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Sakthi Sri Santh M

Design and Implementation of a Centralized Cloud-Based IT Infrastructure Using Amazon Web Services

Problem Statement

A small enterprise with twenty-five employees was facing frequent system downtime and difficulty in managing organizational data due to the absence of a centralized IT infrastructure. All applications and files were stored on individual employee systems, which resulted in unstructured data storage, lack of backup mechanisms, and no secure method for remote access. The organization also had limited control over user access and system maintenance, making it difficult for the IT team to manage resources efficiently. To overcome these challenges, the company required a stable, secure, and centralized infrastructure that could be managed remotely without increasing operational complexity.

Proposed Solution

To address the identified problems, a centralized cloud-based infrastructure was designed and implemented using Amazon Web Services. A cloud-hosted virtual machine was created using AWS EC2 to act as a central server for the organization. Secure remote access was enabled using SSH with key-based authentication. Centralized file storage and user management were configured within the server to ensure controlled access. A snapshot-based backup and recovery mechanism was implemented using AWS AMI to ensure data safety and business continuity. The entire setup was performed manually using free-tier resources to simulate real-world system administration tasks.

Step 1: Accessing the AWS Management Console

The AWS Management Console was accessed using a web browser to manage and monitor cloud resources. The EC2 service was selected from the console to begin the virtual machine setup process.

The screenshot shows the AWS Console Home page. On the left, there's a 'Recently visited' section with a placeholder image of a cube and a message 'No recently visited services'. Below it, links to EC2, S3, CloudWatch, and IAM. In the center, the 'Applications' section shows '0' applications with a 'Create application' button. To the right, there's a 'Cost and usage' section with a pie chart icon. At the bottom, there are links for CloudShell, Feedback, and Console Mobile App.

Step 2: Launching the EC2 Virtual Machine

A new EC2 instance was launched by selecting Ubuntu Server as the operating system and choosing a free-tier eligible instance type. The instance was configured manually to ensure simplicity and stability.

The screenshot shows the AWS EC2 home page. The left sidebar includes sections for Dashboard, EC2 Global View, Events, Instances (with sub-options like Instances, Instance Types, Launch Templates, etc.), Images, Elastic Block Store, and Network & Security. The main content area features a large banner for 'Amazon Elastic Compute Cloud (EC2)' with the tagline 'Create, manage, and monitor virtual servers in the cloud.' It highlights 'Benefits and features' such as 'EC2 offers ultimate scalability and control' and lists advantages like high control, variety of server sizes, and global scalability. It also provides links to 'Launch a virtual server', 'View dashboard', 'Get started walkthroughs', and 'Get started tutorial'. Additional actions include 'View running instances' and 'Migrate a server'. A 'Pricing (US)' section is also present.

SKET Instances | EC2 | us-east-1

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:

EC2 > Instances

Instances Info

Find Instance by attribute or tag (case-sensitive)

All states

Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone | Public IPv4

No instances

You do not have any instances in this region

Launch instances

Select an instance

CloudShell Feedback Console Mobile App

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This screenshot shows the AWS EC2 Instances page. The left sidebar includes options like Dashboard, EC2 Global View, Instances (selected), Images, Elastic Block Store, Network & Security, and CloudShell. The main content area displays a table header for 'Instances Info' with columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, and Public IPv4. A message at the top states 'No instances' and 'You do not have any instances in this region'. A prominent blue 'Launch instances' button is located below the table. The bottom of the page features links for CloudShell, Feedback, and Console Mobile App, along with standard AWS footer links for Privacy, Terms, and Cookie preferences.

SKET Launch an instance | EC2 | us-east-1

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

EC2 > Instances > Launch an instance

Launch an instance

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

Name: Central-IT-Server

Add additional tags

Application and OS Images (Amazon Machine Image)

An AMI contains the operating system, application server, and applications for your instance. If you don't see a suitable AMI below, use the search field or choose Browse more AMIs.

