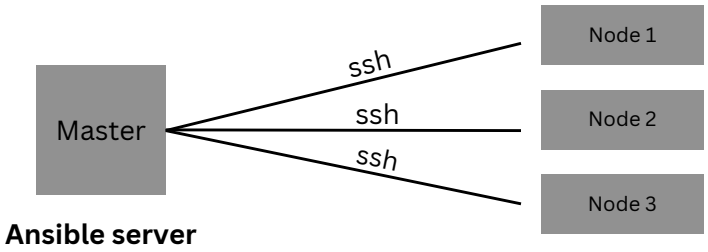
About Ansible:

It is an configuration management tool. that uses YAML scripting and works on push management. One master can control configuration of multiple servers.



EG: Suppose we have to install a package on hundred's of servers we use ansible instead of manual process because it automates the task.

1. It is an configuration management tool.
2. It is an Push-based mechanism.
3. It turns code into infrastructure.
4. Ansible is Agentless.

Advantages of Ansible

1. Light Weight.
2. There is no consistence regarding o.s can run anywhere eg: linux, ubuntu. centos etc.
3. It is very secure due to Agentless and ssh security feature.

Important terms:

1. Ansible Server: It is the machine where ansible package is installed. And we run playbooks.
2. Inventory: It is the file containing client server.
3. Inventory file location: /etc/ansible/hosts

There are 3 Methods to push code

- **Ad-Hoc:** It is simple linux commands. In ad-hoc the is no idempotency. If you run the same ad-hoc command multiple times it will keep overwriting of existing configurations. Ad-hoc commands are used to run quick functions such as to on or off the machine, to create files etc. This commands are of one time usage.

commands

1. ubuntu@ip-172-31-41-90:~$ ansible demo -a "ls"
2. ubuntu@ip-172-31-41-90:~$ ansible demo [0] -a "touch file1" - (to create file in i node of demo group)
3. ubuntu@ip-172-31-41-90:~$ ansible all -a "touch file1" (to create files in all nodes)

- **Modules:** Is an single working and idempotency is present. Modules means commands of set of commands to be executed from client side.

commands

1. ubuntu@ip-172-31-41-90:~$ ansible demo -b -m apt -a
2. ubuntu@ip-172-31-41-90:~$ ansible demo -b -m apt -a "pkg=apache2 state=latest"
3. ubuntu@ip-172-31-41-90:~$ ansible demo -b -m service -a "name=apache2 state=started

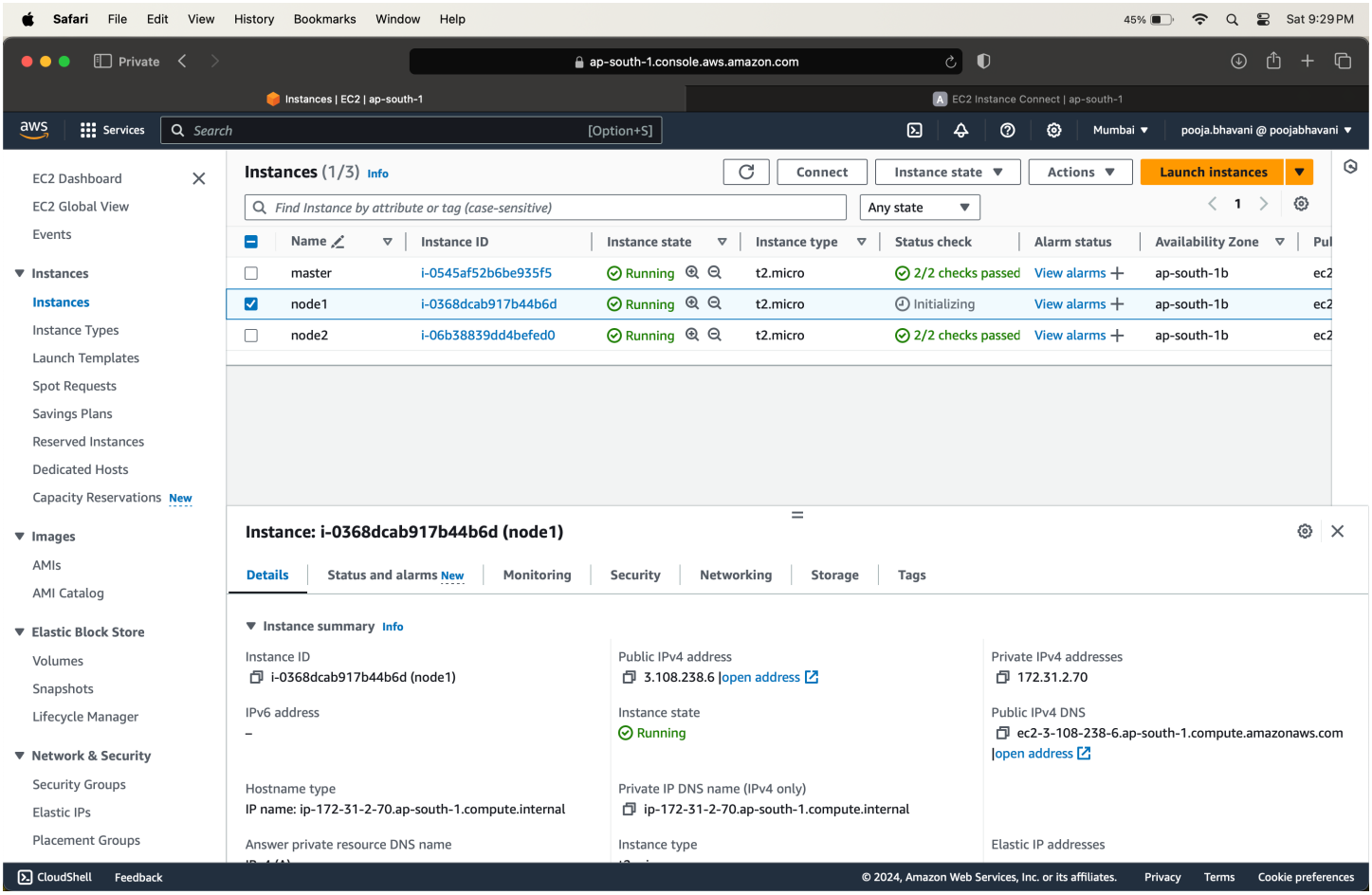
- **Playbook:** Multiple modules are known as playbooks.Playbook is written in YAML language. It contains variables, tasks, handlers, files, templates and roles

