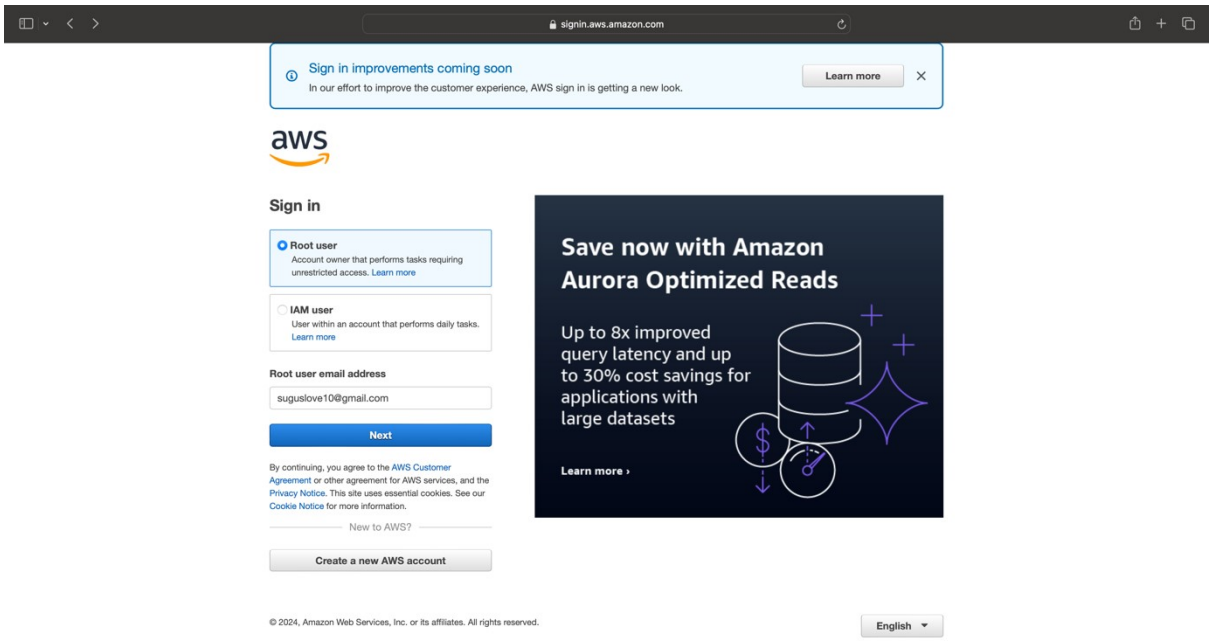
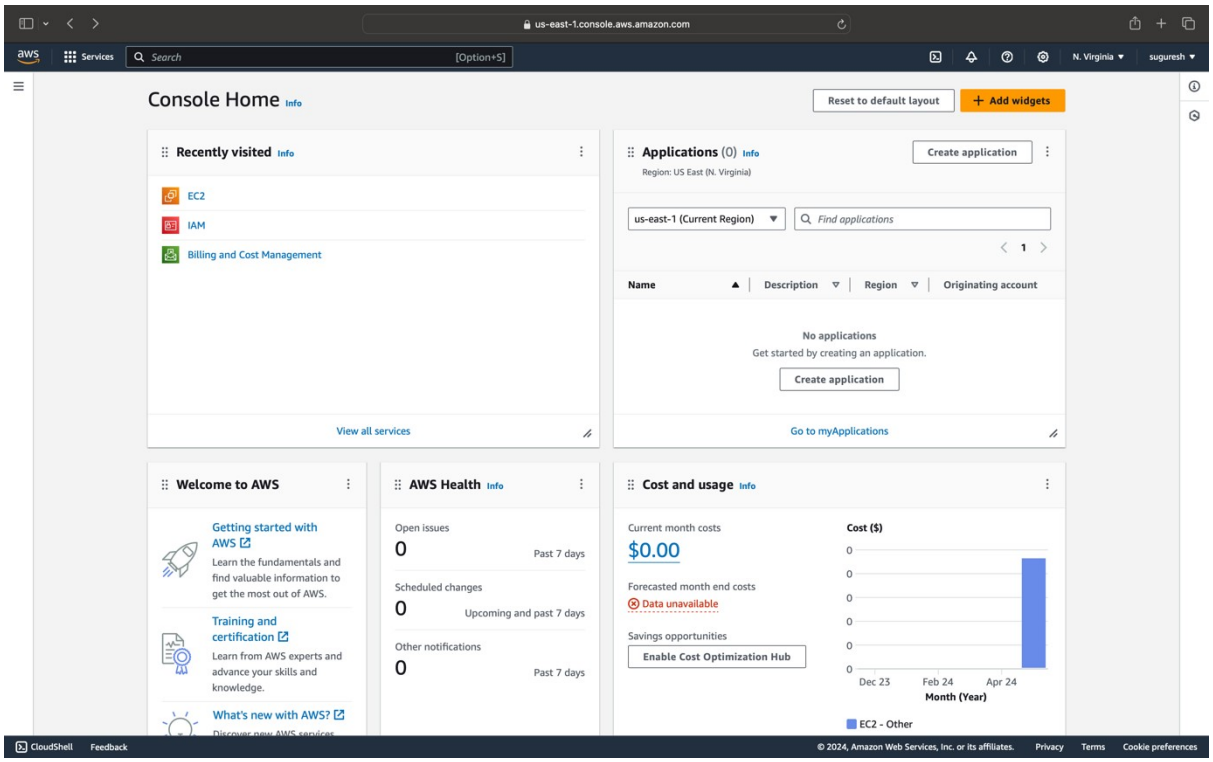
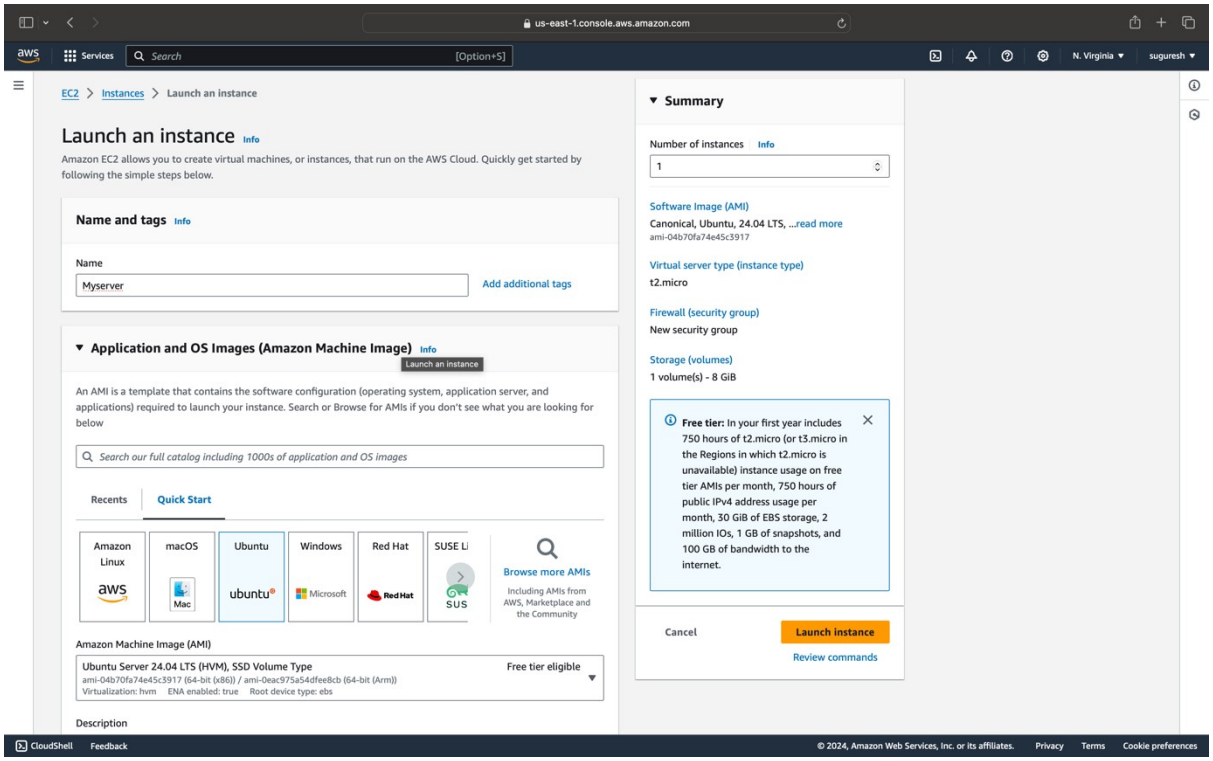
1. L1 - Demonstrate the AWS EC2 Ubuntu Instance Creation steps and connect to EC2 Instance using Mobaxterm/putty agent

(As I am using MacBook so I ll be using terminal, as we know macOS is based of Linux)






us-east-1.console.aws.amazon.com
Services
Search
[Option+5]
N. Virginia
suguresh
EC2 > Instances > 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
Myserver
Add additional tags
Application and OS Images (Amazon Machine Image) Info
Launch an instance
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
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
Free tier eligible
ami-04b70fa74e45c3917 (64-bit (x86)) / ami-0eac975a54dfee8cb (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs
Description
Summary
Number of instances Info
1
Software Image (AMI)
Canonical, Ubuntu, 24.04 LTS, ...read more
ami-04b70fa74e45c3917
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.
Cancel
Launch instance
Review commands
CloudShell
Feedback
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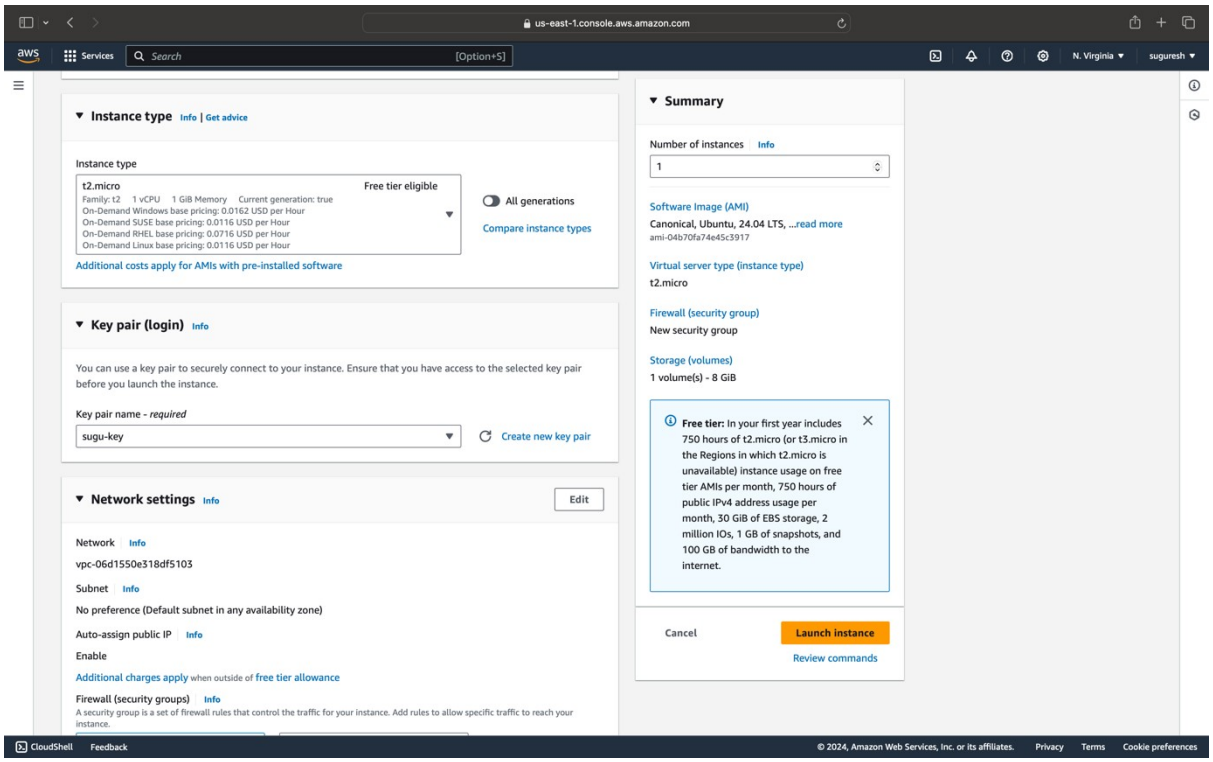
us-east-1.console.aws.amazon.com
Services
Search
[Option+5]
N. Virginia
suguresh
Instance type Info | Get advice
Instance type
t2.micro
Free tier eligible
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Windows base pricing: 0.0162 USD per Hour
On-Demand SUSE base pricing: 0.0116 USD per Hour
On-Demand RHEL base pricing: 0.0716 USD per Hour
On-Demand Linux base pricing: 0.0116 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
sugu-key
Create new key pair
Network settings Info
Edit
Network Info
vpc-06d1550e318df5103
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.
Summary
Number of instances Info
1
Software Image (AMI)
Canonical, Ubuntu, 24.04 LTS, ...read more
ami-04b70fa74e45c3917
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.
