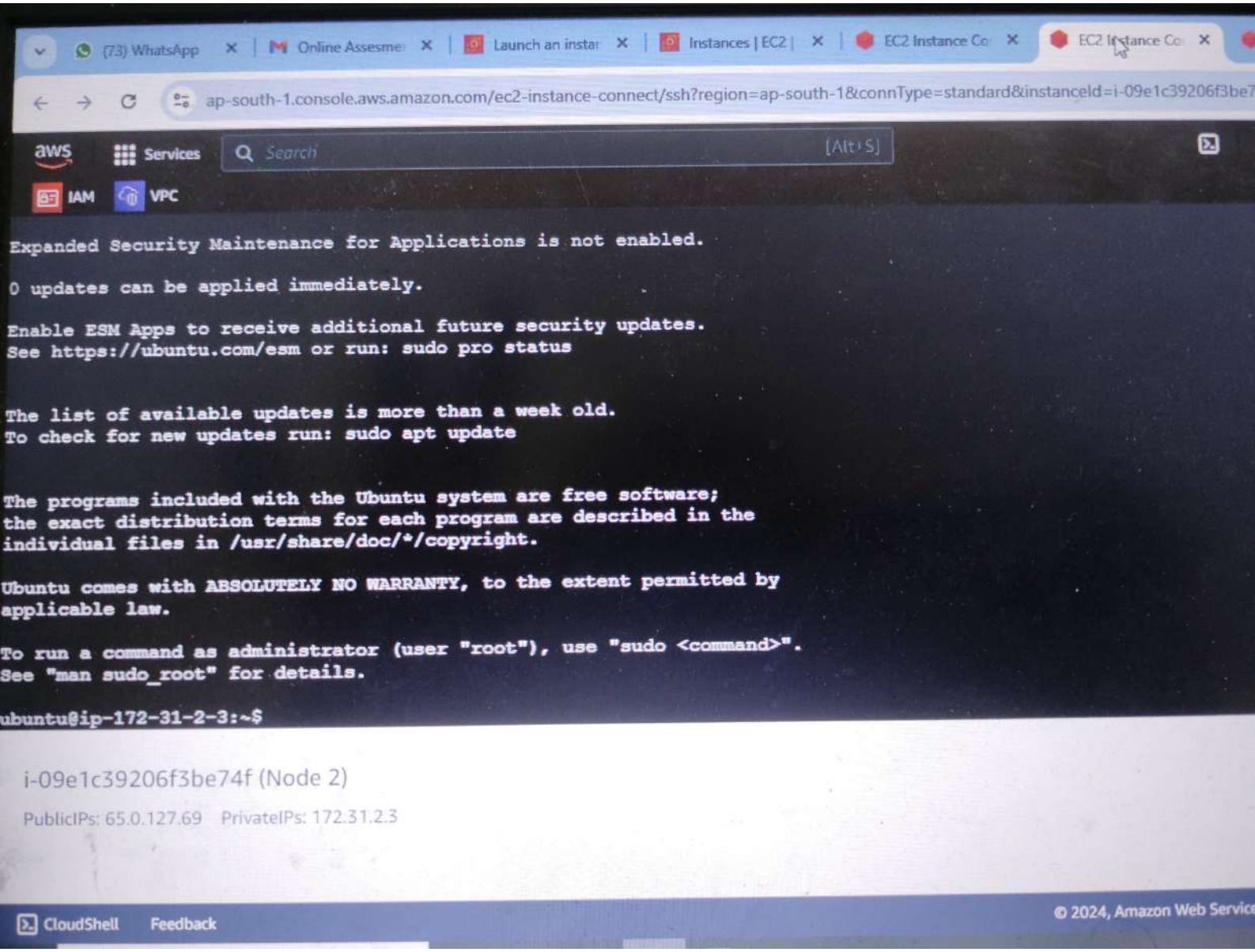
Type here to search


(73) WhatsApp
Online Assesme
Launch an instar
Instances | EC2 |
EC2 Instance Co
EC2 Instance Co
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId=i-09e1c39206f3be7
aws
Services
Search
[Alt+S]
IAM
VPC