Playbooks are divided into sections:

1. Target section: To define the host (eg: node, group) where playbook task should be executed.
2. Task section: List of all modules that we need to run in an order.
3. Variable section: To define variables.

Ansible commands

Launch EC2 instances one will be master where ansible will be installed and others nodes that will be connected to master. Install ansible and to ssh into nodes open vim ansible_key and put your private key now using that key we can connect other instances.


Safari File Edit View History Bookmarks Window Help
45% Sat 9:29 PM
Private
ap-south-1.console.aws.amazon.com
Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south-1
aws Services Search [Option+S]
Mumbai
pooja.bhavani @ poojabhavani
EC2 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
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups
Elastic IPs
Placement Groups
Instances (1/3) Info
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
Any state
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
master i-0545af52b6be935f5 Running t2.micro 2/2 checks passed View alarms ap-south-1b
node1 i-0368dcab917b44b6d Running t2.micro Initializing View alarms ap-south-1b
node2 i-06b38839dd4befed0 Running t2.micro 2/2 checks passed View alarms ap-south-1b
Instance: i-0368dcab917b44b6d (node1)
Details
Status and alarms New
Monitoring
Security
Networking
Storage
Tags
Instance summary Info
Instance ID
i-0368dcab917b44b6d (node1)
Public IPv4 address
3.108.238.6 |open address
Private IPv4 addresses
172.31.2.70
IPv6 address
–
Instance state
Running
Public IPv4 DNS
ec2-3-108-238-6.ap-south-1.compute.amazonaws.com |open address
Hostname type
IP name: ip-172-31-2-70.ap-south-1.compute.internal
Private IP DNS name (IPv4 only)
ip-172-31-2-70.ap-south-1.compute.internal