Cancel
Launch instance
Review commands
CloudShell
Feedback
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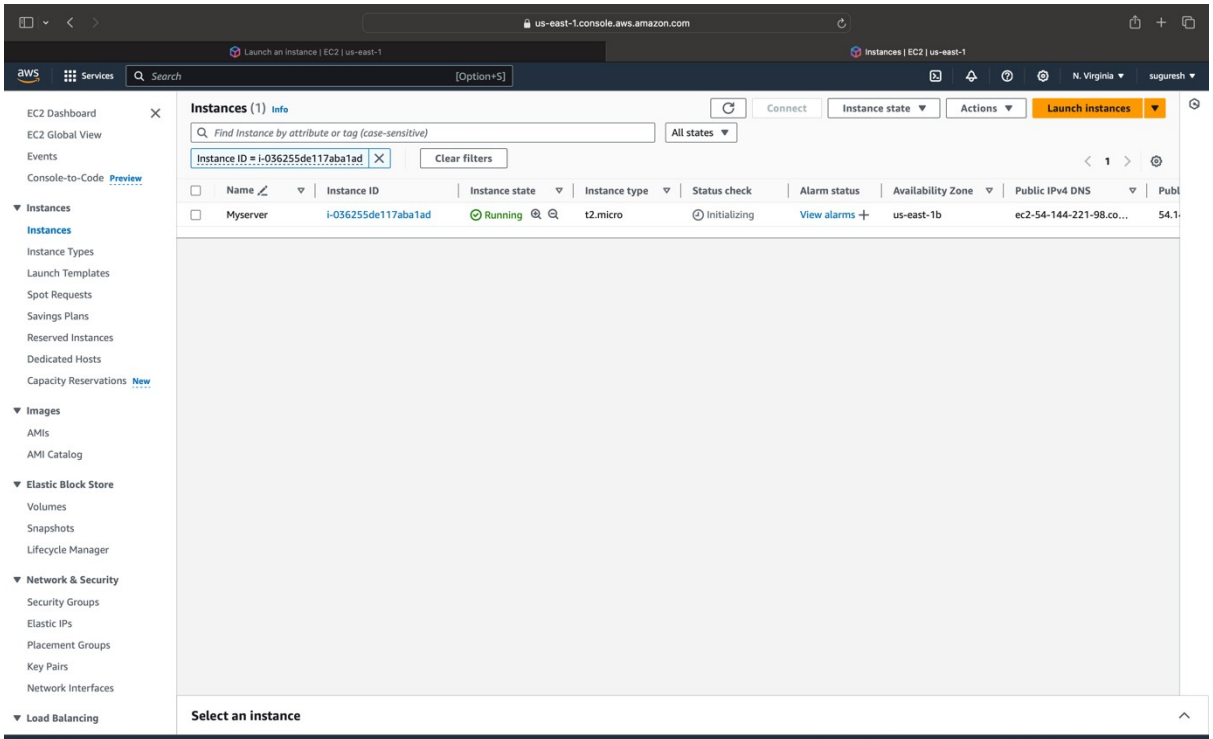
us-east-1.console.aws.amazon.com
Launch an instance | EC2 | us-east-1
Instances | EC2 | us-east-1
Services
Search
[Option+S]
N. Virginia
suguresh
EC2 Dashboard
EC2 Global View
Events
Console-to-Code Preview
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations New
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Instances (1) Info
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Instance ID = i-036255de117aba1ad
Clear filters
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
Myserver
i-036255de117aba1ad
Running
t2.micro
Initializing
View alarms
us-east-1b
ec2-54-144-221-98.co...
Select an instance
CloudShell
Feedback
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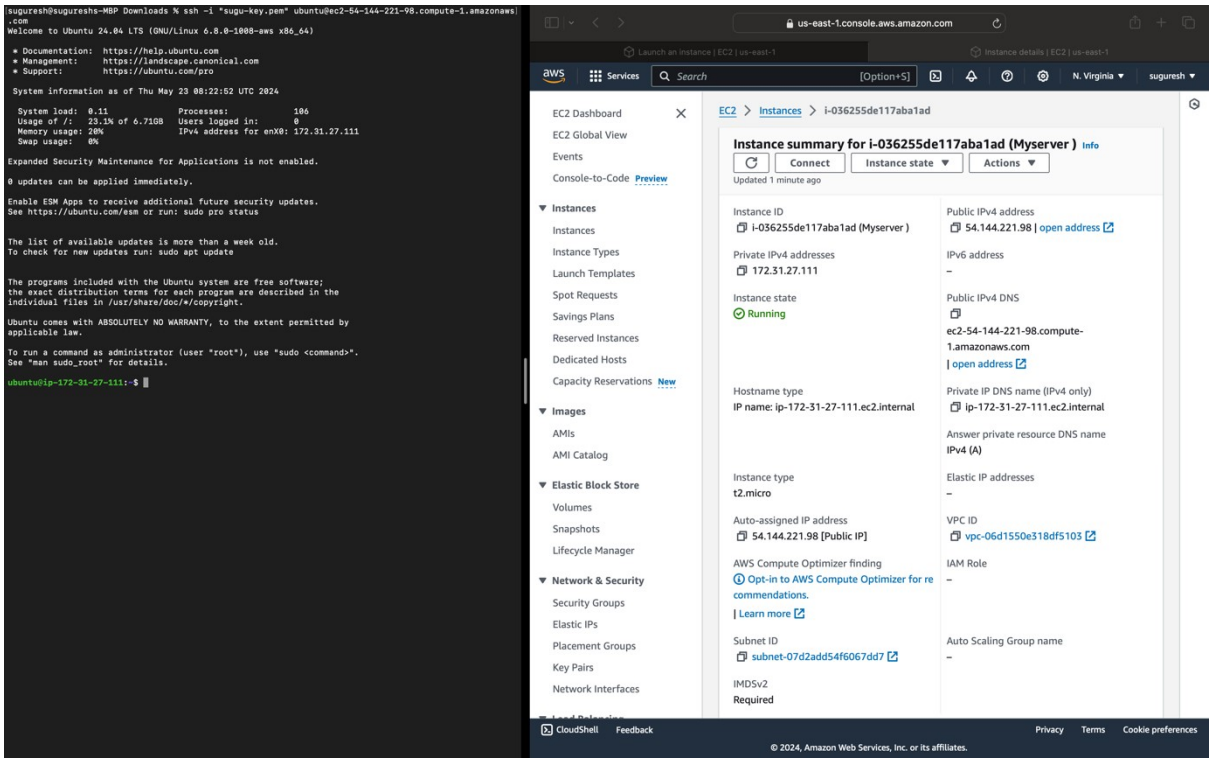
suguresh@sugureshs-MBP Downloads % ssh -i "sugu-key.pem" ubuntu@ec2-54-144-221-98.compute-1.amazonaws.com
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1008-aws x86_64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/pro
System information as of Thu May 23 08:22:52 UTC 2024
System load: 0.11
Usage of /: 23.1% of 6.71GB
Memory usage: 20%
Swap usage: 0%
Processes: 106
Users logged in: 0
IPv4 address for enX0: 172.31.27.111
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-172-31-27-111:~$
us-east-1.console.aws.amazon.com
Launch an instance | EC2 | us-east-1
Instance details | EC2 | us-east-1
Services
Search
[Option+S]
N. Virginia
suguresh
EC2 Dashboard
EC2 Global View
Events
Console-to-Code Preview
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
Key Pairs
Network Interfaces
EC2 > Instances > i-036255de117aba1ad
Instance summary for i-036255de117aba1ad (Myserver) Info
Connect
Instance state
Actions
Updated 1 minute ago
Instance ID
i-036255de117aba1ad (Myserver)
Public IPv4 address
54.144.221.98 | open address
Private IPv4 addresses
172.31.27.111
IPv6 address
–
Instance state
Running
Public IPv4 DNS
ec2-54-144-221-98.compute-1.amazonaws.com | open address
Hostname type
IP name: ip-172-31-27-111.ec2.internal
Private IP DNS name (IPv4 only)
ip-172-31-27-111.ec2.internal
Answer private resource DNS name
IPv4 (A)
Instance type
t2.micro
Elastic IP addresses
–
Auto-assigned IP address
54.144.221.98 [Public IP]
VPC ID
vpc-06d1550e318df5103
AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations. | Learn more
IAM Role
–
Subnet ID
subnet-07d2add54f6067dd7
Auto Scaling Group name
–
IMDSv2
Required
CloudShell
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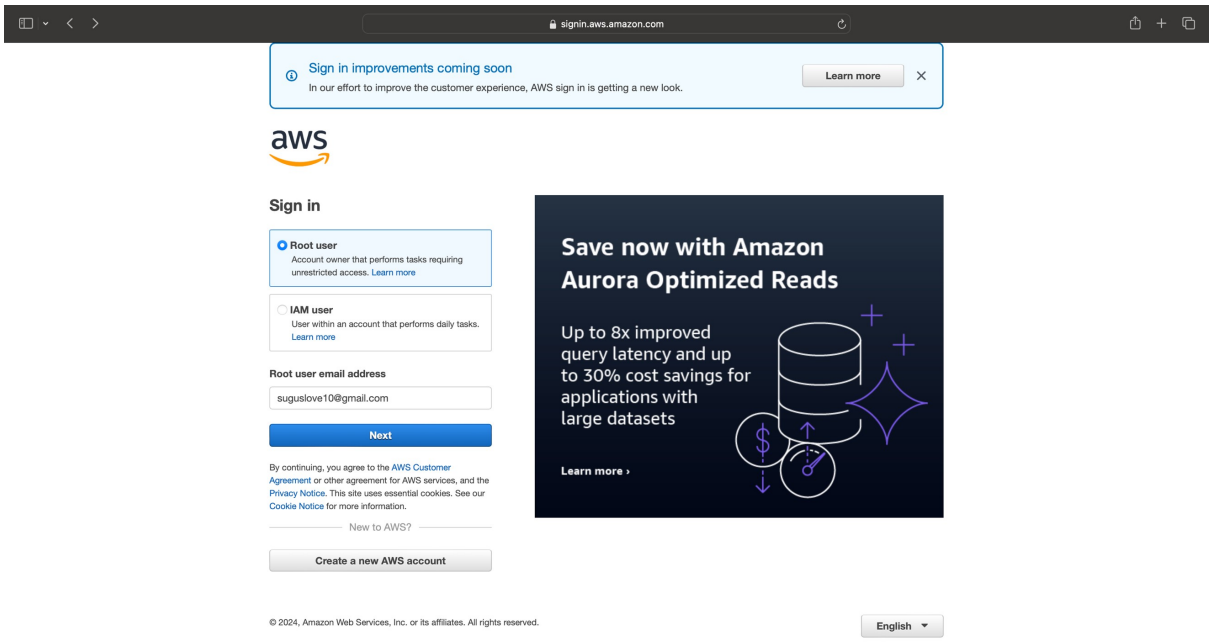
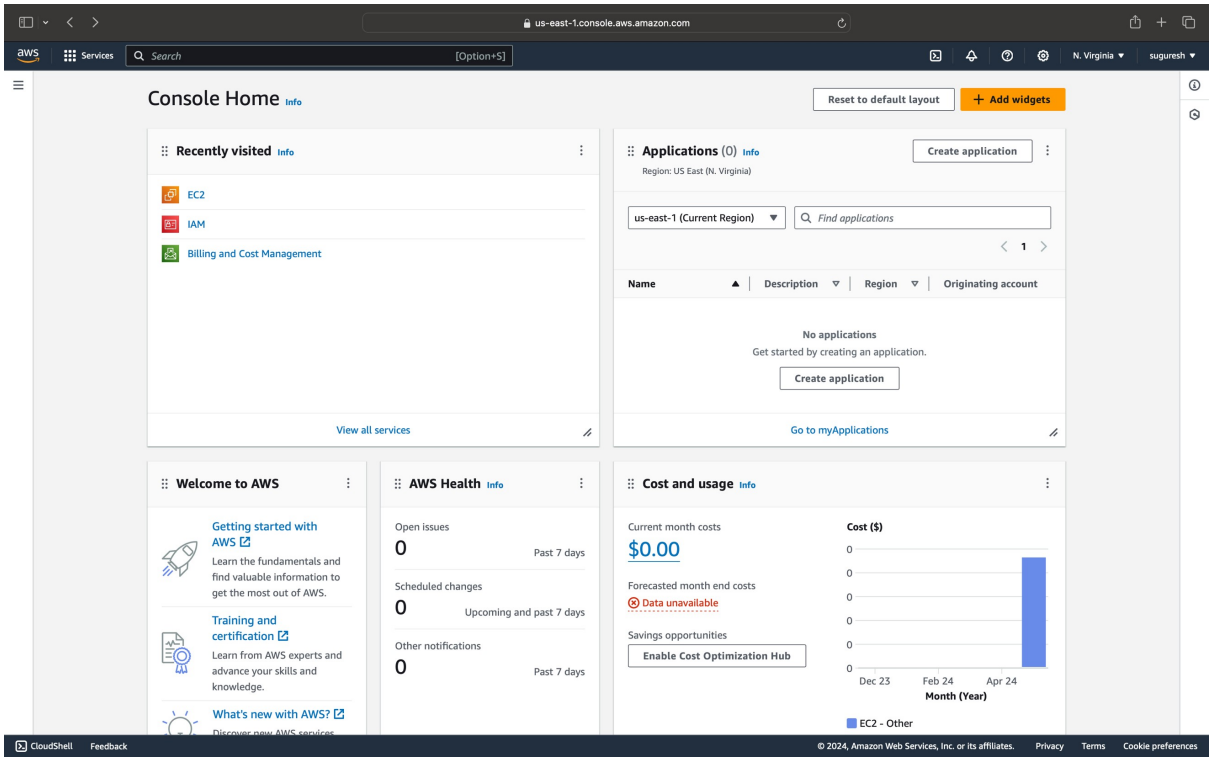
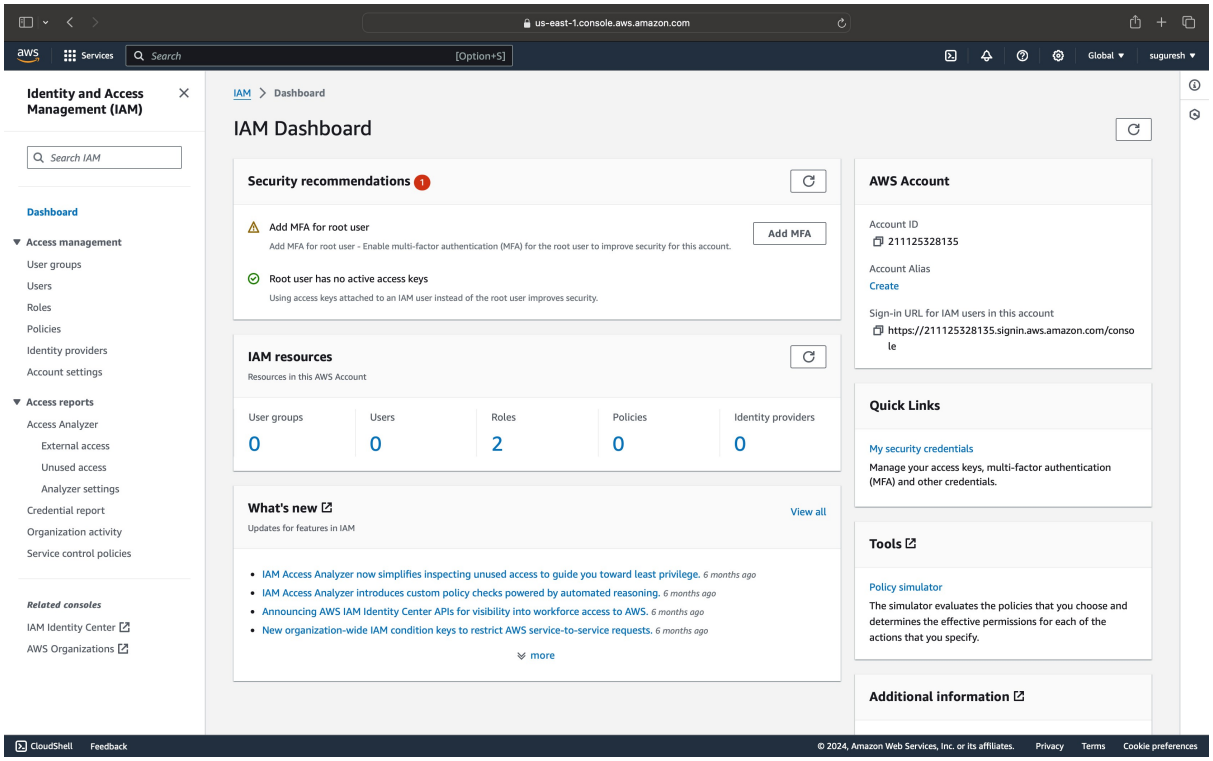
2. L2 - Login to AWS Console and Create IAM User, Role, and Group






us-east-1.console.aws.amazon.com
Services
Search
[Option+5]
Global
suguresh
Identity and Access Management (IAM)
Search IAM
Dashboard
Access management
User groups
Users
Roles
Policies
Identity providers
Account settings
Access reports
Access Analyzer
External access
Unused access
Analyzer settings
Credential report
Organization activity
Service control policies
Related consoles
IAM Identity Center
AWS Organizations
IAM > Dashboard
IAM Dashboard
Security recommendations 1
Add MFA for root user
Add MFA for root user - Enable multi-factor authentication (MFA) for the root user to improve security for this account.