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

Quick Start

Amazon Linux (selected)

macOS

Ubuntu

Windows

Red Hat

SUSE Linux

Debian

Browse more AMIs

Amazon Machine Image (AMI)

Amazon Linux 2023 kernel-6.1 AMI
ami-0532be01f26a3de55 (64-bit (x86), uefi-preferred) / ami-0bb7267a511c0a8e8 (64-bit (Arm), uefi)
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

Summary

Number of instances: 1

Software Image (AMI): Amazon Linux 2023 AMI 2023.10...read more
ami-0532be01f26a3de55

Virtual server type (instance type): t3.micro

Firewall (security group): New security group

Storage (volumes): 1 volume(s) - 8 GiB

Cancel

Launch instance

Preview code

CloudShell Feedback Console Mobile App

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This screenshot shows the 'Launch an instance' page. It begins with a brief introduction about creating instances. The 'Name and tags' section has 'Central-IT-Server' entered. The 'Application and OS Images (Amazon Machine Image)' section shows a grid of operating systems: Amazon Linux (selected), macOS, Ubuntu, Windows, Red Hat, SUSE Linux, and Debian. Below this is a search bar for 'Search our full catalog including 1000s of application and OS images'. The 'Quick Start' section shows a row of icons for different AMIs: Amazon Linux, macOS, Ubuntu, Windows, Red Hat, SUSE Linux, and Debian. To the right of this is a link to 'Browse more AMIs'. The 'Amazon Machine Image (AMI)' section details the selected AMI: 'Amazon Linux 2023 kernel-6.1 AMI' with ID 'ami-0532be01f26a3de55'. It specifies '64-bit (x86)', 'uefi-preferred', '64-bit (Arm)', 'uefi', 'hvm' virtualization, 'ENA enabled: true', and 'Root device type: ebs'. A note indicates it's 'Free tier eligible'. To the right is a 'Summary' panel showing '1' instance. It also lists the 'Software Image (AMI)', 'Virtual server type (instance type)', 'Firewall (security group)', and 'Storage (volumes)'. At the bottom are 'Cancel', 'Launch instance', and 'Preview code' buttons, along with standard AWS footer links.

Screenshot of the AWS EC2 Launch an instance page for launching an Ubuntu Server 24.04 LTS (HVM) instance.

Summary

- Number of instances: 1
- Software Image (AMI): Canonical, Ubuntu, 24.04, amd64... (ami-0b6c6bed2801a5cb)
- Virtual server type (instance type): t3.micro
- Firewall (security group): New security group
- Storage (volumes): 1 volume(s) - 8 GiB

Launch instance | **Preview code**

Application and OS Images (Amazon Machine Image)

An AMI contains the operating system, application server, and applications for your instance. If you don't see a suitable AMI below, use the search field or choose [Browse more AMIs](#).

Quick Start

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

Amazon Linux, macOS, Ubuntu, Windows, Red Hat, SUSE Linux, Debian

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).
Virtualization: hvm ENA enabled: true Root device type: ebs

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	Publish Date	Username
64-bit (x86)	ami-0b6c6bed2801a5cb	2025-12-12	ubuntu

Verified provider

CloudShell Feedback Console Mobile App

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Screenshot of the AWS EC2 Launch an instance page for launching an Ubuntu Server 24.04 LTS (HVM) instance.

Summary

- Number of instances: 1
- Software Image (AMI): Canonical, Ubuntu, 24.04, amd64... (ami-0b6c6bed2801a5cb)
- Virtual server type (instance type): t3.micro
- Firewall (security group): New security group
- Storage (volumes): 1 volume(s) - 8 GiB

Launch instance | **Preview code**

Instance type | [Info](#) | [Get advice](#)

Instance type

t3.micro
Family: t3 2 vCPU 1 GiB Memory Current generation: true
On-Demand Linux base pricing: 0.0104 USD per Hour
On-Demand Windows base pricing: 0.0196 USD per Hour
On-Demand Ubuntu Pro base pricing: 0.0139 USD per Hour
On-Demand SUSE base pricing: 0.0104 USD per Hour On-Demand RHEL base pricing: 0.0392 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

Select | [Create new key pair](#)

CloudShell Feedback Console Mobile App

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Screenshot of the AWS EC2 Launch an instance wizard.