Answer private resource DNS name
Instance type
Elastic IP addresses
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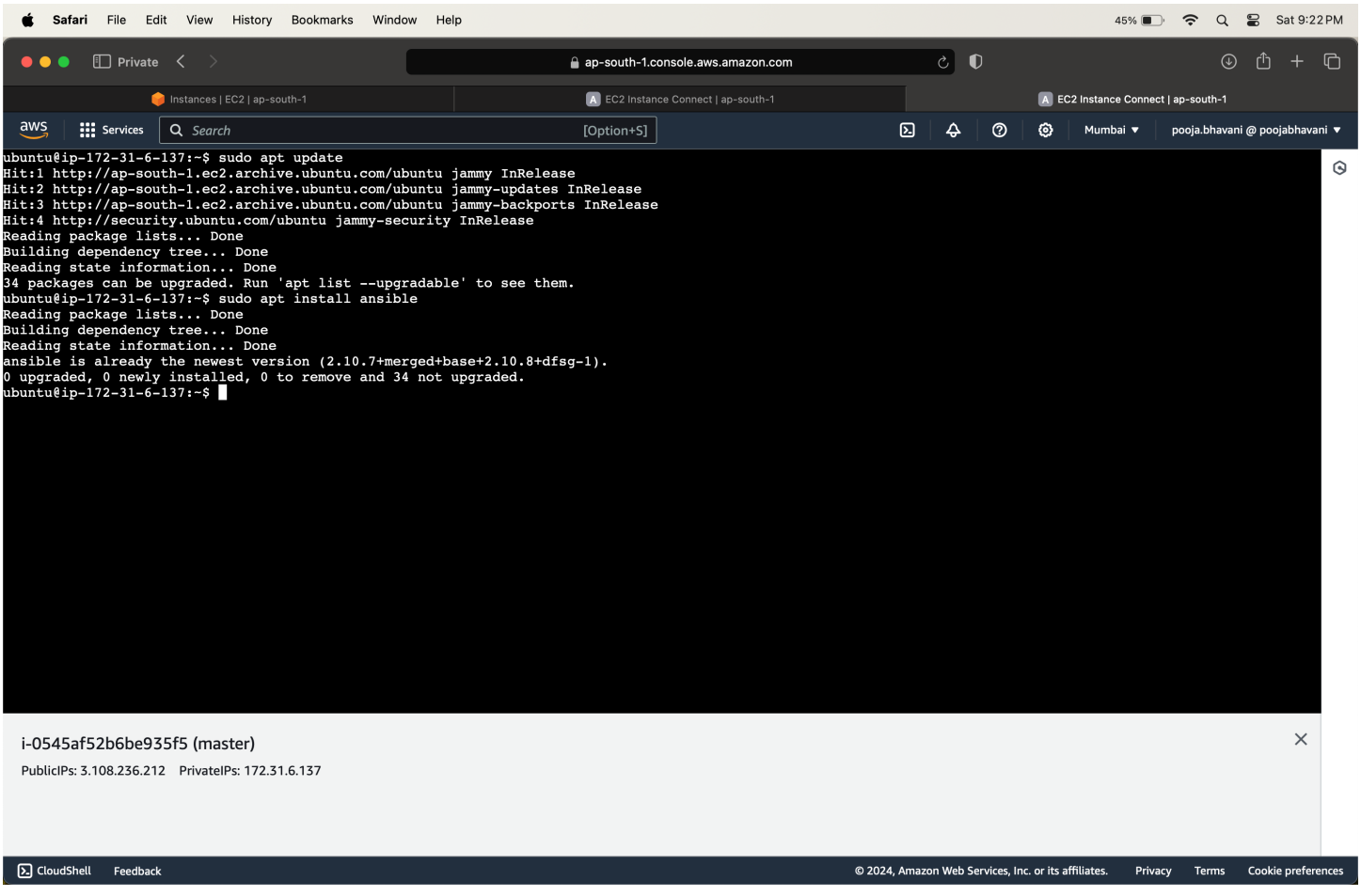
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45% Sat 9:22 PM
Private
ap-south-1.console.aws.amazon.com
Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south-1
EC2 Instance Connect | ap-south-1
aws Services Search [Option+S]
Mumbai
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ubuntu@ip-172-31-6-137:~$ sudo apt update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
34 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-172-31-6-137:~$ sudo apt install ansible
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ansible is already the newest version (2.10.7+merged+base+2.10.8+dfsg-1).
0 upgraded, 0 newly installed, 0 to remove and 34 not upgraded.
ubuntu@ip-172-31-6-137:~$
i-0545af52b6be935f5 (master)