Add MFA
Root user has no active access keys
Using access keys attached to an IAM user instead of the root user improves security.
IAM resources
Resources in this AWS Account
User groups 0
Users 0
Roles 2
Policies 0
Identity providers 0
What's new
Updates for features in IAM
View all
IAM Access Analyzer now simplifies inspecting unused access to guide you toward least privilege. 6 months ago
IAM Access Analyzer introduces custom policy checks powered by automated reasoning. 6 months ago
Announcing AWS IAM Identity Center APIs for visibility into workforce access to AWS. 6 months ago
New organization-wide IAM condition keys to restrict AWS service-to-service requests. 6 months ago
more
AWS Account
Account ID
211125328135
Account Alias
Create
Sign-in URL for IAM users in this account
https://211125328135.signin.aws.amazon.com/console
Quick Links
My security credentials
Manage your access keys, multi-factor authentication (MFA) and other credentials.
Tools
Policy simulator
The simulator evaluates the policies that you choose and determines the effective permissions for each of the actions that you specify.
Additional information
CloudShell
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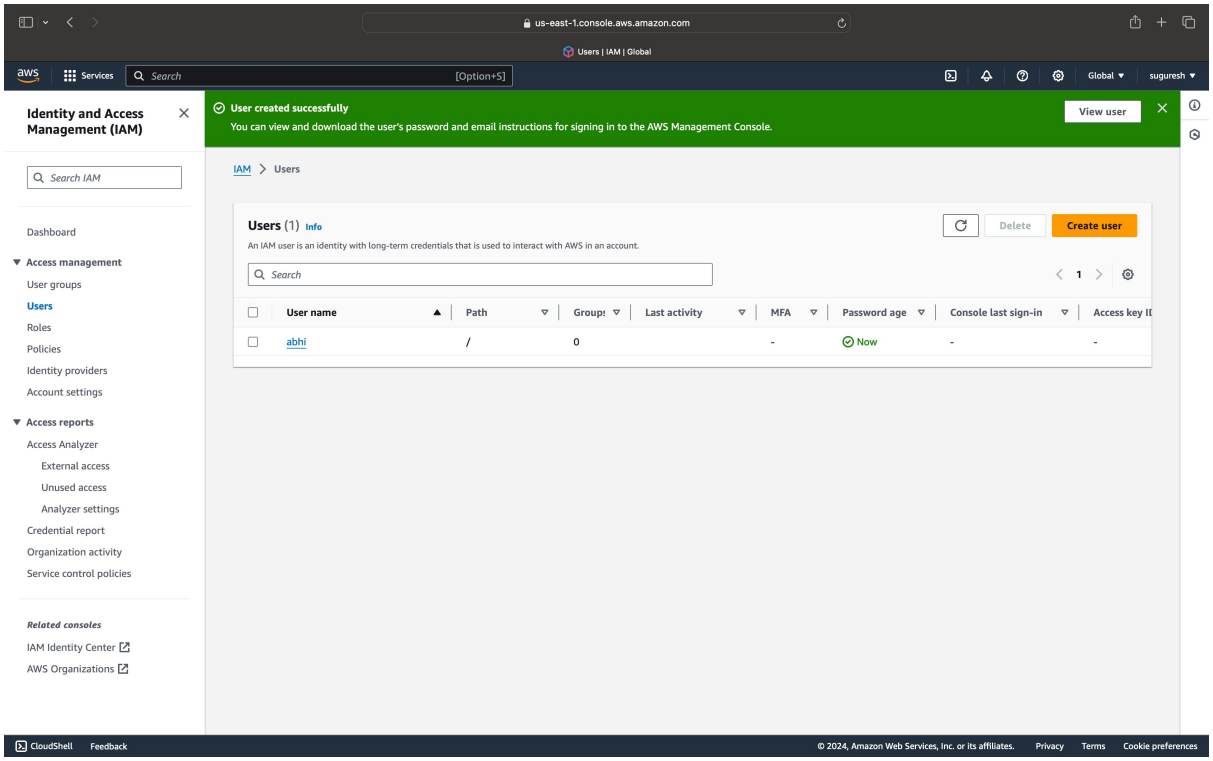
us-east-1.console.aws.amazon.com
Users | IAM | Global
Services
Search
[Option+5]
Global
suguresh
Identity and Access Management (IAM)
User created successfully
You can view and download the user's password and email instructions for signing in to the AWS Management Console.
View user
Search IAM
Dashboard
Access management
User groups
Users
Roles
Policies
Identity providers
Account settings
Access reports
Access Analyzer
External access
Unused access
Analyzer settings
Credential report
Organization activity
Service control policies
Related consoles
IAM Identity Center
AWS Organizations
IAM > Users
Users (1) Info
An IAM user is an identity with long-term credentials that is used to interact with AWS in an account.
Delete
Create user
Search
1
User name
Path
Groups
Last activity
MFA
Password age
Console last sign-in
Access key ID
abhi
/
0
-
Now
-
-
CloudShell
Feedback
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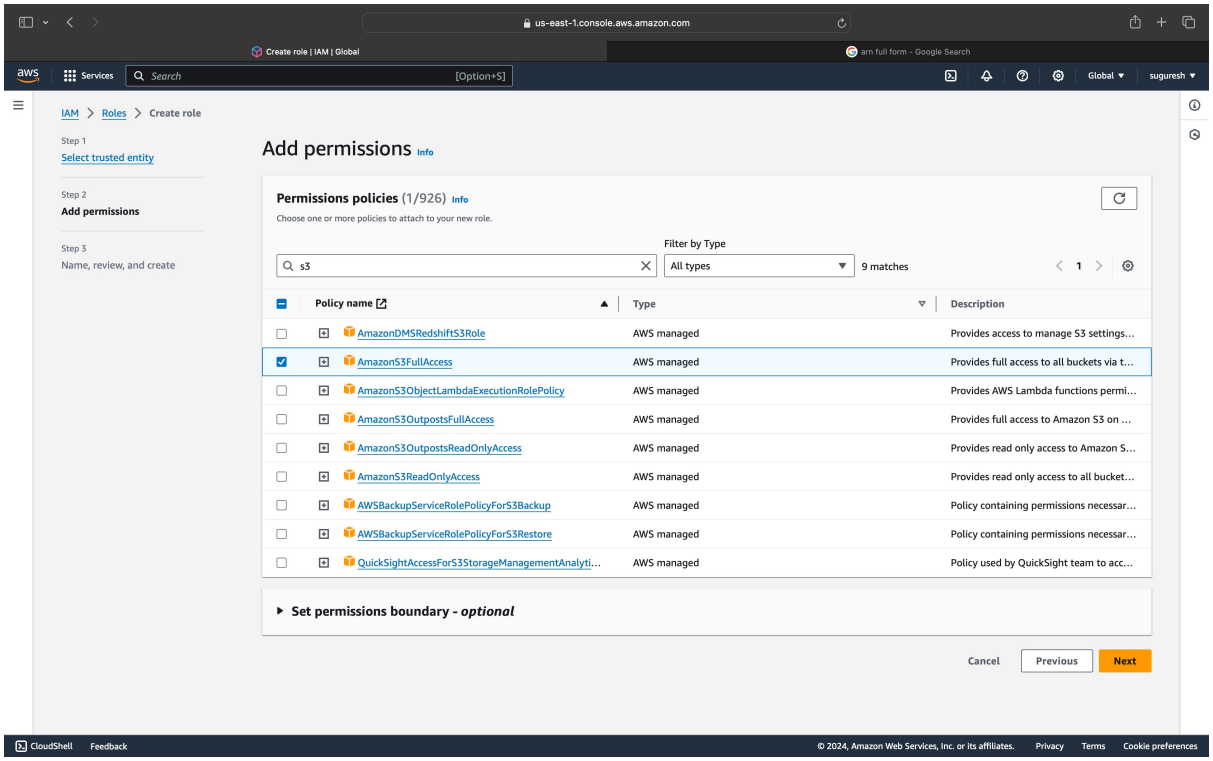
us-east-1.console.aws.amazon.com
Create role | IAM | Global
arn full form - Google Search
Services
Search
[Option+S]
Global
suguresh
IAM > Roles > Create role
Step 1
Select trusted entity
Step 2
Add permissions
Step 3
Name, review, and create
Add permissions Info
Permissions policies (1/926) Info
Choose one or more policies to attach to your new role.
Filter by Type
s3
All types
9 matches
1
Policy name
Type
Description
AmazonDMSRedshiftS3Role
AWS managed
Provides access to manage S3 settings...
AmazonS3FullAccess
AWS managed
Provides full access to all buckets via t...
AmazonS3ObjectLambdaExecutionRolePolicy
AWS managed
Provides AWS Lambda functions permi...
AmazonS3OutpostsFullAccess
AWS managed
Provides full access to Amazon S3 on ...
AmazonS3OutpostsReadOnlyAccess
AWS managed
Provides read only access to Amazon S...
AmazonS3ReadOnlyAccess
AWS managed
Provides read only access to all bucket...
AWSBackupServiceRolePolicyForS3Backup
AWS managed
Policy containing permissions necessar...
AWSBackupServiceRolePolicyForS3Restore
AWS managed
Policy containing permissions necessar...
QuickSightAccessForS3StorageManagementAnalyti...
AWS managed
Policy used by QuickSight team to acc...
Set permissions boundary - optional
Cancel
Previous
Next
CloudShell
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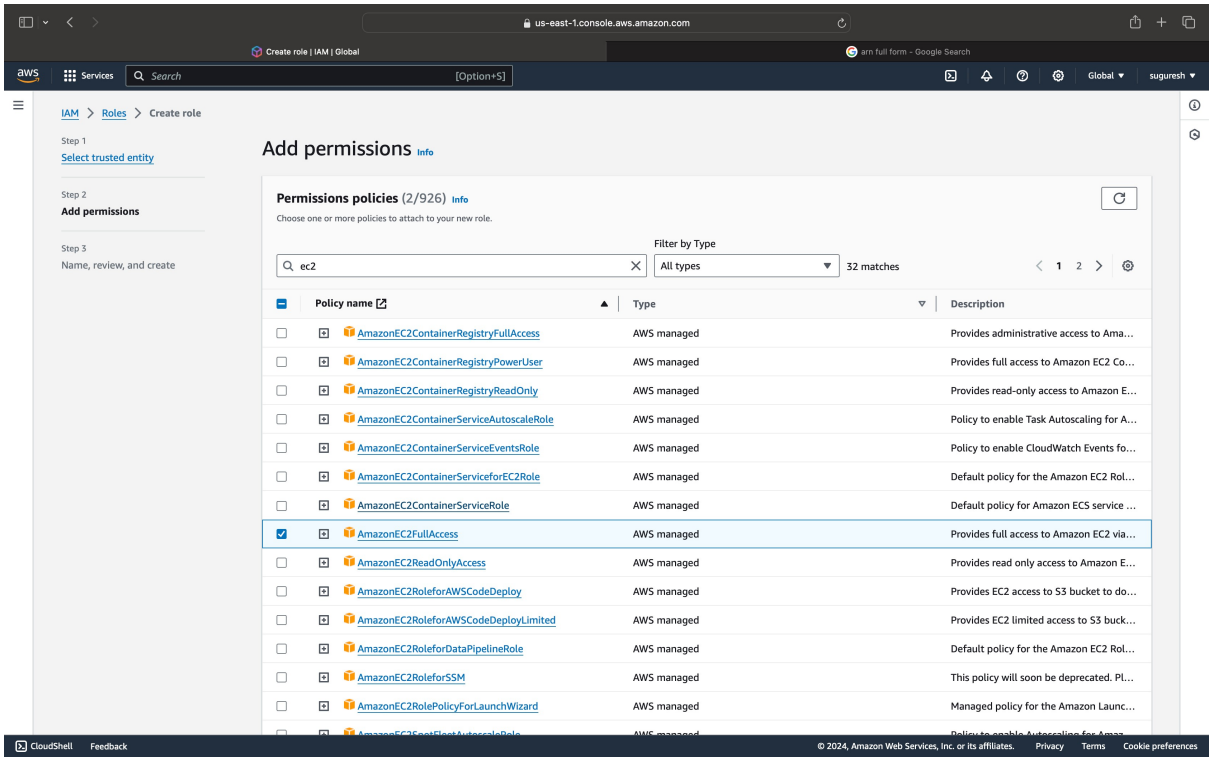
us-east-1.console.aws.amazon.com
Create role | IAM | Global
arn full form - Google Search
Services
Search
[Option+S]
Global
suguresh
IAM > Roles > Create role
Step 1
Select trusted entity
Step 2
Add permissions
Step 3
Name, review, and create
Add permissions Info
Permissions policies (2/926) Info
Choose one or more policies to attach to your new role.
Filter by Type
ec2
All types
32 matches
1
2
Policy name
Type
Description
AmazonEC2ContainerRegistryFullAccess
AWS managed
Provides administrative access to Ama...