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.
ubuntu@ip-172-31-2-3:~$
i-09e1c39206f3be74f (Node 2)
PublicIPs: 65.0.127.69 PrivateIPs: 172.31.2.3
CloudShell
Feedback
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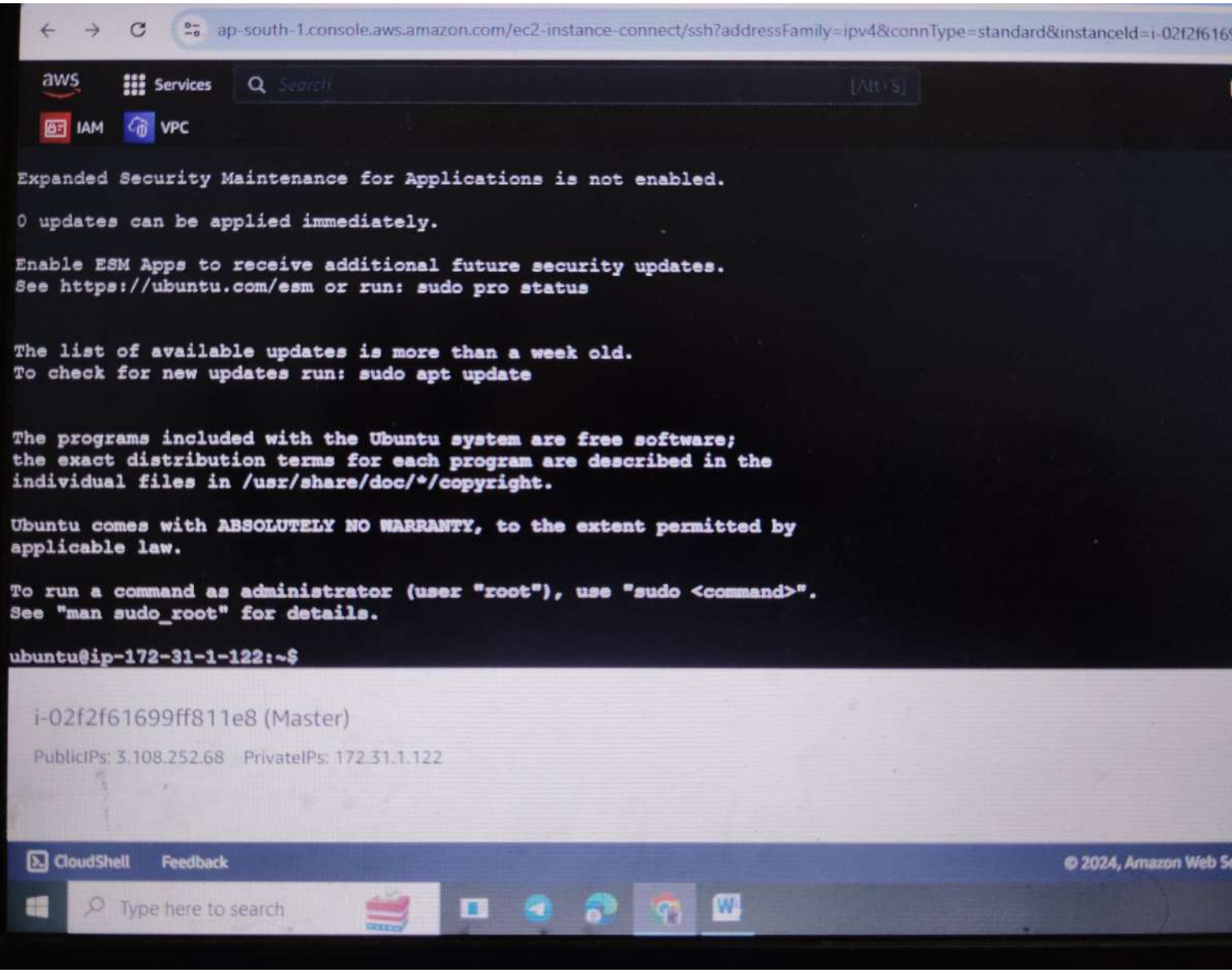