PublicIPs: 3.108.236.212 PrivateIPs: 172.31.6.137
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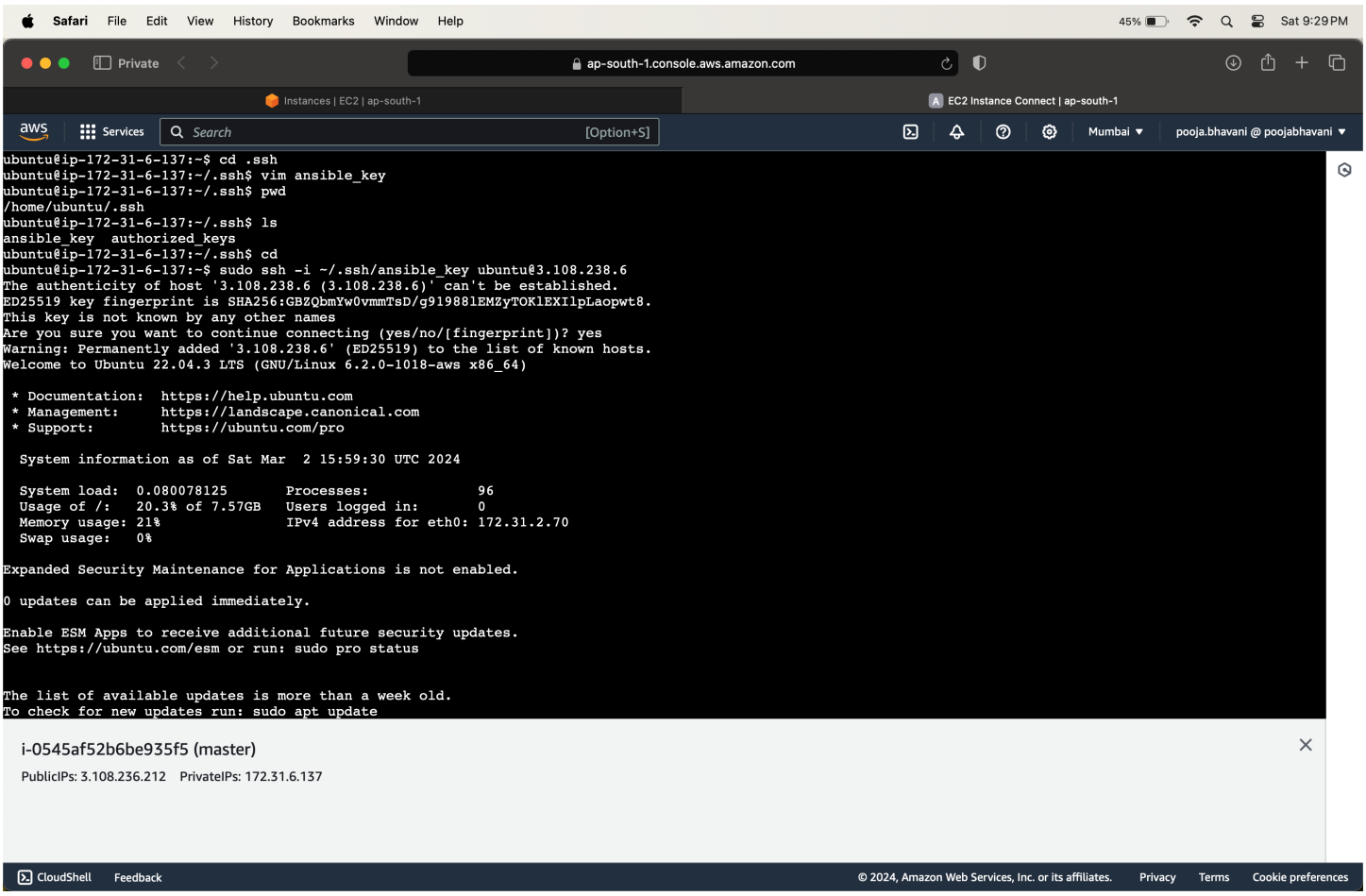
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Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south-1
aws Services Search [Option+S]
Mumbai
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ubuntu@ip-172-31-6-137:~$ cd .ssh
ubuntu@ip-172-31-6-137:~/.ssh$ vim ansible_key
ubuntu@ip-172-31-6-137:~/.ssh$ pwd
/home/ubuntu/.ssh
ubuntu@ip-172-31-6-137:~/.ssh$ ls
ansible_key authorized_keys
ubuntu@ip-172-31-6-137:~/.ssh$ cd
ubuntu@ip-172-31-6-137:~$ sudo ssh -i ~/.ssh/ansible_key ubuntu@3.108.238.6
The authenticity of host '3.108.238.6 (3.108.238.6)' can't be established.
ED25519 key fingerprint is SHA256:GBZQbmYw0vmmTsD/g91988lEMZyTOKlEXIlpLaopwt8.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '3.108.238.6' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-1018-aws x86_64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/pro