AmazonEC2ContainerRegistryPowerUser
AWS managed
Provides full access to Amazon EC2 Co...
AmazonEC2ContainerRegistryReadOnly
AWS managed
Provides read-only access to Amazon E...
AmazonEC2ContainerServiceAutoscaleRole
AWS managed
Policy to enable Task Autoscaling for A...
AmazonEC2ContainerServiceEventsRole
AWS managed
Policy to enable CloudWatch Events fo...
AmazonEC2ContainerServiceforEC2Role
AWS managed
Default policy for the Amazon EC2 Rol...
AmazonEC2ContainerServiceRole
AWS managed
Default policy for Amazon ECS service ...
AmazonEC2FullAccess
AWS managed
Provides full access to Amazon EC2 via...
AmazonEC2ReadOnlyAccess
AWS managed
Provides read only access to Amazon E...
AmazonEC2RoleforAWSCodeDeploy
AWS managed
Provides EC2 access to S3 bucket to do...
AmazonEC2RoleforAWSCodeDeployLimited
AWS managed
Provides EC2 limited access to S3 buck...
AmazonEC2RoleforDataPipelineRole
AWS managed
Default policy for the Amazon EC2 Rol...
AmazonEC2RoleforSSM
AWS managed
This policy will soon be deprecated. Pl...
AmazonEC2RolePolicyForLaunchWizard
AWS managed
Managed policy for the Amazon Launc...
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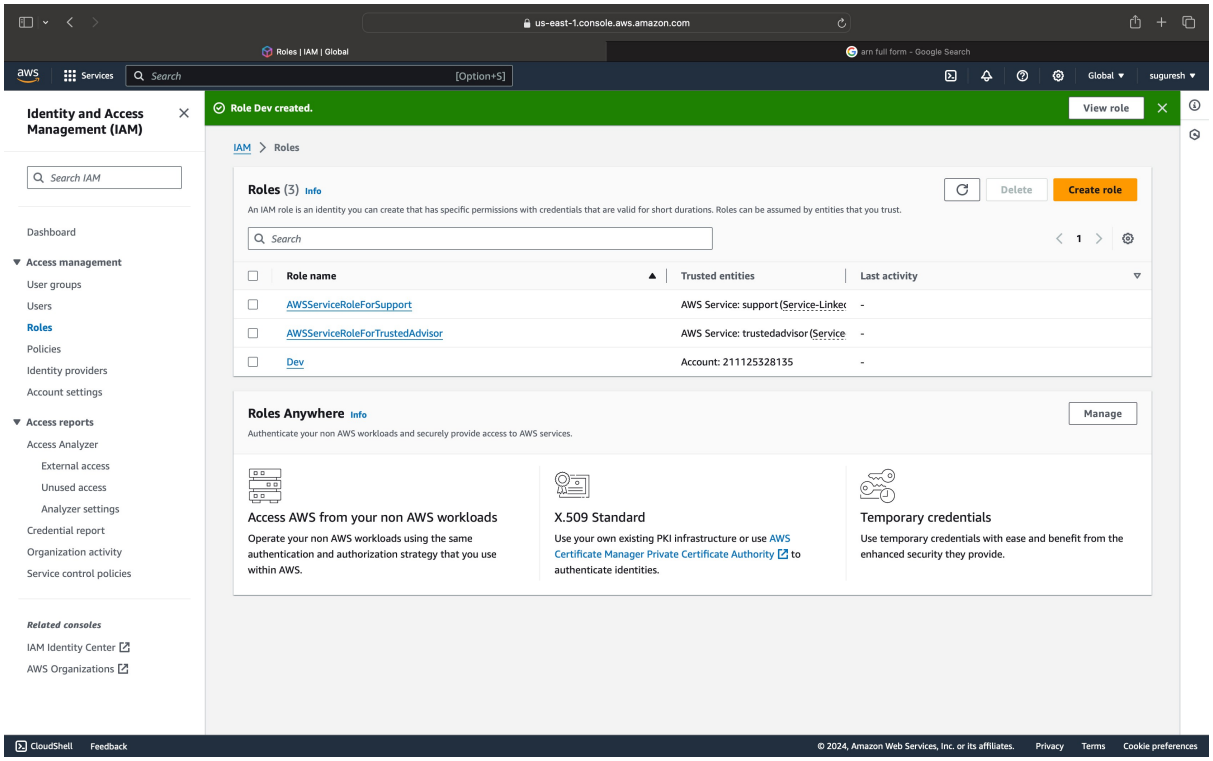
us-east-1.console.aws.amazon.com
Roles | IAM | Global
arn full form - Google Search
Services
Search
[Option+S]
Global
suguresh
Identity and Access Management (IAM)
Search IAM
Dashboard
Access management
User groups
Users
Roles
Policies
Identity providers
Account settings
Access reports
Access Analyzer
External access
Unused access
Analyzer settings
Credential report
Organization activity
Service control policies
Related consoles
IAM Identity Center
AWS Organizations
Role Dev created.
View role
IAM > Roles
Roles (3) Info
An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.
Delete
Create role
Search
Role name
Trusted entities
Last activity
AWSServiceRoleForSupport
AWS Service: support (Service-Linke
-
AWSServiceRoleForTrustedAdvisor
AWS Service: trustedadvisor (Service
-
Dev
Account: 211125328135
-
Roles Anywhere Info
Authenticate your non AWS workloads and securely provide access to AWS services.
Manage
Access AWS from your non AWS workloads
Operate your non AWS workloads using the same authentication and authorization strategy that you use within AWS.
X.509 Standard
Use your own existing PKI infrastructure or use AWS Certificate Manager Private Certificate Authority to authenticate identities.
Temporary credentials
Use temporary credentials with ease and benefit from the enhanced security they provide.
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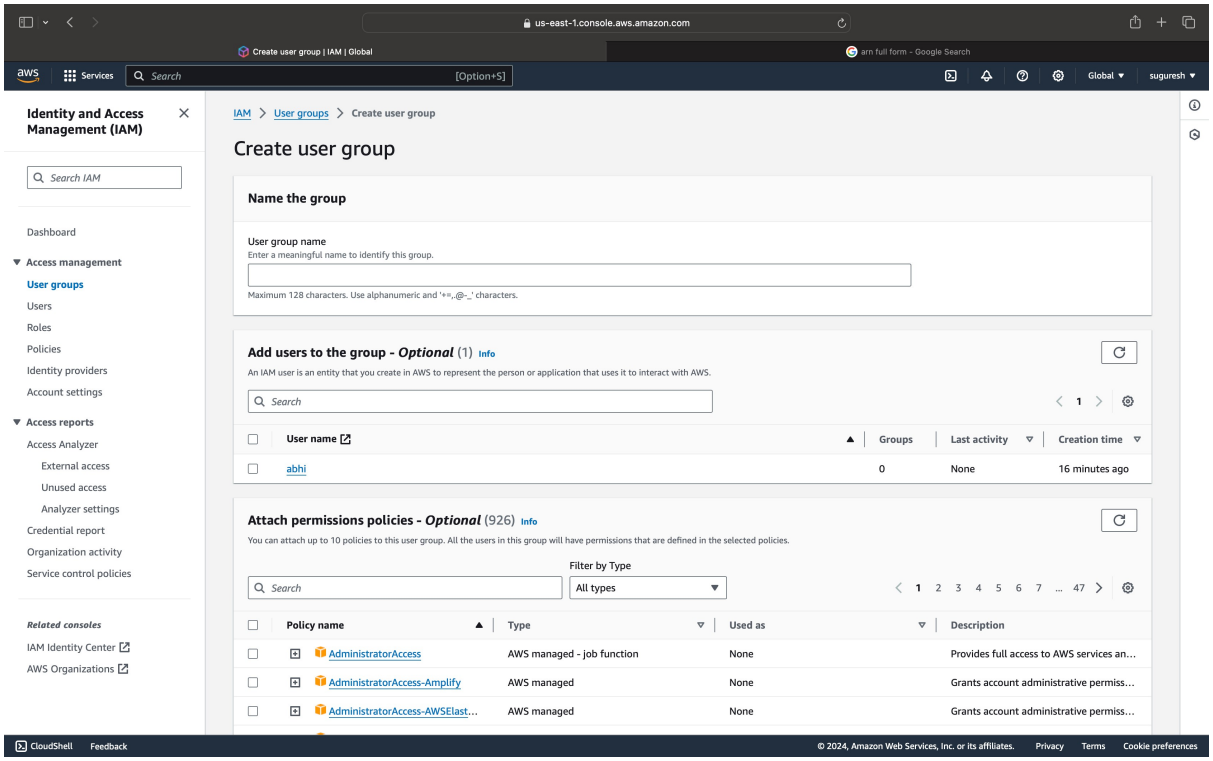
us-east-1.console.aws.amazon.com
Create user group | IAM | Global
arn full form - Google Search
Services
Search
[Option+S]
Global
suguresh
Identity and Access Management (IAM)
Search IAM
Dashboard
Access management
User groups
Users
Roles
Policies
Identity providers
Account settings
Access reports
Access Analyzer
External access
Unused access
Analyzer settings
Credential report
Organization activity
Service control policies
Related consoles
IAM Identity Center
AWS Organizations
IAM > User groups > Create user group
Create user group
Name the group
User group name
Enter a meaningful name to identify this group.
Maximum 128 characters. Use alphanumeric and '+=,.@-_' characters.
Add users to the group - Optional (1) Info
An IAM user is an entity that you create in AWS to represent the person or application that uses it to interact with AWS.
Search
User name
Groups
Last activity
Creation time
abhi
0
None
16 minutes ago
Attach permissions policies - Optional (926) Info
You can attach up to 10 policies to this user group. All the users in this group will have permissions that are defined in the selected policies.
Filter by Type
Search
All types
1 2 3 4 5 6 7 ... 47
Policy name
Type
Used as
Description
AdministratorAccess
AWS managed - job function
None
Provides full access to AWS services an...
AdministratorAccess-Amplify
AWS managed
None
Grants account administrative permiss...
AdministratorAccess-AWSElast...
AWS managed
None
Grants account administrative permiss...
CloudShell
Feedback
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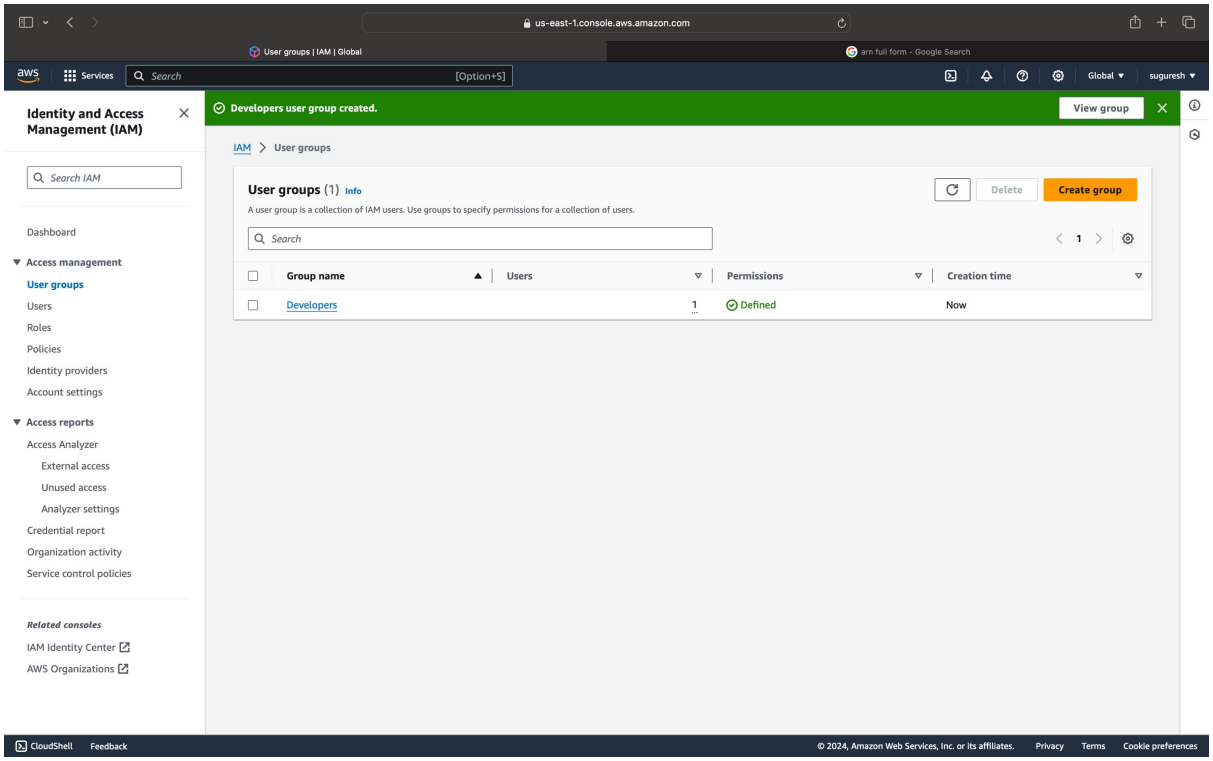
us-east-1.console.aws.amazon.com
User groups | IAM | Global
arn full form - Google Search
aws
Services
Search
[Option+S]
Global
suguresh
Identity and Access Management (IAM)
Search IAM
Dashboard
Access management
User groups
Users
Roles
Policies
Identity providers
Account settings
Access reports
Access Analyzer
External access
Unused access
Analyzer settings
Credential report
Organization activity
Service control policies
Related consoles
IAM Identity Center
AWS Organizations
Developers user group created.
View group
IAM
User groups
User groups (1) Info
A user group is a collection of IAM users. Use groups to specify permissions for a collection of users.