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?addressFamily=ipv4&connType=standard&instanceId=i-02f2f616
aws
Services
Search
[Alt+S]
IAM
VPC
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.
Enable ESM Apps to receive additional future security 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.
ubuntu@ip-172-31-1-122:~$
i-02f2f61699ff811e8 (Master)
PublicIPs: 3.108.252.68 PrivateIPs: 172.31.1.122
CloudShell
Feedback
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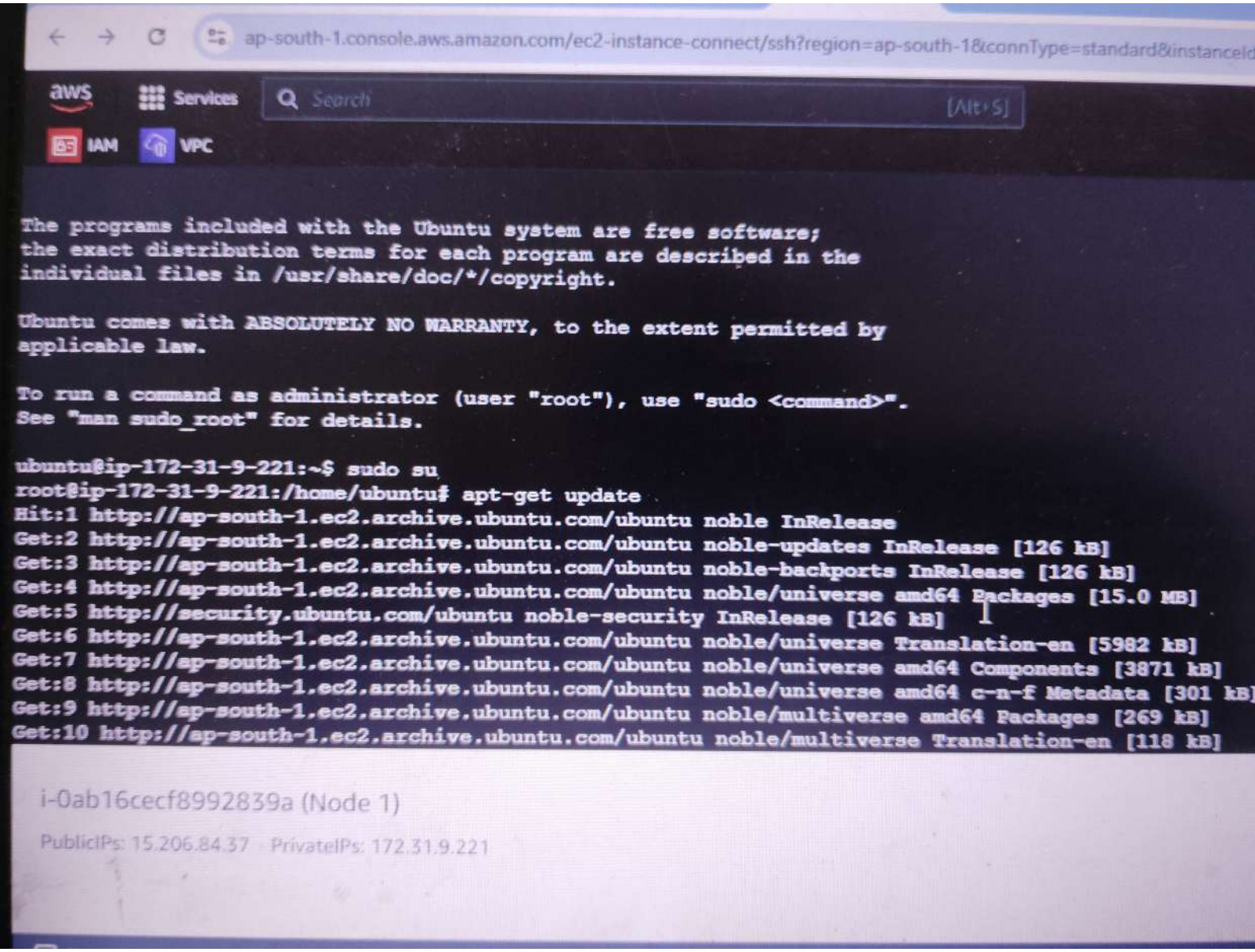
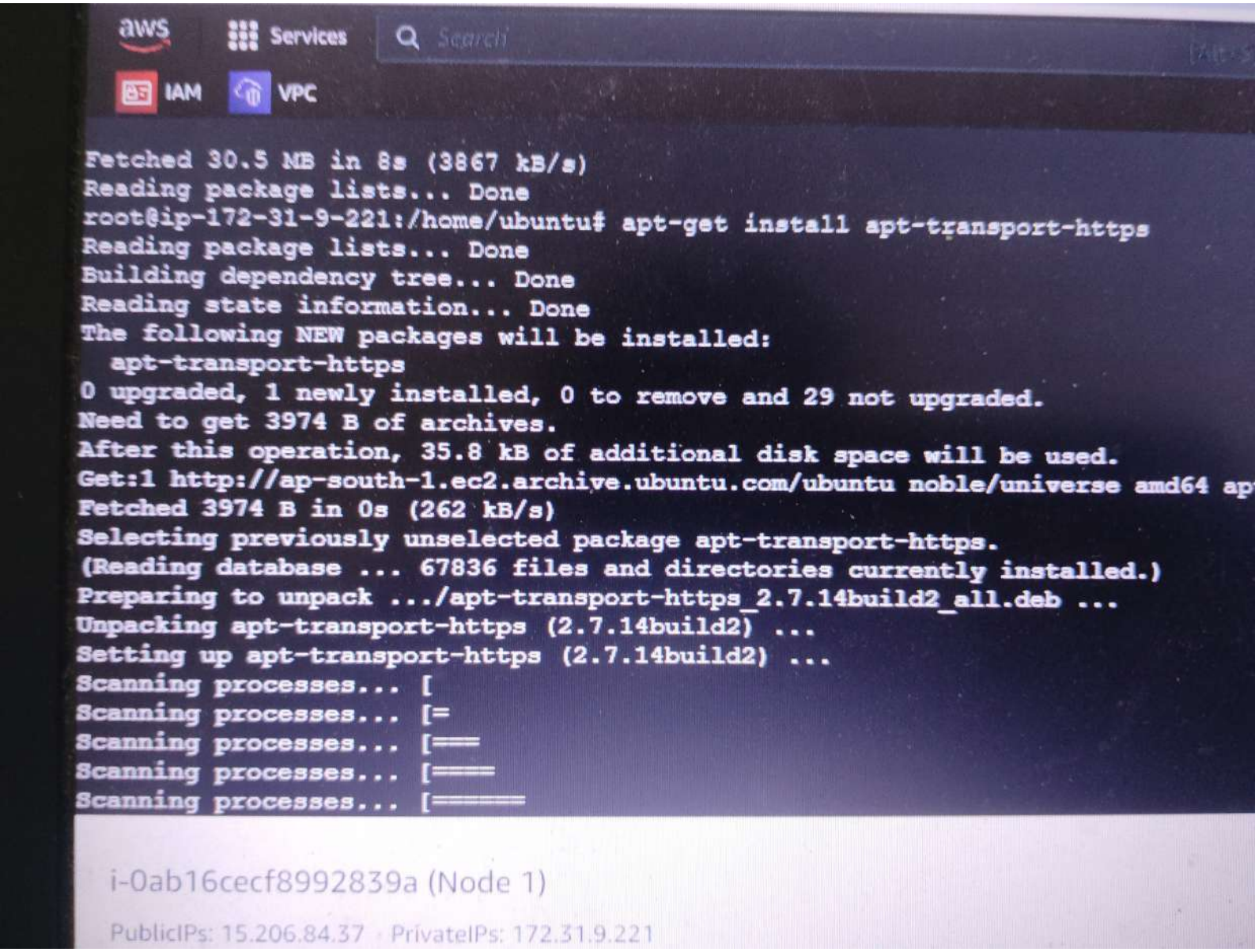
Type here to search


ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId
aws
Services
Search
[Alt+S]
IAM
VPC
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-172-31-9-221:~$ sudo su
root@ip-172-31-9-221:/home/ubuntu# apt-get update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:9 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:10 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
i-0ab16cecf8992839a (Node 1)
PublicIPs: 15.206.84.37 PrivateIPs: 172.31.9.221

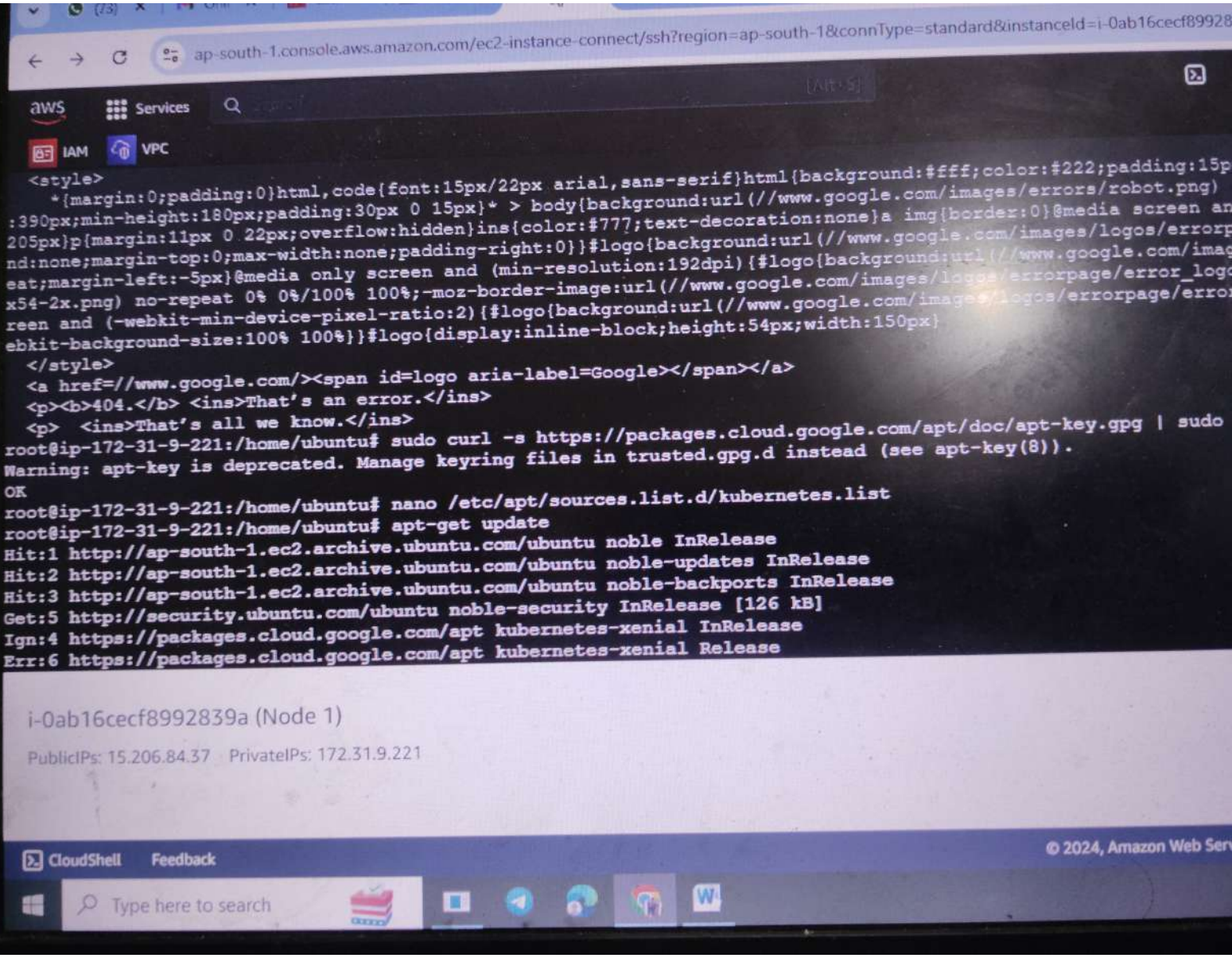

aws
Services
Search
IAM
VPC
Fetched 30.5 MB in 8s (3867 kB/s)
Reading package lists... Done
root@ip-172-31-9-221:/home/ubuntu# apt-get install apt-transport-https
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
apt-transport-https
0 upgraded, 1 newly installed, 0 to remove and 29 not upgraded.
Need to get 3974 B of archives.
After this operation, 35.8 kB of additional disk space will be used.
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 ap
Fetched 3974 B in 0s (262 kB/s)
Selecting previously unselected package apt-transport-https.
(Reading database ... 67836 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_2.7.14build2_all.deb ...
Unpacking apt-transport-https (2.7.14build2) ...
Setting up apt-transport-https (2.7.14build2) ...
Scanning processes... [
Scanning processes... [=
Scanning processes... [===
Scanning processes... [====
Scanning processes... [======
i-0ab16cecf8992839a (Node 1)
PublicIPs: 15.206.84.37 PrivateIPs: 172.31.9.221

```
Scanning linux images... [==========================================================
Scanning linux images...


Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@ip-172-31-9-221:/home/ubuntu# docker --version
Docker version 24.0.7, build 24.0.7-0ubuntu4.1
root@ip-172-31-9-221:/home/ubuntu# systemctl start docker
root@ip-172-31-9-221:/home/ubuntu# systemctl enable docker
root@ip-172-31-9-221:/home/ubuntu#
sudo curl -s https://packages.cloud.google.com/apt... | sudo apt-key add
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see a
gpg: no valid OpenPGP data found.
root@ip-172-31-9-221:/home/ubuntu#
sudo curl -s https://packages.cloud.google.com/apt | sudo apt-key add
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see a
```