System information as of Sat Mar 2 15:59:30 UTC 2024
System load: 0.080078125 Processes: 96
Usage of /: 20.3% of 7.57GB Users logged in: 0
Memory usage: 21% IPv4 address for eth0: 172.31.2.70
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
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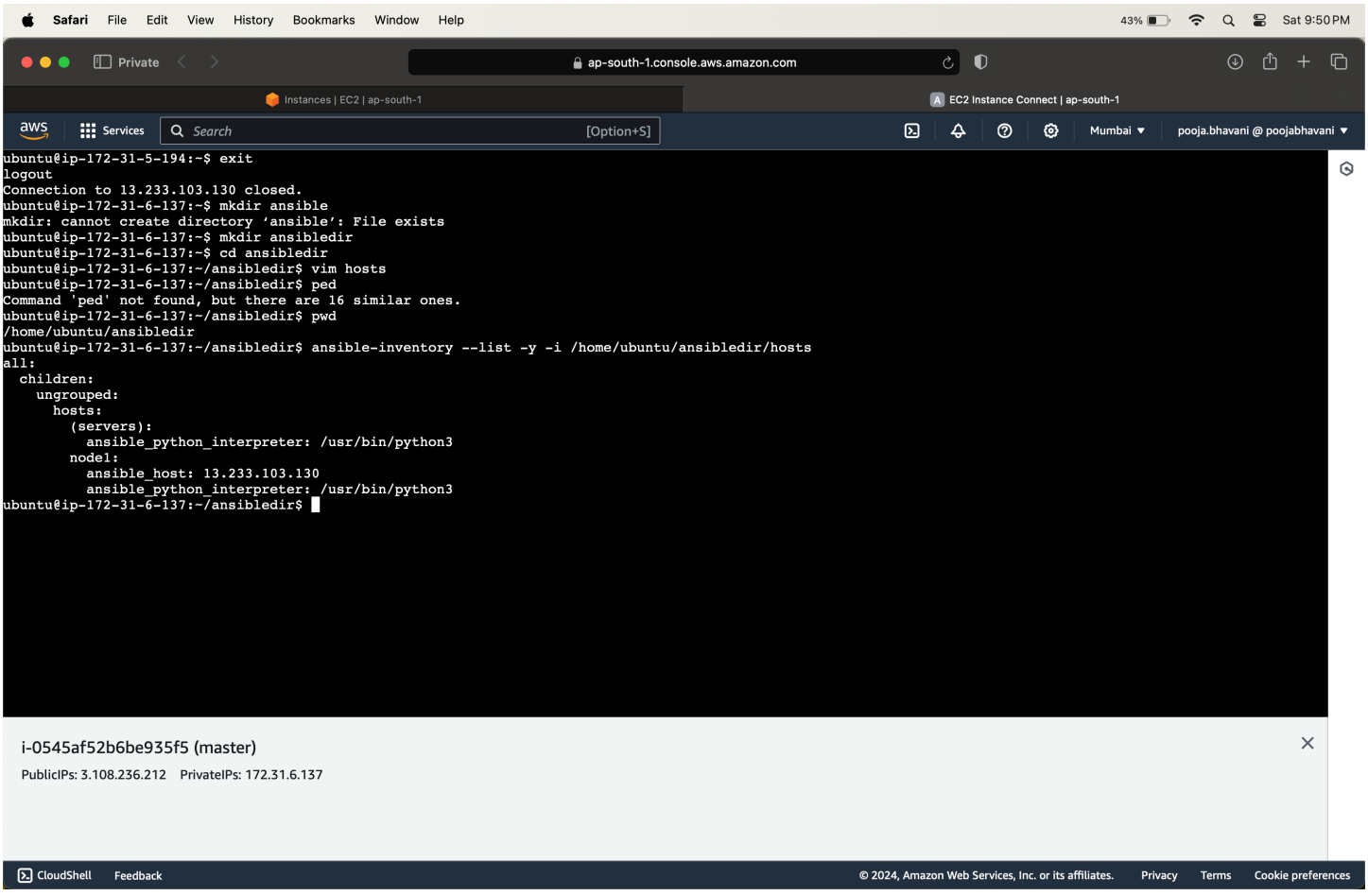
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43% Sat 9:50 PM
Private
ap-south-1.console.aws.amazon.com
Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south-1
aws Services Search [Option+S]
Mumbai
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ubuntu@ip-172-31-5-194:~$ exit
logout
Connection to 13.233.103.130 closed.
ubuntu@ip-172-31-6-137:~$ mkdir ansible
mkdir: cannot create directory ‘ansible’: File exists
ubuntu@ip-172-31-6-137:~$ mkdir ansibledir