Delete
Create group
Search
1
Group name
Users
Permissions
Creation time
Developers
1
Defined
Now
CloudShell
Feedback
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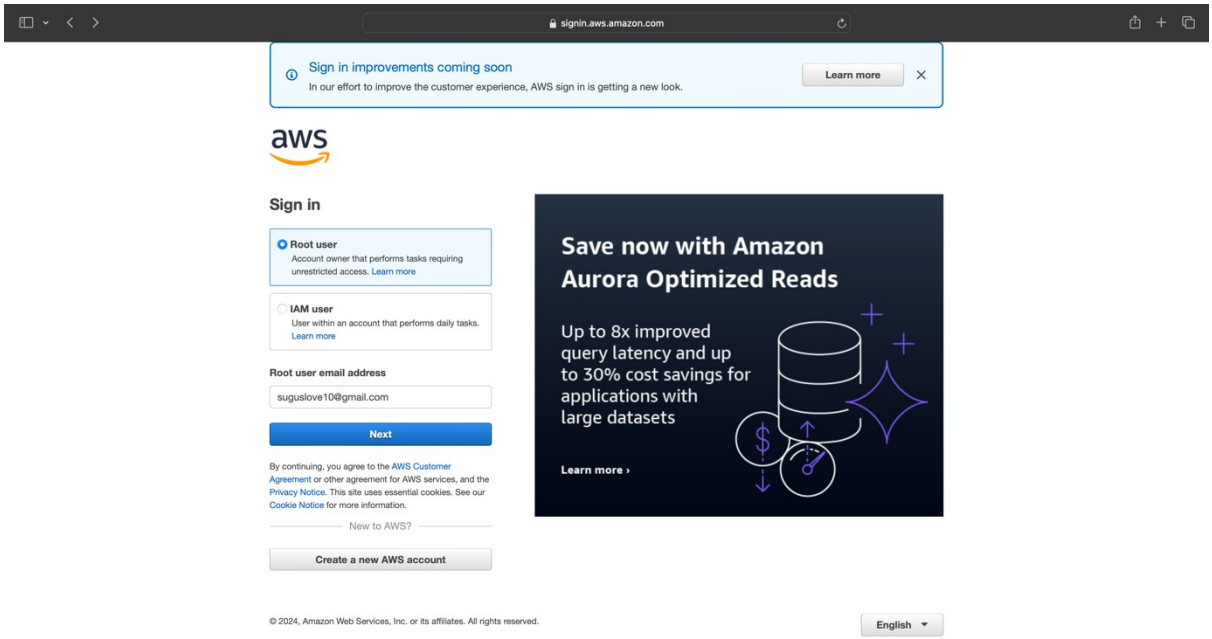
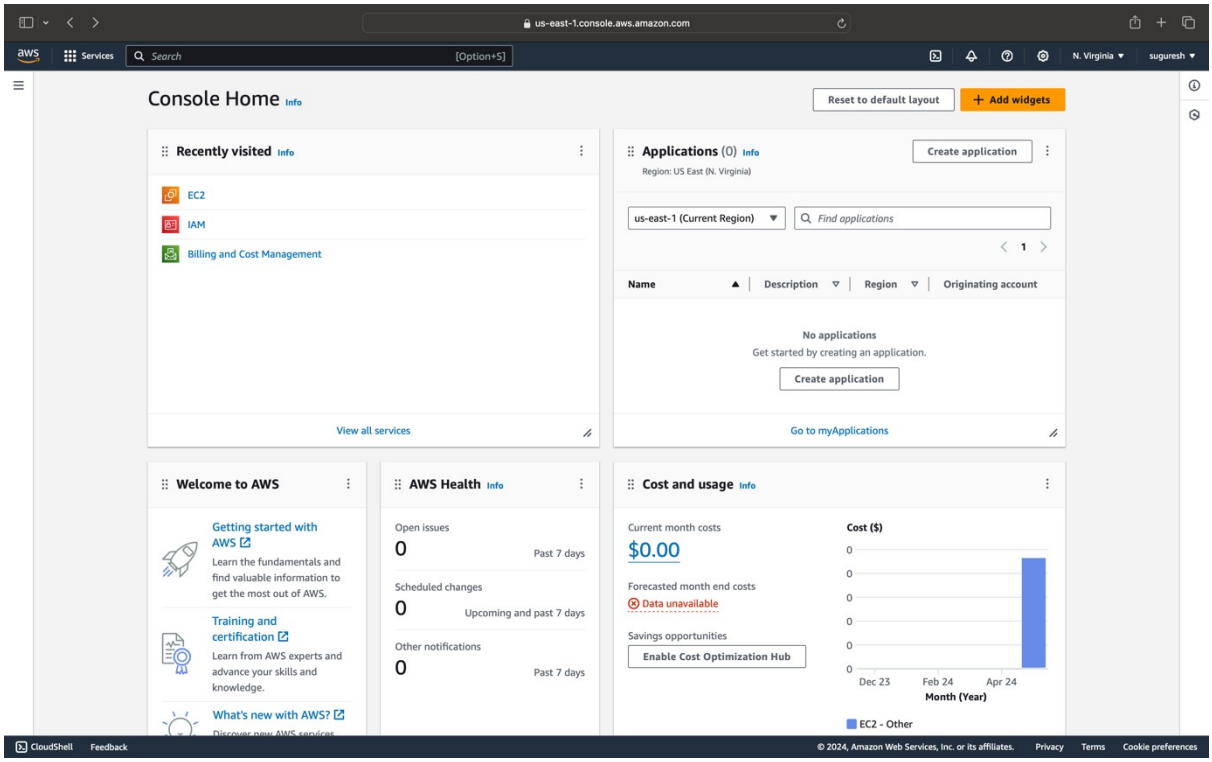
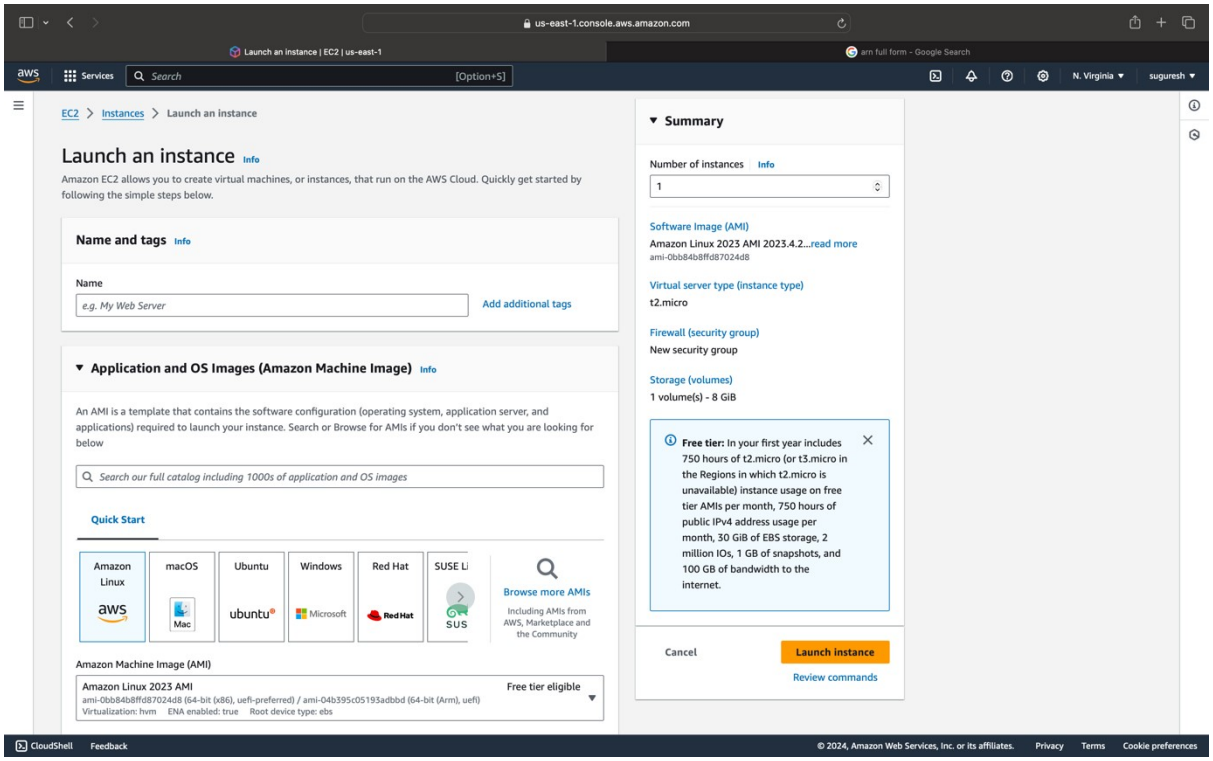
3. L3 - Launch AWS EC2 Ubuntu Instance and configure the Security Group - Inbound Rule: 8080. Justify the usage of Inbound Rules






us-east-1.console.aws.amazon.com
Launch an instance | EC2 | us-east-1
arn full form - Google Search
Services
Search
[Option+S]
N. Virginia
suguresh
EC2 > Instances > 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
Search our full catalog including 1000s of application and OS images
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)
Amazon Linux 2023 AMI
Free tier eligible
ami-0bb84b8ffd87024d8 (64-bit (x86), uefi-preferred) / ami-04b395c05193adbbd (64-bit (Arm), uefi)
Virtualization: hvm ENA enabled: true Root device type: ebs
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.4.2...read more
ami-0bb84b8ffd87024d8
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.
Cancel
Launch instance
Review commands
CloudShell
Feedback
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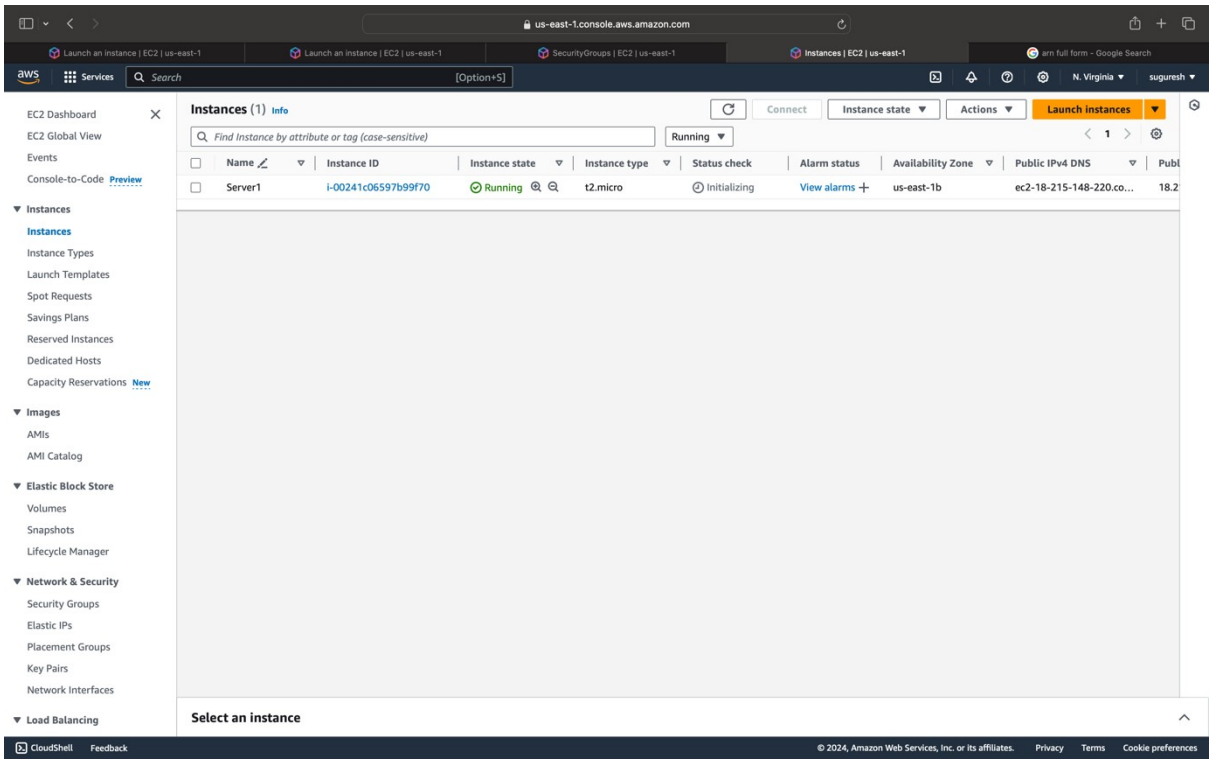
us-east-1.console.aws.amazon.com
Launch an instance | EC2 | us-east-1
Launch an instance | EC2 | us-east-1
SecurityGroups | EC2 | us-east-1
Instances | EC2 | us-east-1
arn full form - Google Search
Services
Search
[Option+S]
N. Virginia
suguresh
EC2 Dashboard
EC2 Global View
Events
Console-to-Code Preview
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
Key Pairs
Network Interfaces
Load Balancing
Instances (1) Info
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
Running
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
Server1
i-00241c06597b99f70
Running
t2.micro
Initializing
View alarms
us-east-1b
ec2-18-215-148-220.co...
Select an instance
CloudShell
Feedback
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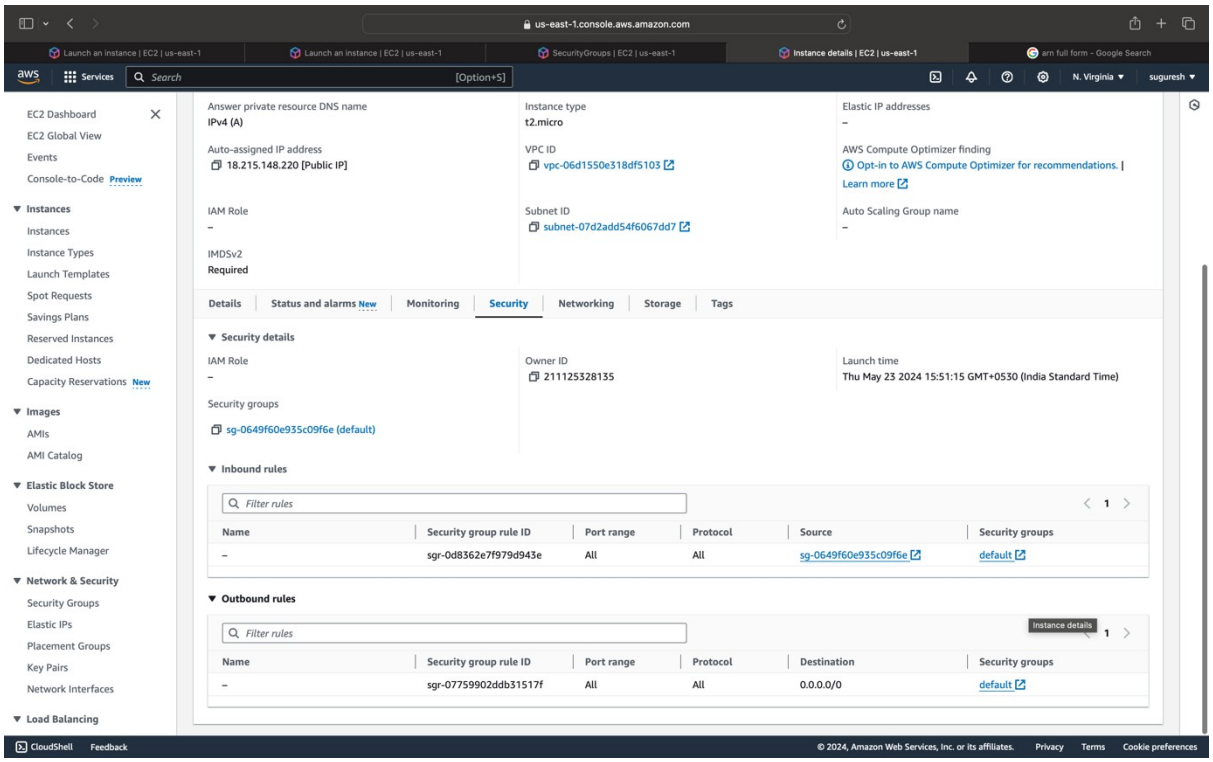
us-east-1.console.aws.amazon.com
Launch an instance | EC2 | us-east-1
Launch an instance | EC2 | us-east-1
SecurityGroups | EC2 | us-east-1
Instance details | EC2 | us-east-1
arn full form - Google Search
Services
Search
[Option+S]
N. Virginia
suguresh
EC2 Dashboard
EC2 Global View
Events
Console-to-Code Preview
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
Key Pairs
Network Interfaces
Load Balancing
Answer private resource DNS name
IPv4 (A)
Instance type
t2.micro
Elastic IP addresses
–
Auto-assigned IP address
18.215.148.220 [Public IP]
VPC ID
vpc-06d1550e318df5103
AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations.