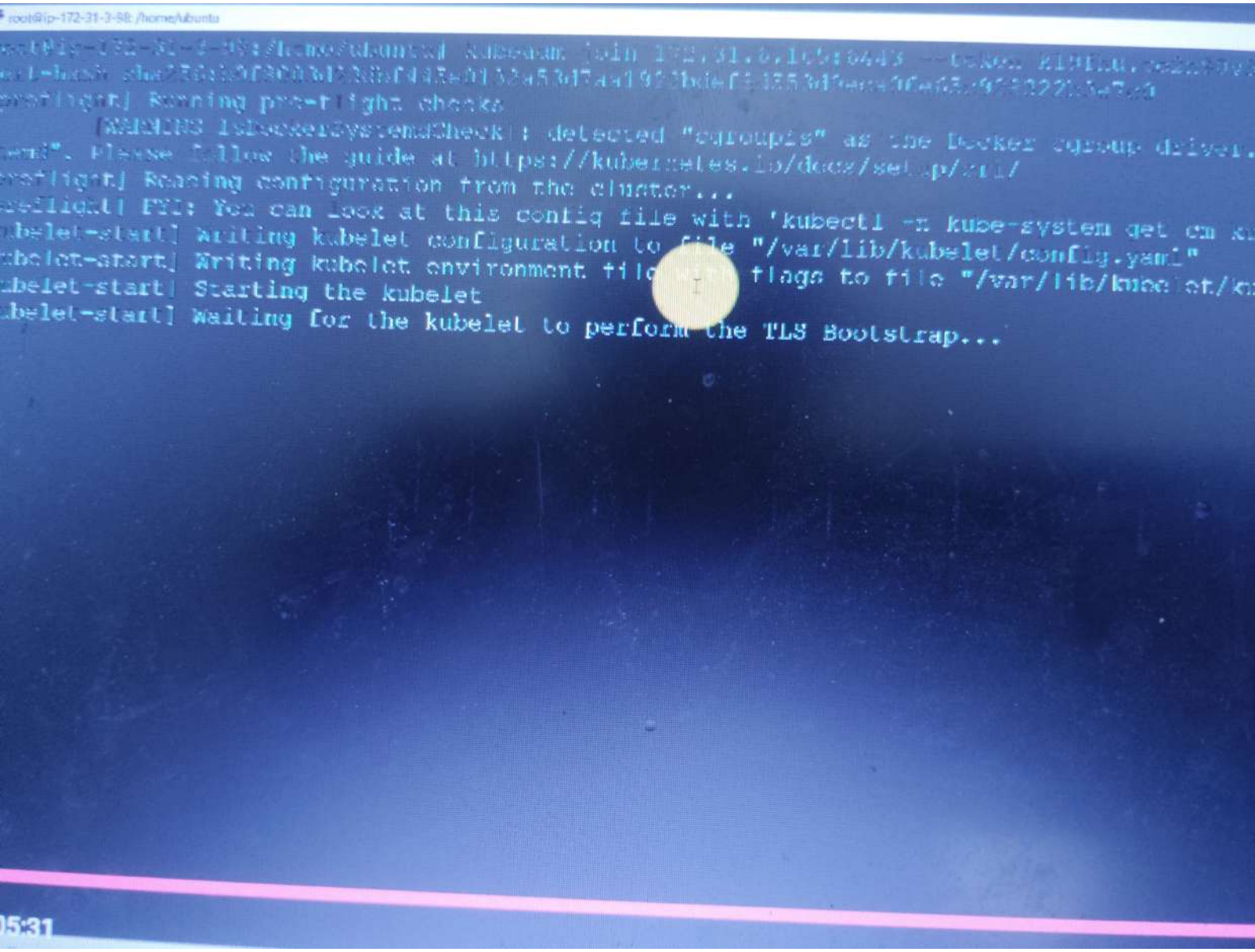
i-0ab16cecf8992839a (Node 1)

PublicIPs: 15.206.84.37 PrivateIPs: 172.31.9.221

CloudShell Feedback


ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId=i-0ab16cecf89928
aws
Services
IAM
VPC
<style>
*{margin:0;padding:0}html,code{font:15px/22px arial,sans-serif}html{background:#fff;color:#222;padding:15p
:390px;min-height:180px;padding:30px 0 15px}* > body{background:url(//www.google.com/images/errors/robot.png)
205px}p{margin:11px 0 22px;overflow:hidden}ins{color:#777;text-decoration:none}a img{border:0}@media screen an
nd:none;margin-top:0;max-width:none;padding-right:0}}#logo{background:url(//www.google.com/images/logos/errorp
eat;margin-left:-5px}@media only screen and (min-resolution:192dpi){#logo{background:url(//www.google.com/imag
x54-2x.png) no-repeat 0% 0%/100% 100%;-moz-border-image:url(//www.google.com/images/logos/errorpage/error_logo
reen and (-webkit-min-device-pixel-ratio:2){#logo{background:url(//www.google.com/images/logos/errorpage/erro
ebkit-background-size:100% 100%}}#logo{display:inline-block;height:54px;width:150px}
</style>