ubuntu@ip-172-31-6-137:~$ cd ansibledir
ubuntu@ip-172-31-6-137:~/ansibledir$ vim hosts
ubuntu@ip-172-31-6-137:~/ansibledir$ ped
Command 'ped' not found, but there are 16 similar ones.
ubuntu@ip-172-31-6-137:~/ansibledir$ pwd
/home/ubuntu/ansibledir
ubuntu@ip-172-31-6-137:~/ansibledir$ ansible-inventory --list -y -i /home/ubuntu/ansibledir/hosts
all:
children:
ungrouped:
hosts:
(servers):
ansible_python_interpreter: /usr/bin/python3
node1:
ansible_host: 13.233.103.130
ansible_python_interpreter: /usr/bin/python3
ubuntu@ip-172-31-6-137:~/ansibledir$
i-0545af52b6be935f5 (master)
PublicIPs: 3.108.236.212 PrivateIPs: 172.31.6.137
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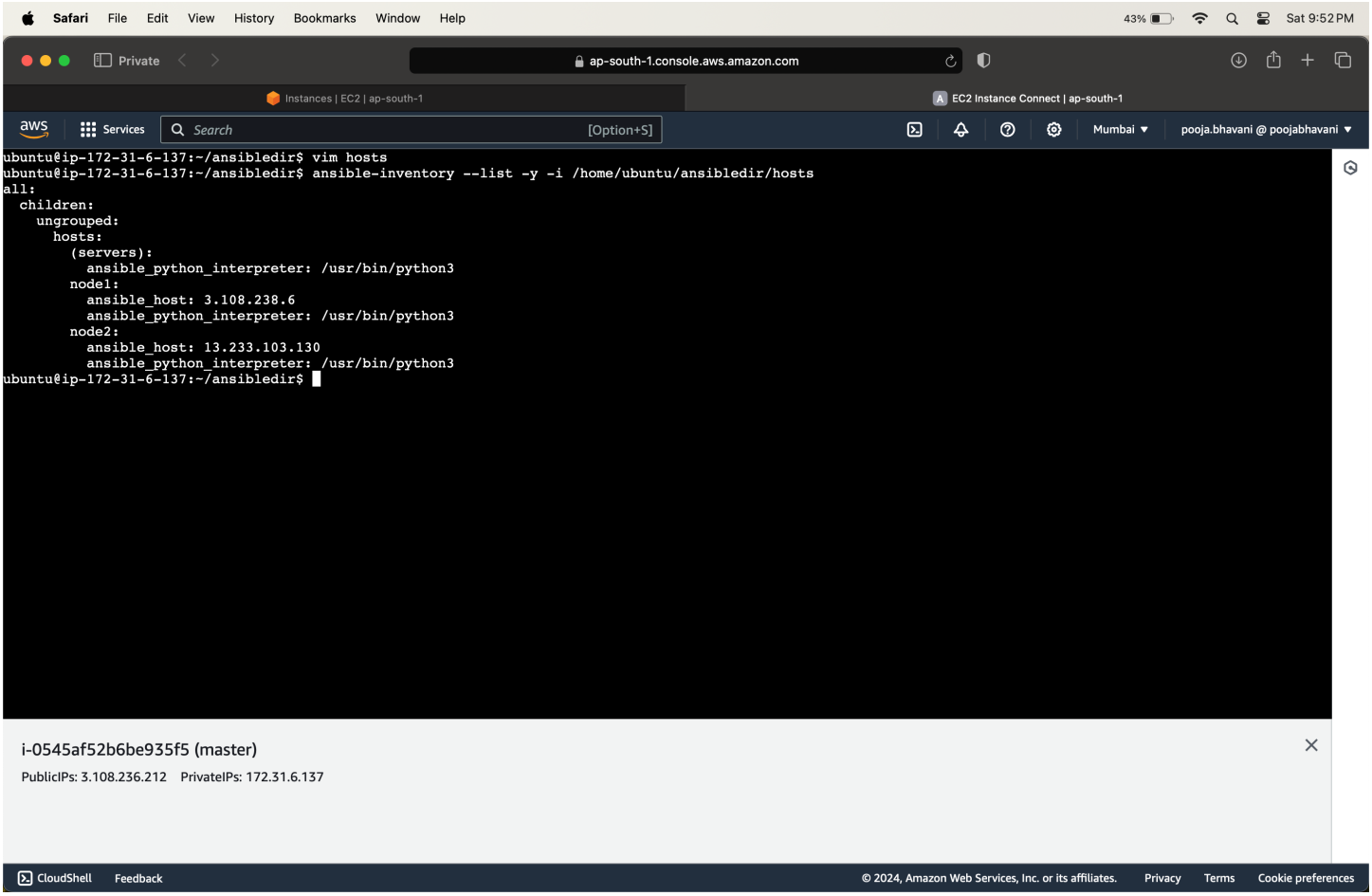
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43% Sat 9:52 PM
Private
ap-south-1.console.aws.amazon.com
Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south-1