Learn more
IAM Role
–
Subnet ID
subnet-07d2add54f6067dd7
Auto Scaling Group name
–
IMDSv2
Required
Details
Status and alarms New
Monitoring
Security
Networking
Storage
Tags
Security details
IAM Role
–
Owner ID
211125328135
Launch time
Thu May 23 2024 15:51:15 GMT+0530 (India Standard Time)
Security groups
sg-0649f60e935c09f6e (default)
Inbound rules
Filter rules
Name
Security group rule ID
Port range
Protocol
Source
Security groups
–
sgr-0d8362e7f979d943e
All
All
sg-0649f60e935c09f6e
default
Outbound rules
Filter rules
Instance details
Name
Security group rule ID
Port range
Protocol
Destination
Security groups
–
sgr-07759902ddb31517f
All
All
0.0.0.0/0
default
CloudShell
Feedback
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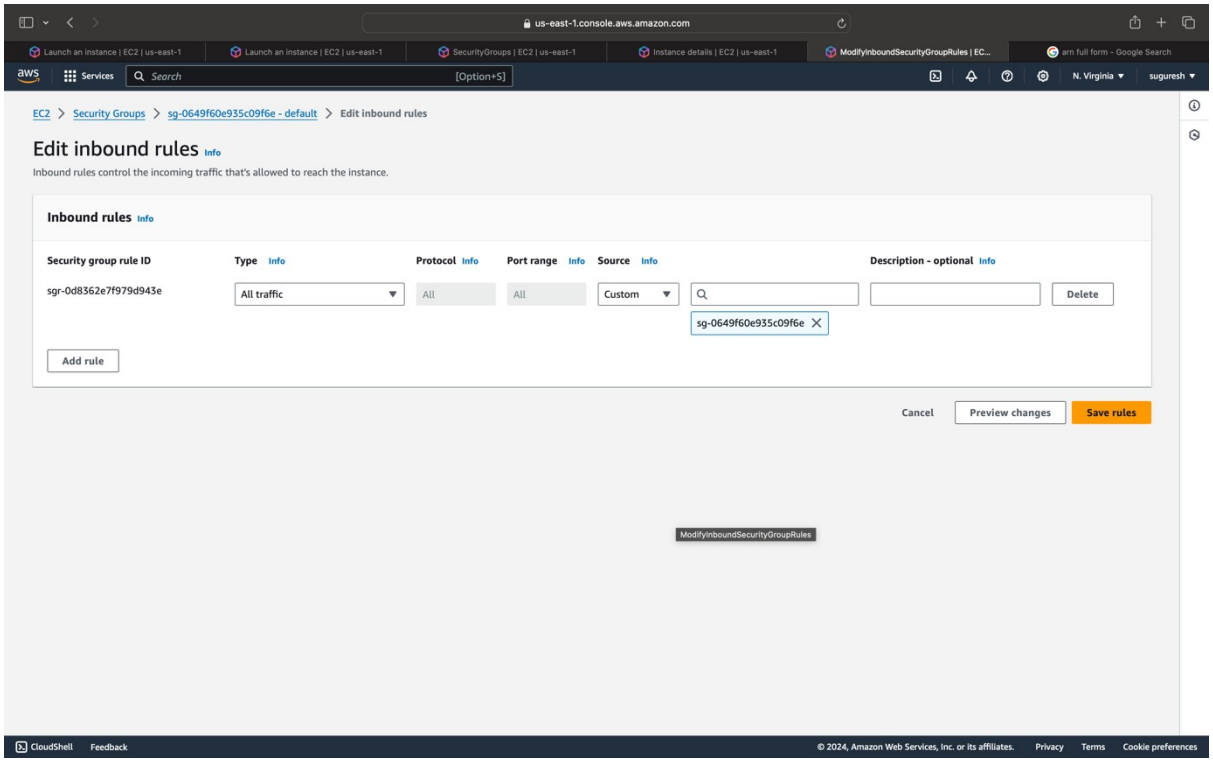
us-east-1.console.aws.amazon.com
Launch an instance | EC2 | us-east-1
Launch an instance | EC2 | us-east-1
SecurityGroups | EC2 | us-east-1
Instance details | EC2 | us-east-1
ModifyInboundSecurityGroupRules | EC...
arn full form - Google Search
Services
Search
[Option+S]
N. Virginia
suguresh
EC2 > Security Groups > sg-0649f60e935c09f6e - default > Edit inbound rules
Edit inbound rules Info
Inbound rules control the incoming traffic that's allowed to reach the instance.
Inbound rules Info
Security group rule ID
Type Info
Protocol Info
Port range Info
Source Info
Description - optional Info
sgr-0d8362e7f979d943e
All traffic
All
All
Custom
sg-0649f60e935c09f6e
Delete
Add rule
Cancel
Preview changes
Save rules
ModifyInboundSecurityGroupRules
CloudShell
Feedback
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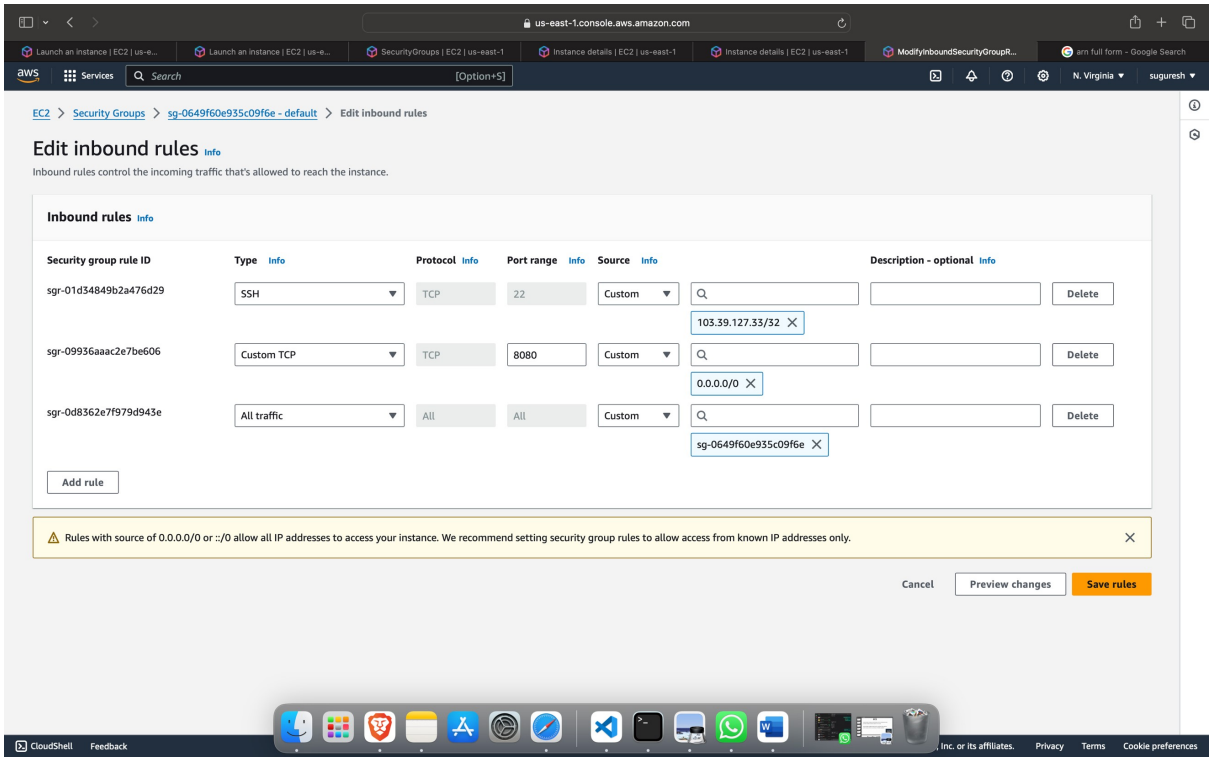
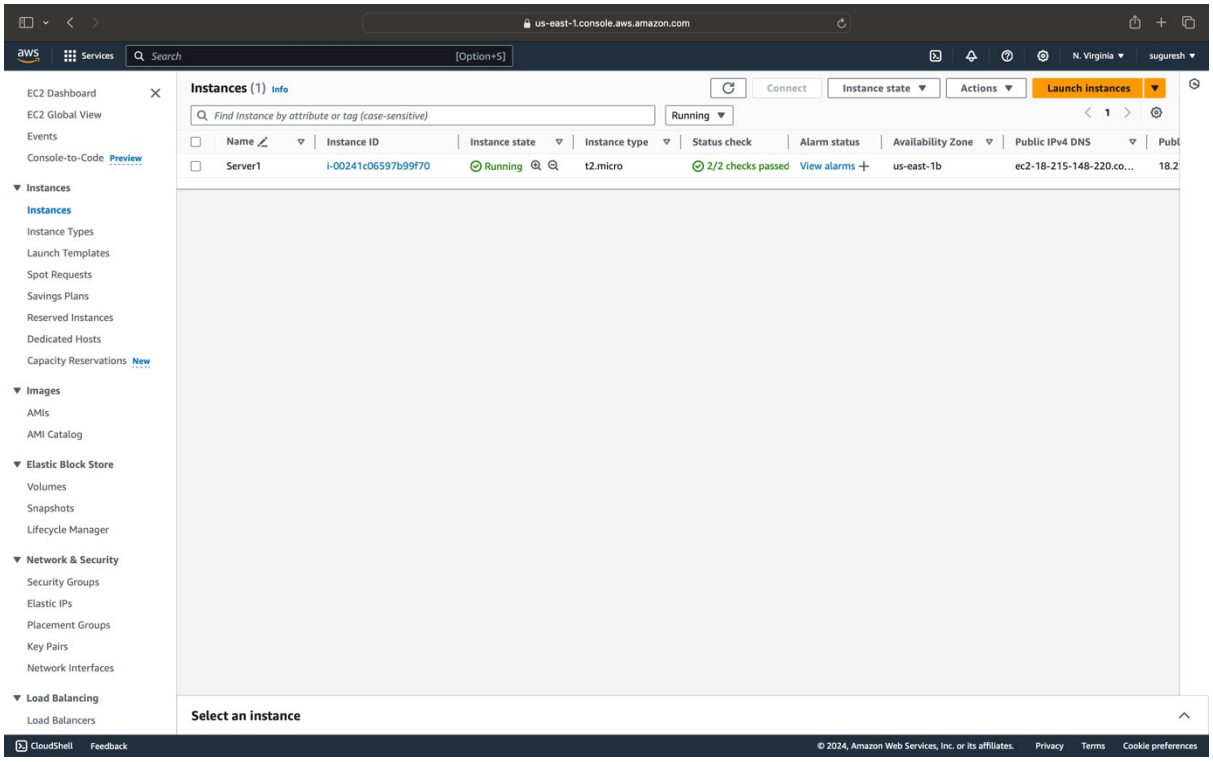
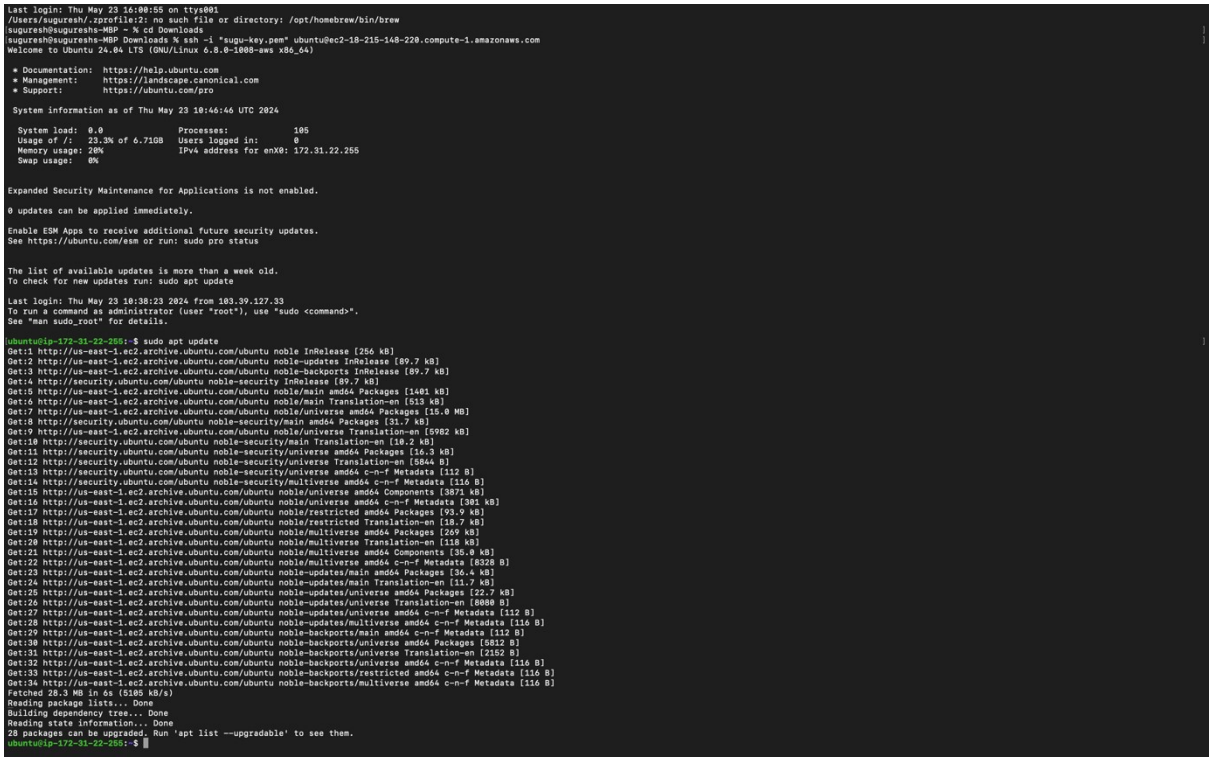


Justify the usage of Inbound Rules:

You can manage incoming traffic to your instance by using inbound rules. You can enable HTTP traffic, which is frequently used for web applications, from your personal IP address to your instance by defining an inbound rule for port 8080. By restricting access to just reliable sources, this improves security by lowering the possibility of unwanted access.