Summary

- Number of instances: 1
- Software Image (AMI): Canonical, Ubuntu, 24.04, amd64... (ami-0b6cgebed2801a5cb)
- Virtual server type (instance type): t3.micro
- Firewall (security group): New security group
- Storage (volumes): 1 volume(s) - 8 GiB

Create key pair

Key pair name: central-server-key

Key pair type: RSA (selected)

Private key file format: .pem (selected)

Instructions: When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more](#)

Buttons: Cancel, Create key pair

Screenshot of the AWS EC2 Launch an instance wizard.

Summary

- Number of instances: 1
- Software Image (AMI): Canonical, Ubuntu, 24.04, amd64... (ami-0b6cgebed2801a5cb)
- Virtual server type (instance type): t3.micro
- Firewall (security group): New security group
- Storage (volumes): 1 volume(s) - 8 GiB

Network settings

VPC - required: Info

VPC: vpc-0189875927a51f1e3 (default)

Subnet: Info

subnet-0d17f28e8f4fb4a5e (selected)

Auto-assign public IP: Info

Disable

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

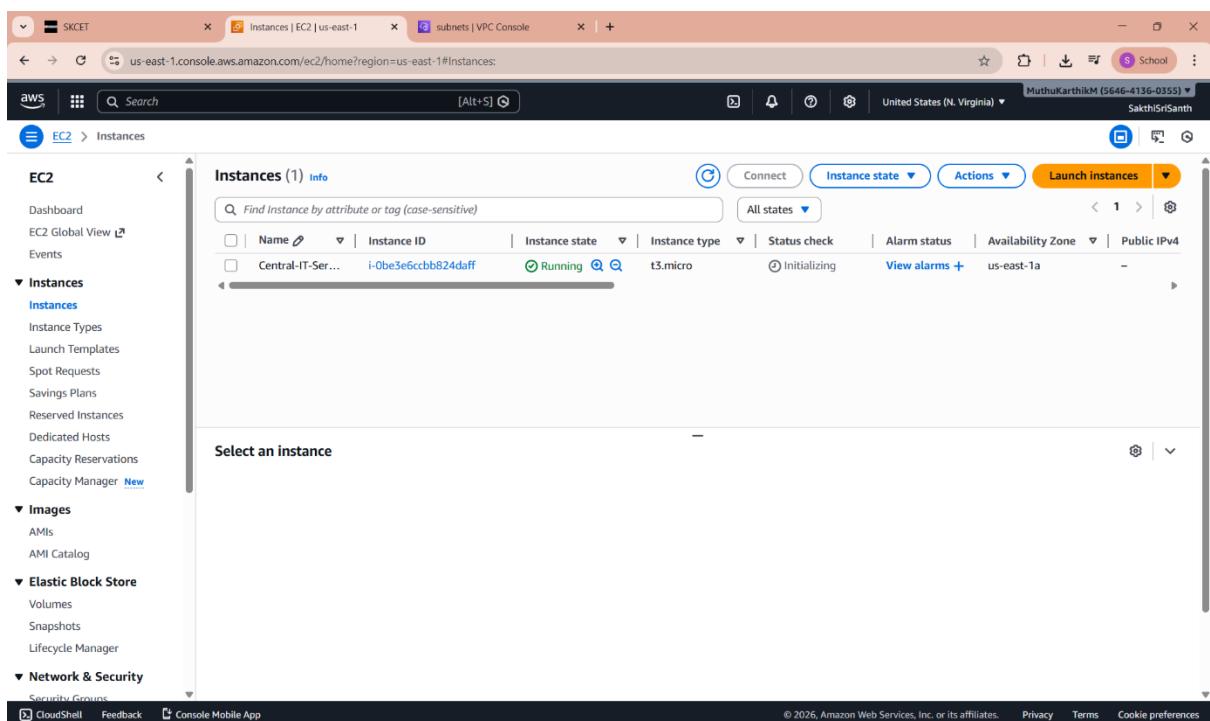
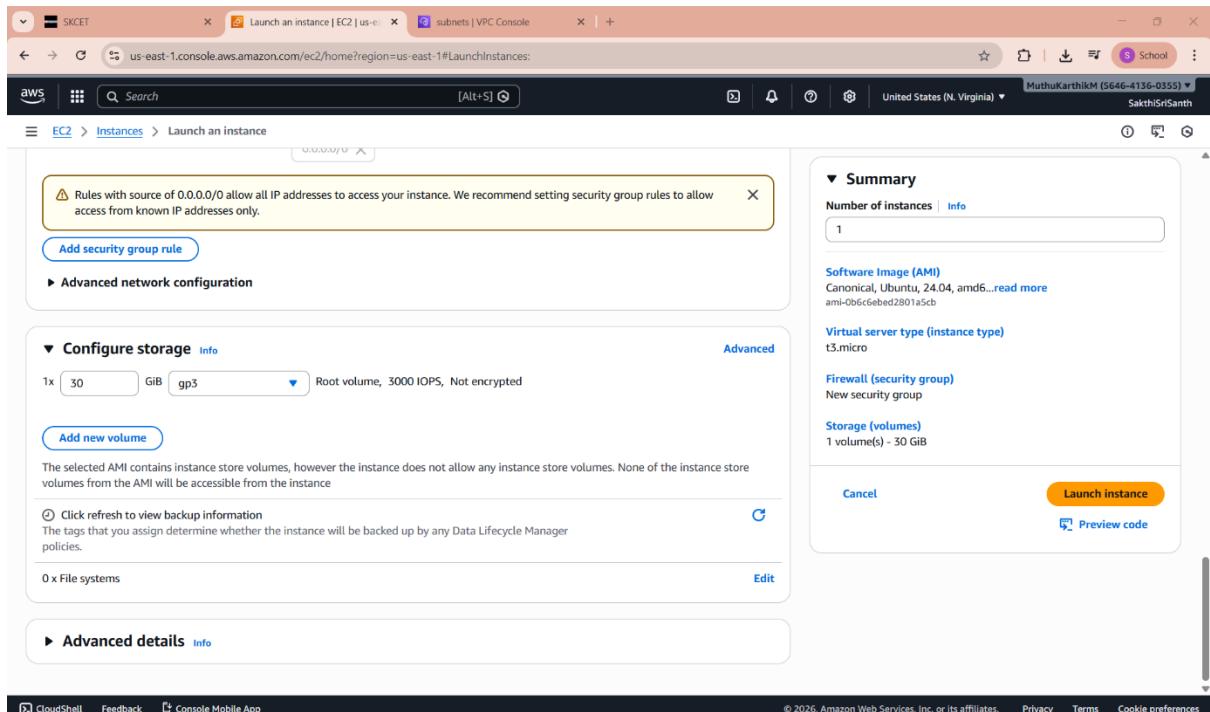
Select existing security group