aws Services Search [Option+S]
Mumbai
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ubuntu@ip-172-31-6-137:~/ansibledir$ vim hosts
ubuntu@ip-172-31-6-137:~/ansibledir$ ansible-inventory --list -y -i /home/ubuntu/ansibledir/hosts
all:
children:
ungrouped:
hosts:
(servers):
ansible_python_interpreter: /usr/bin/python3
node1:
ansible_host: 3.108.238.6
ansible_python_interpreter: /usr/bin/python3
node2:
ansible_host: 13.233.103.130
ansible_python_interpreter: /usr/bin/python3
ubuntu@ip-172-31-6-137:~/ansibledir$
i-0545af52b6be935f5 (master)
PublicIPs: 3.108.236.212 PrivateIPs: 172.31.6.137
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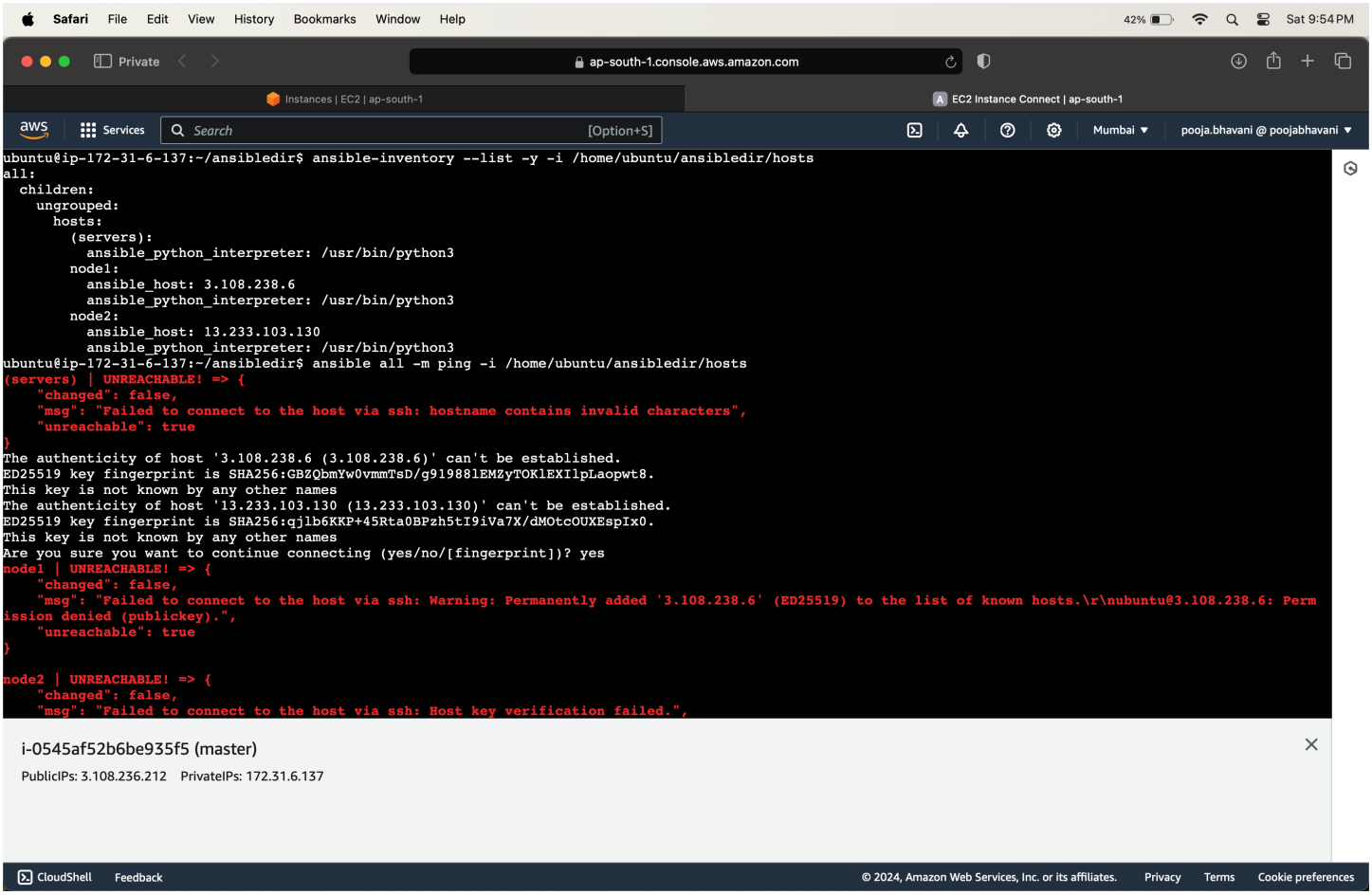
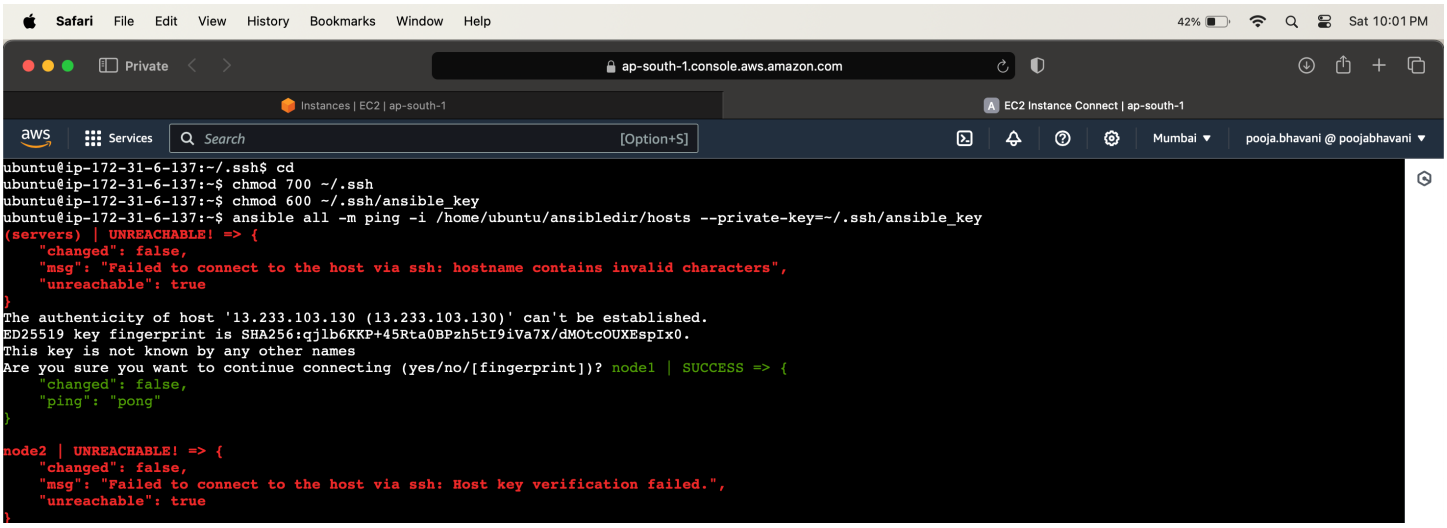
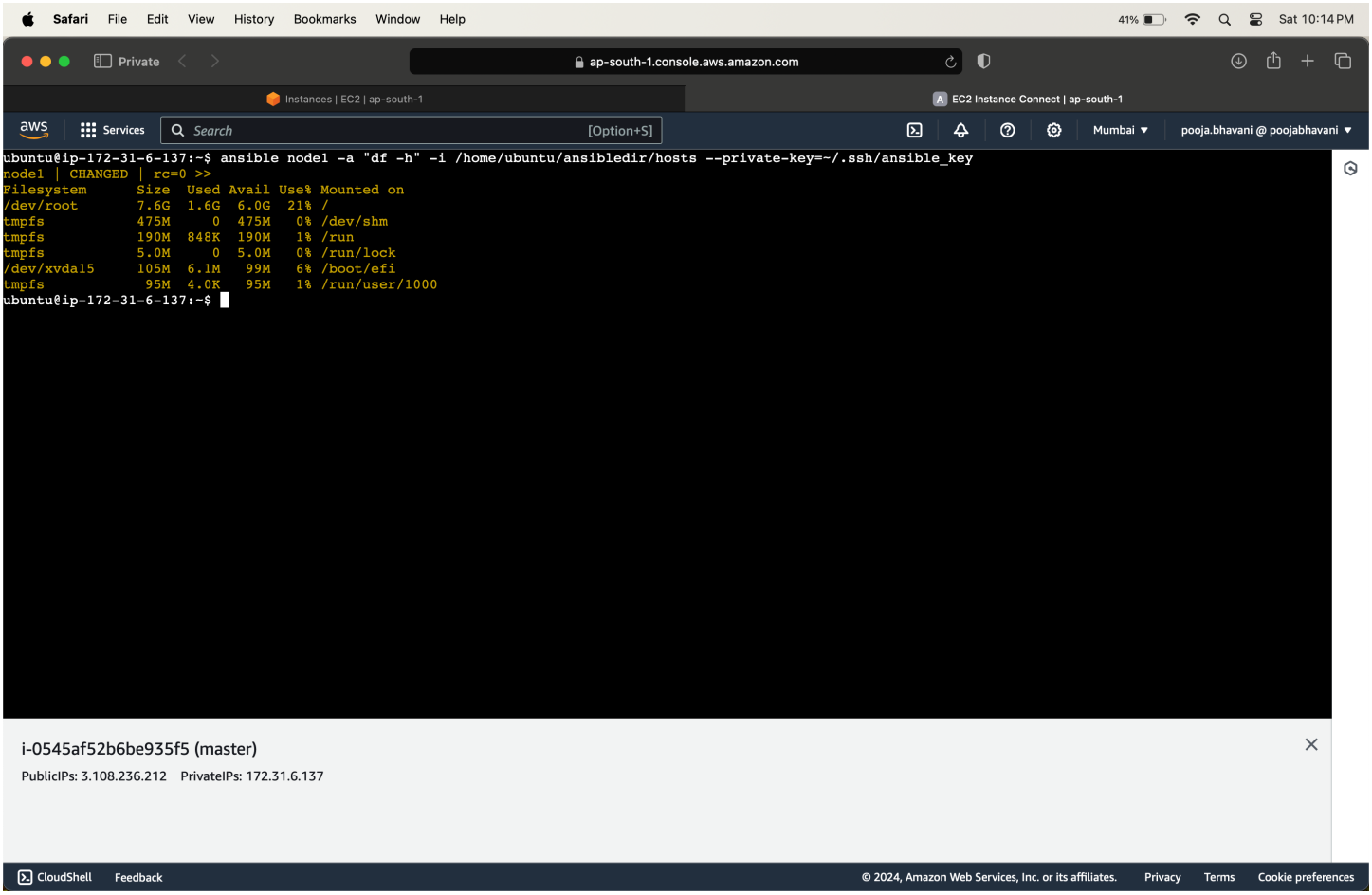


Now we first need to give private key permissions





To check memory usage.

to know the uptime of servers