4. L4 - Connect to the AWS EC2 Ubuntu Instance and Update default packages, install JDK, Maven, Git, and validate the versions





```
Get:28 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [116 B]
Get:29 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 c-n-f Metadata [112 B]
Get:30 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [5812 B]
Get:31 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [2152 B]
Get:32 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 c-n-f Metadata [116 B]
Get:33 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 c-n-f Metadata [116 B]
Get:34 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 c-n-f Metadata [116 B]
Fetched 28.3 MB in 6s (5105 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
28 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-172-31-22-255:~$ sudo apt upgrade -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages will be upgraded:
  apport apport-core-dump-handler curl distro-info-data gir1.2-glib-2.0 klibc-utils less libc-bin libc-dev-bin libc-devtools libc6 libc6-dev libcurl3t64-gnutls libcurl4t64 libglib2.0-0t64 libglib2.0-bin libglib2.0-data libgnutls30t64
  libklibc libnghttp2-14 libssl3t64 locales openssl python3-apport python3-distupgrade python3-idna python3-problem-report ubuntu-release-upgrader-core
28 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
22 standard LTS security updates
Need to get 17.9 MB of archives.
After this operation, 283 kB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libc-devtools amd64 2.39-0ubuntu8.1 [29.3 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libc6-dev amd64 2.39-0ubuntu8.1 [2124 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/main amd64 klibc-utils amd64 2.0.13-4ubuntu0.1 [100 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libc-dev-bin amd64 2.39-0ubuntu8.1 [20.4 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libc6 amd64 2.39-0ubuntu8.1 [3265 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/main amd64 libklibc amd64 2.0.13-4ubuntu0.1 [47.2 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libc-bin amd64 2.39-0ubuntu8.1 [682 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 python3-problem-report all 2.28.1-0ubuntu3 [23.9 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 python3-apport all 2.28.1-0ubuntu3 [92.1 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libglib2.0-data all 2.80.0-6ubuntu3.1 [48.4 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libglib2.0-bin amd64 2.80.0-6ubuntu3.1 [97.9 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 gir1.2-glib-2.0 amd64 2.80.0-6ubuntu3.1 [183 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libglib2.0-0t64 amd64 2.80.0-6ubuntu3.1 [1546 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apport-core-dump-handler all 2.28.1-0ubuntu3 [16.9 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apport all 2.28.1-0ubuntu3 [83.5 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libssl3t64 amd64 3.0.13-0ubuntu3.1 [1939 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libgnutls30t64 amd64 3.8.3-1.1ubuntu3.1 [998 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 distro-info-data all 0.60ubuntu0.1 [6514 B]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 less amd64 590-2ubuntu2.1 [142 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 locales all 2.39-0ubuntu8.1 [4236 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 openssl amd64 3.0.13-0ubuntu3.1 [1303 kB]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libnghttp2-14 amd64 1.59.0-1ubuntu0.1 [74.3 kB]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 ubuntu-release-upgrader-core all 1:24.04.18 [27.4 kB]
Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 python3-distupgrade all 1:24.04.18 [122 kB]
Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0-2ubuntu10.1 [227 kB]
Get:26 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl4t64 amd64 8.5.0-2ubuntu10.1 [341 kB]
Get:27 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl3t64-gnutls amd64 8.5.0-2ubuntu10.1 [333 kB]
Get:28 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 python3-idna all 3.6-2ubuntu0.1 [49.0 kB]
Fetched 17.9 MB in 0s (45.5 MB/s)
Preconfiguring packages ...
(Reading database ... 71839 files and directories currently installed.)
Preparing to unpack .../libc-devtools_2.39-0ubuntu8.1_amd64.deb ...
Unpacking libc-devtools (2.39-0ubuntu8.1) over (2.39-0ubuntu8) ...
Preparing to unpack .../libc6-dev_2.39-0ubuntu8.1_amd64.deb ...
Unpacking libc6-dev:amd64 (2.39-0ubuntu8.1) over (2.39-0ubuntu8) ...
Preparing to unpack .../libc-dev-bin_2.39-0ubuntu8.1_amd64.deb ...
Unpacking libc-dev-bin (2.39-0ubuntu8.1) over (2.39-0ubuntu8) ...
Preparing to unpack .../libc6_2.39-0ubuntu8.1_amd64.deb ...
Unpacking libc6:amd64 (2.39-0ubuntu8.1) over (2.39-0ubuntu8) ...
Setting up libc6:amd64 (2.39-0ubuntu8.1) ...
(Reading database ... 71839 files and directories currently installed.)
Preparing to unpack .../libc-bin_2.39-0ubuntu8.1_amd64.deb ...
Unpacking libc-bin (2.39-0ubuntu8.1) over (2.39-0ubuntu8) ...
Setting up libc-bin (2.39-0ubuntu8.1) ...
(Reading database ... 71839 files and directories currently installed.)
Preparing to unpack .../0-python3-problem-report_2.28.1-0ubuntu3_all.deb ...
Unpacking python3-problem-report (2.28.1-0ubuntu3) over (2.28.1-0ubuntu2) ...
Preparing to unpack .../1-python3-apport_2.28.1-0ubuntu3_all.deb ...
Unpacking python3-apport (2.28.1-0ubuntu3) over (2.28.1-0ubuntu2) ...
Preparing to unpack .../2-libglib2.0-data_2.80.0-6ubuntu3.1_all.deb ...
```

```
Unpacking python3-distupgrade (1:24.04.18) over (1:24.04.16) ...
Preparing to unpack .../07-curl_8.5.0-2ubuntu10.1_amd64.deb ...
Unpacking curl (8.5.0-2ubuntu10.1) over (8.5.0-2ubuntu10) ...
Preparing to unpack .../08-libcurl4t64_8.5.0-2ubuntu10.1_amd64.deb ...
Unpacking libcurl4t64:amd64 (8.5.0-2ubuntu10.1) over (8.5.0-2ubuntu10) ...
Preparing to unpack .../09-klibc-utils_2.0.13-4ubuntu0.1_amd64.deb ...
Unpacking klibc-utils (2.0.13-4ubuntu0.1) over (2.0.13-4) ...
Preparing to unpack .../10-libklibc_2.0.13-4ubuntu0.1_amd64.deb ...
Unpacking libklibc:amd64 (2.0.13-4ubuntu0.1) over (2.0.13-4) ...
Preparing to unpack .../11-libcurl3t64-gnutls_8.5.0-2ubuntu10.1_amd64.deb ...
Unpacking libcurl3t64-gnutls:amd64 (8.5.0-2ubuntu10.1) over (8.5.0-2ubuntu10) ...
Preparing to unpack .../12-python3-idna_3.6-2ubuntu0.1_all.deb ...
Unpacking python3-idna (3.6-2ubuntu0.1) over (3.6-2) ...
Setting up python3-problem-report (2.28.1-0ubuntu3) ...
Setting up distro-info-data (0.60ubuntu0.1) ...
Setting up libnghttp2-14:amd64 (1.59.0-1ubuntu0.1) ...
Setting up libcurl3t64-gnutls:amd64 (8.5.0-2ubuntu10.1) ...
Setting up less (590-2ubuntu2.1) ...
Setting up python3-distupgrade (1:24.04.18) ...
Setting up locales (2.39-0ubuntu8.1) ...
Generating locales (this might take a while)...
  en_US.UTF-8... done
Generation complete.
Setting up python3-apport (2.28.1-0ubuntu3) ...
Setting up libklibc:amd64 (2.0.13-4ubuntu0.1) ...
Setting up libglib2.0-0t64:amd64 (2.80.0-6ubuntu3.1) ...
No schema files found: doing nothing.
Setting up libglib2.0-data (2.80.0-6ubuntu3.1) ...
Setting up python3-idna (3.6-2ubuntu0.1) ...
Setting up ubuntu-release-upgrader-core (1:24.04.18) ...
Setting up gir1.2-glib-2.0:amd64 (2.80.0-6ubuntu3.1) ...
Setting up libc-dev-bin (2.39-0ubuntu8.1) ...
Setting up klibc-utils (2.0.13-4ubuntu0.1) ...
Setting up openssl (3.0.13-0ubuntu3.1) ...
Setting up libc-devtools (2.39-0ubuntu8.1) ...
Setting up libcurl4t64:amd64 (8.5.0-2ubuntu10.1) ...
Setting up libglib2.0-bin (2.80.0-6ubuntu3.1) ...
Setting up libc6-dev:amd64 (2.39-0ubuntu8.1) ...
Setting up curl (8.5.0-2ubuntu10.1) ...
Setting up apport-core-dump-handler (2.28.1-0ubuntu3) ...
Setting up apport (2.28.1-0ubuntu3) ...
apport-autoreport.service is a disabled or a static unit not running, not starting it.
Processing triggers for initramfs-tools (0.142ubuntu25) ...
update-initramfs: Generating /boot/initrd.img-6.8.0-1008-aws
Processing triggers for libc-bin (2.39-0ubuntu8.1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning candidates...
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...
 /etc/needrestart/restart.d/systemd-manager
 systemctl restart acpid.service chrony.service cron.service multipathd.service packagekit.service polkit.service rsyslog.service snapd.service ssh.service systemd-journald.service systemd-networkd.service systemd-resolved.service systemd
-udevd.service udisks2.service

Service restarts being deferred:
 systemctl restart ModemManager.service
 /etc/needrestart/restart.d/dbus.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 #6: apt[1697], sshd[1197,1270]
 ubuntu @ user manager service: systemd[1202]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-22-255:~$
```

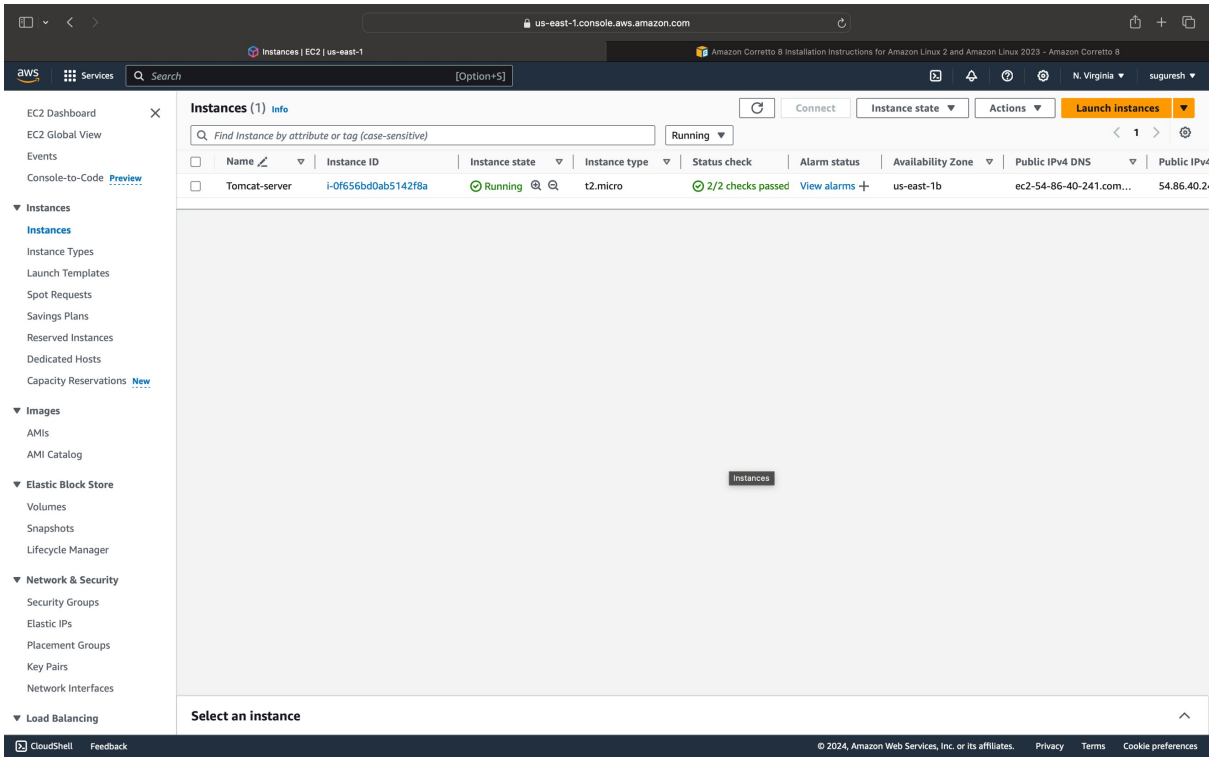
```
Service restarts being deferred:
 systemctl restart ModemManager.service
 /etc/needrestart/restart.d/dbus.service
 systemctl restart getty@tty1.service
 systemctl restart networkd-dispatcher.service
 systemctl restart serial-getty@ttyS0.service
 systemctl restart systemd-logind.service
 systemctl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

No containers need to be restarted.