Description - required: Info

launch-wizard-1 created 2026-02-07T03:38:49.185Z

Inbound Security Group Rules

Buttons: Cancel, Launch instance, Preview code



Step 3: Verifying EC2 Instance Status

After launching the instance, its status was verified to ensure that it was running successfully and had passed all system health checks.

The screenshot shows the AWS EC2 Instances page. The left sidebar is collapsed, and the main area displays a table of instances. One instance is listed:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
Central-IT-Ser...	i-0be3e6ccb824daff	Running	t3.micro	Initializing		us-east-1a	

Below the table, a section titled "Select an instance" is visible.

Step 4: Assigning a Public IP Address

An Elastic IP address was allocated and associated with the EC2 instance to enable secure remote access from external networks.

The screenshot shows the AWS Elastic IP addresses page. The left sidebar is collapsed, and the main area displays a table of elastic IP addresses. A message indicates "No Elastic IP addresses found in this Region".

Name	Allocated IPv4 addr...	Type	Allocation ID	Reverse DNS record	Assoc

Below the table, a section titled "Select an elastic IP address" is visible, containing a note about Public IP insights.

The screenshot shows the AWS EC2 console with the 'Elastic IP addresses' page open. The left sidebar includes options like Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Capacity Manager, Images, AMIs, AMI Catalog, Elastic Block Store, Volumes, Snapshots, Lifecycle Manager, Network & Security (selected), Security Groups, Elastic IPs (selected), Placement Groups, Key Pairs, Network Interfaces, Load Balancing, Load Balancers, and Target Groups. The main content area displays a table titled 'Elastic IP addresses (1)'. The table has columns for Name, Allocated IPv4 address, Type, Allocation ID, Reverse DNS record, and Associate with instance. A single row is present with the values: Name is empty, Allocated IPv4 address is '18.205.122.254', Type is 'Public IP', Allocation ID is 'eipalloc-0afc9a419b554eebc', Reverse DNS record is empty, and Associate with instance is empty. Below the table, a section titled 'Select an elastic IP address' contains a note about viewing IP address usage and recommendations. The bottom of the screen shows standard AWS navigation links: CloudShell, Feedback, Console Mobile App, Privacy, Terms, and Cookie preferences.

This screenshot is identical to the one above, but it includes a green success message at the top stating: 'Elastic IP address associated successfully. Elastic IP address 18.205.122.254 has been associated with instance i-0be3e6ccb824daff'. The rest of the interface and data are the same as the first screenshot.

Step 5: Connecting to the Server Using SSH

A secure SSH connection was established from a Windows system to the EC2 instance using key-based authentication, allowing administrative access to the server.

ubuntu@ip-172-31-109-41:~

```
Microsoft Windows [Version 10.0.26200.7705]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd C:\Users\Admin\OneDrive\Documents\My Files\Downloads

C:\Users\Admin\OneDrive\Documents\My Files\Downloads>ssh -i central-server-key.pem ubuntu@18.205.122.254
The authenticity of host '18.205.122.254 (18.205.122.254)' can't be established.
ED25519 key fingerprint is SHA256:/PT5Jg+/08vmzHQoR081LoaYwzn9sAq3C99ZPUDMNqc.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '18.205.122.254' (ED25519) to the list of known hosts.

Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-1018-aws x86_64)

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

System information as of Sat Feb 7 03:57:01 UTC 2026

System load: 0.0 Temperature: -273.1 C
Usage of /: 6.2% of 28.02GB Processes: 111
Memory usage: 23% Users logged in: 0
Swap usage: 0% IPv4 address for ens5: 172.31.109.41

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

AMIs
AMI Catalog

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

Elastic Block Store
i-0be3e6ccb824daff
IPv6 address -
Instance state Running
Private IP DNS name (IPv4 only)
172.31.109.41

Public DNS
ec2-18-205-122-254.compute-1.amazonaws.com | open address

Network & Security
Security Groups

CloudShell Feedback Console Mobile App
```