<p>404. <ins>That's an error.</ins>
<p> <ins>That's all we know.</ins>
root@ip-172-31-9-221:/home/ubuntu# sudo curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
OK
root@ip-172-31-9-221:/home/ubuntu# nano /etc/apt/sources.list.d/kubernetes.list
root@ip-172-31-9-221:/home/ubuntu# apt-get update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Ign:4 https://packages.cloud.google.com/apt kubernetes-xenial InRelease
Err:6 https://packages.cloud.google.com/apt kubernetes-xenial Release
i-0ab16cecf8992839a (Node 1)
PublicIPs: 15.206.84.37 PrivateIPs: 172.31.9.221
CloudShell
Feedback
© 2024, Amazon Web Ser
Type here to search


root@ip-172-31-3-98: /home/ubuntu
[preflight] Running pre-flight checks
[WARNING IsDockerSystemdCheck]: detected "cgroupfs" as the Docker cgroup driver.
[preflight] Reading configuration from the cluster...
[preflight] FYI: You can look at this config file with 'kubectl -n kube-system get cm
[kubelet-start] Writing kubelet configuration to file "/var/lib/kubelet/config.yaml"
[kubelet-start] Writing kubelet environment file with flags to file "/var/lib/kubelet/
[kubelet-start] Starting the kubelet
[kubelet-start] Waiting for the kubelet to perform the TLS Bootstrap...

```
root@ip-172-31-6-165:/home/ubuntu# kubectl get nodes
NAME                STATUS   ROLES                  AGE     VERSION
ip-172-31-15-102    Ready    <none>                 93s     v1.21.1
ip-172-31-3-98      Ready    <none>                 47s     v1.21.1
ip-172-31-6-165     Ready    control-plane,master   5m34s   v1.21.1
root@ip-172-31-6-165:/home/ubuntu#
```

-Login to aws

- launch 3 instance

- ubuntu 16.04 (t2 medium)

- connect all 3 instance

- access all the 3 instance (1 master, 2 nodes

Commands common for master & node

- sudo su

- apt-get update

- apt-get install apt-transport-https

This https is needed for intra cluster command (particularly from control plane to individual pods)

Now install docker on all 3 instances

- apt install docker.io -y

- docker --version

- systemctl start docker

- systemctl enable docker

setup open GPG key. This is requires for intra cluster communication. It will be added to source key on this node. i,e when k8s sends signed info to our host, it is going to accept those information because this open GPG key is present in the source key.

- sudo curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key add

Edit source list file (apt-get install nano)

- nano /etc/apt/sources.list.d/kubernetes.list

- deb http://apt.kubernetes.io/ kubernetes-xenial main

exit from nano -> ctrl+X -> caps+Y -> enter

-

apt-get update

apt-get install -y kubelet kubeadm kubectl kubernetes-cni

Bootstrapping the Master Node (in Master)

To initialize K8s cluster

- kubeadm init

You will get one long command started from "kubeadm join 172.76....." copy this command and save on notepad

create both .kube and its parent directories (-p)

- mkdir -p $HOME/.kube

Cpoy configuration to kube directory (in config file)

- sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config

Provide permission to config file

- chown $(id -u):$(id -g) $HOME/.kube/config

Deploy flanned node network for its repository path.
flannel is going to place a binary in each node

- kubectl apply -f
[raw.githubusercontent.com/coreos/flannel/ma..

-](raw.githubusercontent.com/coreos/flannel/ma..-)
kubectl apply -f
[raw.githubusercontent.com/coreos/flannel/ma..

Configure](raw.githubusercontent.com/coreos/flannel/ma..Configure) worker nodes

- paste long command in both the nodes

Go to master

- kubectl get nodes