ubuntu@ip-172-31-109-41:~

```
System information as of Sat Feb 7 03:57:01 UTC 2026

System load: 0.0 Temperature: -273.1 C
Usage of /: 6.2% of 28.02GB Processes: 111
Memory usage: 23% Users logged in: 0
Swap usage: 0% IPv4 address for ens5: 172.31.109.41

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.

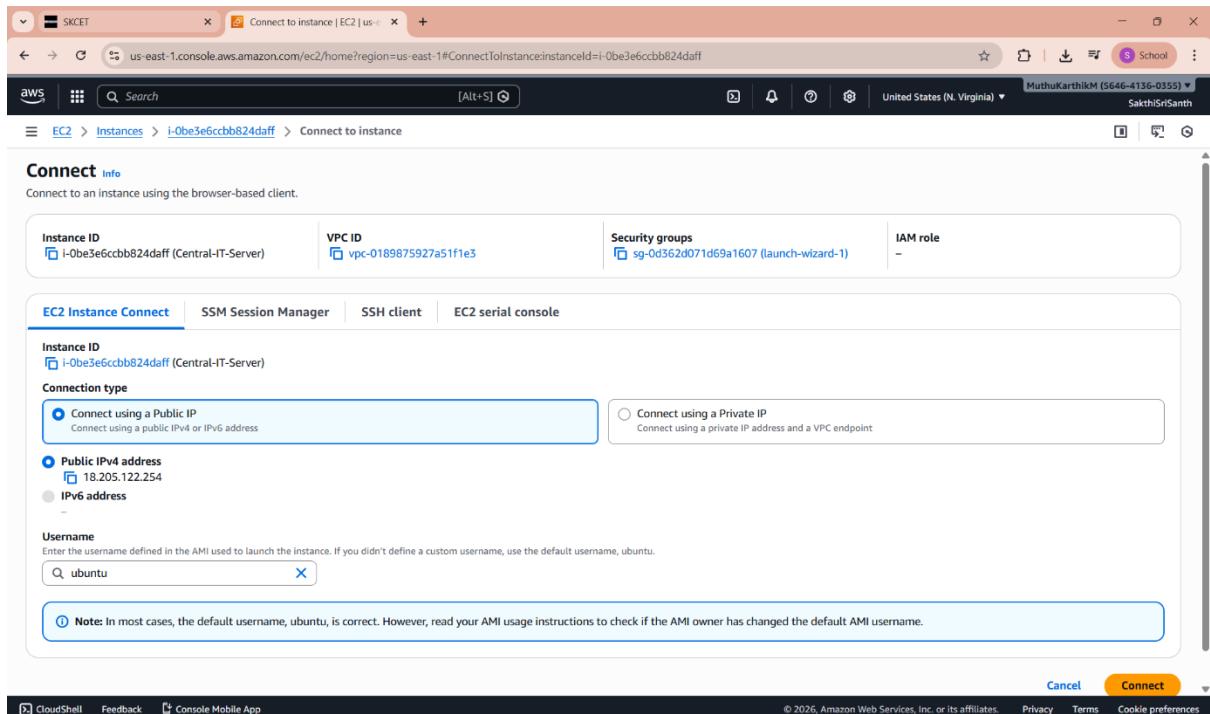
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Elastic Block Store
i-0be3e6ccb824daff
IPv6 address -
Instance state Running
Private IP DNS name (IPv4 only)
172.31.109.41

Public DNS
ec2-18-205-122-254.compute-1.amazonaws.com | open address

Network & Security
Security Groups

CloudShell Feedback Console Mobile App
```



```
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-1018-aws x86_64)

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

System information as of Sat Feb 7 04:07:52 UTC 2026

System load: 0.07 Temperature: -273.1 C
Usage of /: 6.3% of 28.02GB Processes: 111
Memory usage: 22% Users logged in: 1
Swap usage: 0% IPv4 address for ens5: 172.31.109.41

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

Last login: Sat Feb 7 03:57:03 2026 from 106.192.171.26
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-109-41:~$
```

i-0be3e6ccbb824daff (Central-IT-Server)
PublicIPs: 18.205.122.254 PrivateIPs: 172.31.109.41

Step 6: Updating the Server System

System packages were updated inside the EC2 instance to ensure that the operating system was secure and up to date before further configuration.

```
ubuntu@ip-172-31-109-41:~$ sudo apt update && sudo apt upgrade -y
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease [126 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1739 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [324 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [17 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/min amd64 c-n-f Metadata [16.5 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1520 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [313 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [386 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [31.9 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [2582 kB]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [591 kB]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 kB]
Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 c-n-f Metadata [556 B]
Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [32.1 kB]
Get:26 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [6816 B]
Get:27 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:28 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [496 B]
Get:29 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 Packages [40.4 kB]
Get:30 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main Translation-en [9208 B]
Get:31 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [7296 B]
Get:32 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 c-n-f Metadata [368 B]

```

i-0be3e6ccbb824daff (Central-IT-Server)
PublicIPs: 18.205.122.254 PrivateIPs: 172.31.109.41

```
Processing triggers for install-info (7.1-3build2) ...
Processing triggers for initramfs-tools (0.142ubuntu25.5) ...
update-initramfs: Generating /boot/initrd.img-5.14.0-1018-aws
Processing triggers for libc-bin (2.39-0ubuntu0.7) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for dbus (1.14.10-4ubuntu4.1) ...
Processing triggers for debiantutils (5.17build1) ...
scanning processes...
scanning candidates...
scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...
systemctl restart apcid.service chrony.service cron.service irqbalance.service packagekit.service polkit.service rsyslog.service ssh.service udisks2.service

Service restarts being deferred:
systemctl restart ModemManager.service
/etc/needrestart/restart.d/dhds.service
systemctl restart getty@tty1.service
systemctl restart networkd-dispatcher.service
systemctl restart serial-getty@ttyS0.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
ubuntu @ session #3: sshd[1108,1220]
ubuntu @ session #6: apt[1967], sshd[1282,1638]
ubuntu @ user manager service: systemd[1113]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-109-41:~$
```

i-0be3e6ccbb824daff (Central-IT-Server)
PublicIPs: 18.205.122.254 PrivateIPs: 172.31.109.41

Step 7: Creating Centralized Storage

A centralized storage directory was created on the server, and appropriate permissions were assigned to restrict unauthorized access.

```
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-1018-aws x86_64)

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

System information as of Sat Feb 7 04:15:03 UTC 2026

System load: 0.0 Temperature: -273.1 °C
Usage of /: 7.3% of 28.02GB Processes: 114
Memory usage: 26% Users logged in: 1
Swap usage: 0% IPv4 address for ens5: 172.31.109.41

* Ubuntu Pro delivers the most comprehensive open source security and
  compliance features.

https://ubuntu.com/aws/pro

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

*** System restart required ***
Last login: Sat Feb 7 04:07:58 2026 from 18.206.107.29
ubuntu@ip-172-31-109-41:~$ sudo mkdir /company_data
sudo chmod 770 /company_data
ubuntu@ip-172-31-109-41:~$ ls -ld /company_data
drwxrwx--- 2 root root 4096 Feb 7 04:16 /company_data
ubuntu@ip-172-31-109-41:~$
```

i-0be3e6ccbb824daff (Central-IT-Server)
PublicIPs: 18.205.122.254 PrivateIPs: 172.31.109.41

CloudShell Feedback Console Mobile App

Step 8: Creating Employee User Accounts

Employee user accounts were created on the server to simulate controlled access for organizational users without administrative privileges.

```
ubuntu@ip-172-31-109-41:~$ sudo adduser employee1
sudo adduser: employee1
info: Adding user 'employee1' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group 'employee1' (1001) ...
info: Adding new user 'employee1' (1001) with group 'employee1' (1001) ...
info: Creating home directory '/home/employee1' ...
info: Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for employee1
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []
Is the information correct? [Y/n]
info: Adding new user 'employee1' to supplemental / extra groups 'users' ...
info: Adding user 'employee1' to group 'users' ...
info: Adding user 'employee2' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group 'employee2' (1002) ...
info: Adding new user 'employee2' (1002) with group 'employee2' (1002) ...
info: Creating home directory '/home/employee2' ...
info: Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for employee2
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
```

i-0be3e6ccbb824daff (Central-IT-Server)
PublicIPs: 18.205.122.254 PrivateIPs: 172.31.109.41

CloudShell Feedback Console Mobile App

```

passwd: password updated successfully
Changing the user information for employee1
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []

Is the information correct? [Y/n]
info: Adding new user 'employee1' to supplemental / extra groups 'users' ...
info: Adding user 'employee1' to group 'users' ...
info: Adding user 'employee2' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Picking new group 'employee2' (1002)
info: Adding new user 'employee2' (1002) with group `employee2` (1002)
info: Creating home directory '/home/employee2' ...
info: Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for employee2
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []

Is the information correct? [Y/n] info: Adding new user 'employee2' to supplemental / extra groups 'users' ...
info: Adding user 'employee2' to group 'users' ...
ubuntu@ip-172-31-109-41:~$ cut -d: -f1 /etc/passwd | grep employee
employee1
employee2
ubuntu@ip-172-31-109-41:~$ 

```

i-0be3e6ccbb824daff (Central-IT-Server)
PublicIPs: 18.205.122.254 PrivateIPs: 172.31.109.41

Step 9: Creating Backup Using Snapshot

A snapshot of the EC2 instance was created manually using the AWS Management Console to enable backup and disaster recovery.

Create image Info

An image (also referred to as an AMI) defines the programs and settings that are applied when you launch an EC2 instance. You can create an image from the configuration of an existing instance.

Image details

Instance ID: (Central-IT-Server)

Image name:

Image description - optional:

Reboot instance: When selected, Amazon EC2 reboots the instance so that data is at rest when snapshots of the attached volumes are taken. This ensures data consistency.

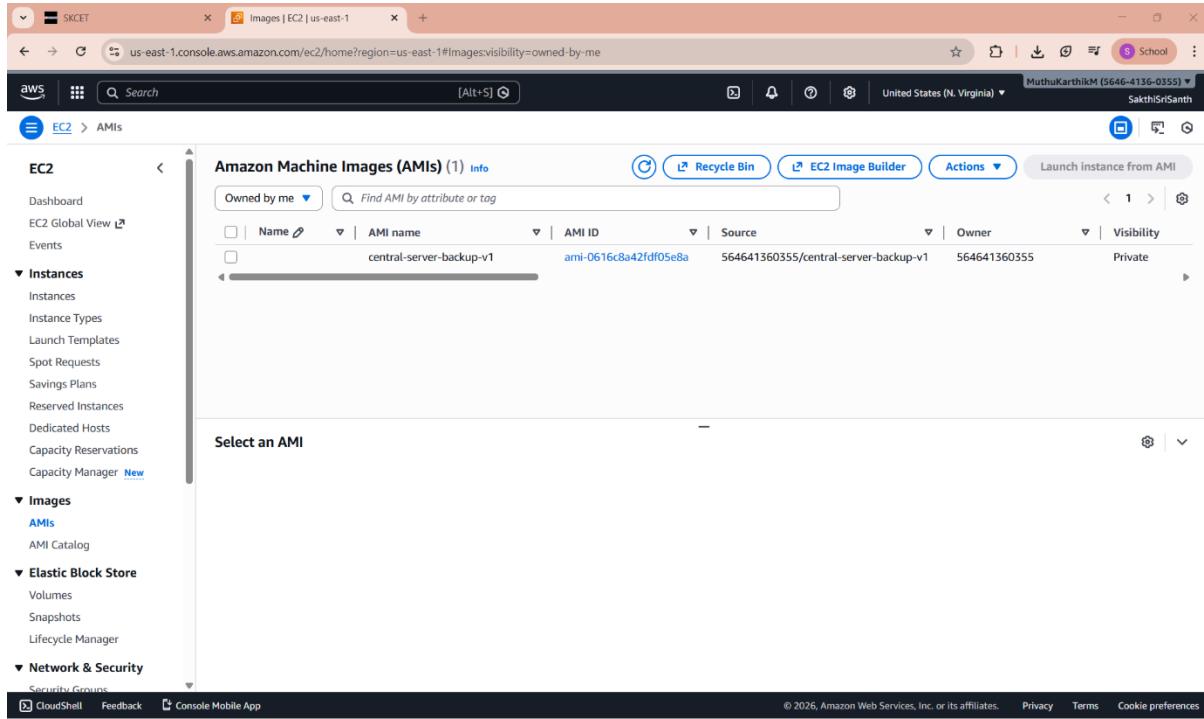
Instance volumes

Storage type	Device	Snapshot	Size	Volume type	IOPS	Throughput	Delete on termination	Encrypted
EBS	/dev/...	Create new snapshot fro...	30	EBS General Purpose SS...	3000		<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Enable

Add volume

Step 10: Verifying Recovery Capability

The created snapshot was verified in the AMI section of AWS to confirm that the system could be restored if required.



The screenshot shows the AWS EC2 console with the 'AMIs' section selected. A single AMI entry is listed:

Name	AMI ID	Source	Owner	Visibility
central-server-backup-v1	ami-0616c8a42fdf05e8a	564641360355/central-server-backup-v1	564641360355	Private

Conclusion

The centralized cloud-based infrastructure was successfully implemented using Amazon Web Services. The solution improved data organization, enabled secure remote access, and ensured backup and recovery capabilities. This project demonstrates practical cloud administration skills and provides a scalable solution suitable for small enterprises.