User sessions running outdated binaries:
 ubuntu @ session #6: apt[1597], sshd[1197,1270]
 ubuntu @ user manager service: systemd[1202]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-22-255:~$ sudo apt install default-jdk
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  adwaita-icon-theme alsa-topology-conf alsa-ucm-conf at-spi2-common at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service default-jdk-headless default-jre default-jre-headless fontconfig fonts-dejavu-extra
  gsettings-desktop-schemas gtk-update-icon-cache hicolor-icon-theme humanity-icon-theme java-common libasound2-data libasound2t64 libatk-bridge2.0-0t64 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0t64 libatspi2.0-0t64
  libavahi-client3 libavahi-common-data libavahi-common3 libcairo-gobject2 libcairo2 libcolord2 libcups2t64 libdatrie1 libdconf1 libdrm-amdgpu1 libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libepoxy0 libgdk-pixbuf-2.0-0
  libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common libgif7 libgl1 libgl1-amber-dri libgl1-mesa-dri libglapi-mesa libglvnd0 libglx-mesa0 libglx0 libgraphite2-3 libgtk-3-0t64 libgtk-3-bin libgtk-3-common libharfbuzz0b libice-dev libice6
  liblcms2-2 libllvm17t64 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libpciaccess0 libpcsclite1 libpixman-1-0 libpthread-stubs0-dev librsvg2-2 librsvg2-common libsm-dev libsm6 libthai-data libthai0 libvulkan1
  libwayland-client0 libwayland-cursor0 libwayland-egl1 libx11-dev libx11-xcb1 libxau-dev libxaw7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-randr0 libxcb-render0 libxcb-shape0 libxcb-shm0 libxcb-sync1 libxcb-xfixes0
  libxcb1-dev libxcomposite1 libxcursor1 libxdamage1 libxdmcp-dev libxfixes3 libxft2 libxi6 libxinerama1 libxkbfile1 libxmu6 libxrandr2 libxrender1 libxshmfence1 libxt-dev libxt6t64 libxtst6 libxv1 libxxf86dga1 libxxf86vm1
  mesa-vulkan-drivers openjdk-21-jdk openjdk-21-jdk-headless openjdk-21-jre openjdk-21-jre-headless session-migration ubuntu-mono x11-common x11-utils x11proto-dev xorg-sgml-doctools xtrans-dev
Suggested packages:
  alsa-utils libasound2-plugins colord cups-common gvfs libice-doc liblcms2-utils pcscd librsvg2-bin libsm-doc libx11-doc libxcb-doc libxt-doc openjdk-21-demo openjdk-21-source visualvm libnss-mdns fonts-ipafont-gothic
  fonts-ipafont-mincho fonts-wqy-microhei | fonts-wqy-zenhei fonts-indic mesa-utils
Recommended packages:
  luit
The following NEW packages will be installed:
  adwaita-icon-theme alsa-topology-conf alsa-ucm-conf at-spi2-common at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service default-jdk default-jdk-headless default-jre default-jre-headless fontconfig fonts-dejavu-extra
  gsettings-desktop-schemas gtk-update-icon-cache hicolor-icon-theme humanity-icon-theme java-common libasound2-data libasound2t64 libatk-bridge2.0-0t64 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0t64 libatspi2.0-0t64
  libavahi-client3 libavahi-common-data libavahi-common3 libcairo-gobject2 libcairo2 libcolord2 libcups2t64 libdatrie1 libdconf1 libdrm-amdgpu1 libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libepoxy0 libgdk-pixbuf-2.0-0
  libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common libgif7 libgl1 libgl1-amber-dri libgl1-mesa-dri libglapi-mesa libglvnd0 libglx-mesa0 libglx0 libgraphite2-3 libgtk-3-0t64 libgtk-3-bin libgtk-3-common libharfbuzz0b libice-dev libice6
  liblcms2-2 libllvm17t64 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libpciaccess0 libpcsclite1 libpixman-1-0 libpthread-stubs0-dev librsvg2-2 librsvg2-common libsm-dev libsm6 libthai-data libthai0 libvulkan1
  libwayland-client0 libwayland-cursor0 libwayland-egl1 libx11-dev libx11-xcb1 libxau-dev libxaw7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-randr0 libxcb-render0 libxcb-shape0 libxcb-shm0 libxcb-sync1 libxcb-xfixes0
  libxcb1-dev libxcomposite1 libxcursor1 libxdamage1 libxdmcp-dev libxfixes3 libxft2 libxi6 libxinerama1 libxkbfile1 libxmu6 libxrandr2 libxrender1 libxshmfence1 libxt-dev libxt6t64 libxtst6 libxv1 libxxf86dga1 libxxf86vm1
  mesa-vulkan-drivers openjdk-21-jdk openjdk-21-jdk-headless openjdk-21-jre openjdk-21-jre-headless session-migration ubuntu-mono x11-common x11-utils x11proto-dev xorg-sgml-doctools xtrans-dev
0 upgraded, 123 newly installed, 0 to remove and 0 not upgraded.
Need to get 202 MB of archives.
After this operation, 627 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libgdk-pixbuf2.0-common all 2.42.10+dfsg-3ubuntu3 [7852 B]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libgdk-pixbuf-2.0-0 amd64 2.42.10+dfsg-3ubuntu3 [147 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 gtk-update-icon-cache amd64 3.24.41-4ubuntu1 [51.6 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 hicolor-icon-theme all 0.17-2 [9976 B]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 humanity-icon-theme all 0.6.16 [1282 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 ubuntu-mono all 24.04-0ubuntu1 [151 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 adwaita-icon-theme all 46.0-1 [723 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 alsa-topology-conf all 1.2.5.1-2 [15.5 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libasound2-data all 1.2.11-1build2 [21.0 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libasound2t64 amd64 1.2.11-1build2 [399 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 alsa-ucm-conf all 1.2.10-1ubuntu5 [63.1 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 at-spi2-common all 2.52.0-1build1 [8674 B]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libxi6 amd64 2:1.8.1-1build1 [32.4 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libatspi2.0-0t64 amd64 2.52.0-1build1 [80.5 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 x11-common all 1:7.7+23ubuntu3 [21.7 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libxtst6 amd64 2:1.2.3-1.1build1 [12.6 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libdconf1 amd64 0.40.0-4build2 [39.4 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 dconf-service amd64 0.40.0-4build2 [27.5 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 dconf-gsettings-backend amd64 0.40.0-4build2 [22.1 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 session-migration amd64 0.3.9build1 [9836 B]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 gsettings-desktop-schemas all 46.0-1ubuntu2 [35.6 kB]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 at-spi2-core amd64 2.52.0-1build1 [56.6 kB]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 ca-certificates-java all 20240118 [11.6 kB]
Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 java-common all 0.75+exp1 [6798 B]
Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 liblcms2-2 amd64 2.14-2build1 [161 kB]
Get:26 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libpcsclite1 amd64 2.0.3-1build1 [21.4 kB]
```

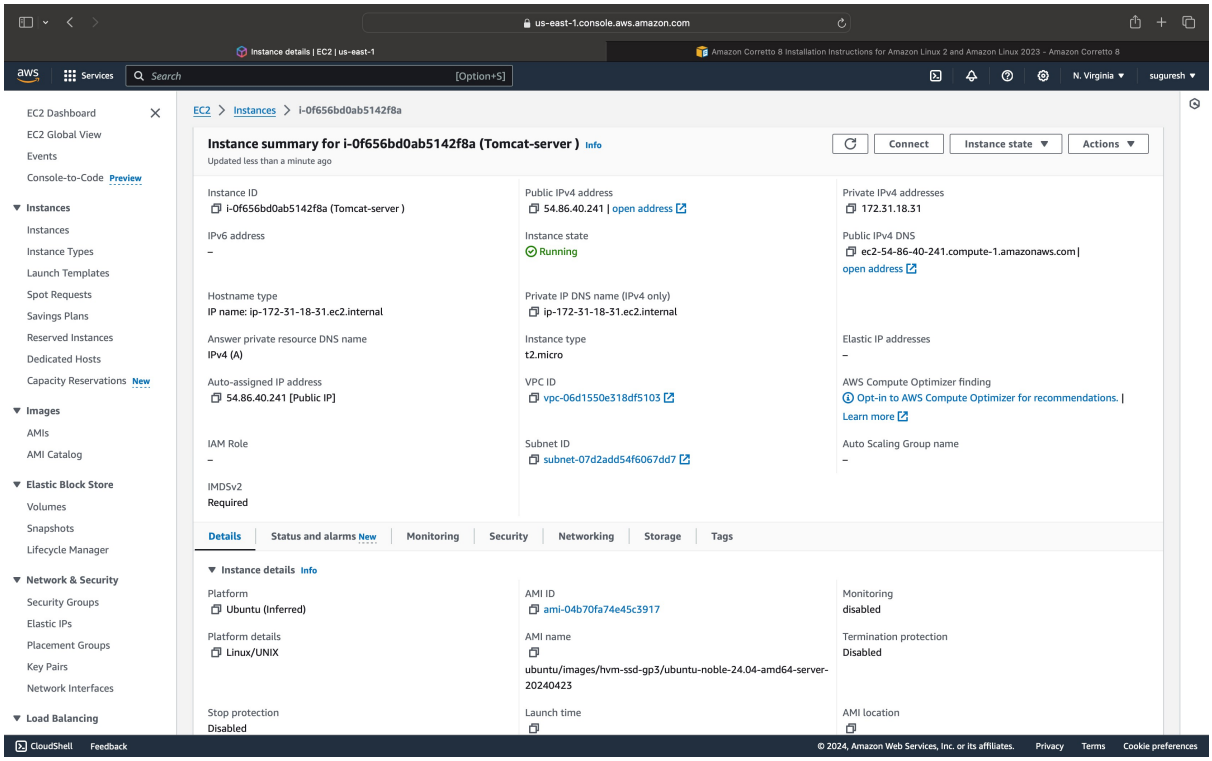
```
Adding debian:TunTrust_Root_CA.pem
Adding debian:UCA_Extended_Validation_Root.pem
Adding debian:UCA_Global_G2_Root.pem
Adding debian:USERTrust_ECC_Certification_Authority.pem
Adding debian:USERTrust_RSA_Certification_Authority.pem
Adding debian:XRamp_Global_CA_Root.pem
Adding debian:certSIGN_ROOT_CA.pem
Adding debian:certSIGN_Root_CA_G2.pem
Adding debian:e-Szigno_Root_CA_2017.pem
Adding debian:ePKI_Root_Certification_Authority.pem
Adding debian:emSign_ECC_Root_CA_-_C3.pem
Adding debian:emSign_ECC_Root_CA_-_G3.pem
Adding debian:emSign_Root_CA_-_C1.pem
Adding debian:emSign_Root_CA_-_G1.pem
Adding debian:vTrus_ECC_Root_CA.pem
Adding debian:vTrus_Root_CA.pem
done.
Setting up default-jre-headless (2:1.21-75+exp1) ...
Setting up openjdk-21-jre:amd64 (21.0.3+9-1ubuntu1) ...
Setting up openjdk-21-jdk-headless:amd64 (21.0.3+9-1ubuntu1) ...
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jar to provide /usr/bin/jar (jar) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jarsigner to provide /usr/bin/jarsigner (jarsigner) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/javac to provide /usr/bin/javac (javac) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/javadoc to provide /usr/bin/javadoc (javadoc) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/javap to provide /usr/bin/javap (javap) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jcmd to provide /usr/bin/jcmd (jcmd) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jdb to provide /usr/bin/jdb (jdb) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jdeprscan to provide /usr/bin/jdeprscan (jdeprscan) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jdeps to provide /usr/bin/jdeps (jdeps) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jfr to provide /usr/bin/jfr (jfr) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jimage to provide /usr/bin/jimage (jimage) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jinfo to provide /usr/bin/jinfo (jinfo) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jlink to provide /usr/bin/jlink (jlink) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jmap to provide /usr/bin/jmap (jmap) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jmod to provide /usr/bin/jmod (jmod) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jps to provide /usr/bin/jps (jps) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jrunscript to provide /usr/bin/jrunscript (jrunscript) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jshell to provide /usr/bin/jshell (jshell) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jstack to provide /usr/bin/jstack (jstack) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jstat to provide /usr/bin/jstat (jstat) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jstatd to provide /usr/bin/jstatd (jstatd) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jwebserver to provide /usr/bin/jwebserver (jwebserver) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/serialver to provide /usr/bin/serialver (serialver) in auto mode
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jhsdb to provide /usr/bin/jhsdb (jhsdb) in auto mode
Setting up default-jre (2:1.21-75+exp1) ...
Setting up openjdk-21-jdk:amd64 (21.0.3+9-1ubuntu1) ...
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jconsole to provide /usr/bin/jconsole (jconsole) in auto mode
Setting up default-jdk-headless (2:1.21-75+exp1) ...
Setting up default-jdk (2:1.21-75+exp1) ...
Processing triggers for libgdk-pixbuf-2.0-0:amd64 (2.42.10+dfsg-3ubuntu3) ...
Scanning processes...
Scanning candidates...
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...

Service restarts being deferred:
 /etc/needrestart/restart.d/dbus.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 #6: sshd[1197,1270]
 ubuntu @ user manager service: systemd[1202]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-22-255:~$
```

```
ubuntu@ip-172-31-22-255:~$ sudo apt install maven
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libaopalliance-java libapache-pom-java libatinject-jsr330-api-java libcdi-api-java libcommons-cli-java libcommons-io-java libcommons-lang3-java libcommons-parent-java liberror-prone-java libgeronimo-annotation-1.3-spec-java
  libgeronimo-interceptor-3.0-spec-java libguava-java libguice-java libjansi-java libjsr305-java libmaven-parent-java libmaven-resolver-java libmaven-shared-utils-java libmaven3-core-java libplexus-cipher-java libplexus-classworlds-java
  libplexus-component-annotations-java libplexus-interpolation-java libplexus-sec-dispatcher-java libplexus-utils2-java libsisu-inject-java libsisu-plexus-java libslf4j-java libwagon-file-java libwagon-http-shaded-java
  libwagon-provider-api-java
Suggested packages:
  libatinject-jsr330-api-java-doc libel-api-java libcommons-io-java-doc libasm-java libcglib-java libjsr305-java-doc libmaven-shared-utils-java-doc liblogback-java libplexus-utils2-java-doc junit4 testng libcommons-logging-java
  liblog4j1.2-java
The following NEW packages will be installed:
  libaopalliance-java libapache-pom-java libatinject-jsr330-api-java libcdi-api-java libcommons-cli-java libcommons-io-java libcommons-lang3-java libcommons-parent-java liberror-prone-java libgeronimo-annotation-1.3-spec-java
  libgeronimo-interceptor-3.0-spec-java libguava-java libguice-java libjansi-java libjsr305-java libmaven-parent-java libmaven-resolver-java libmaven-shared-utils-java libmaven3-core-java libplexus-cipher-java libplexus-classworlds-java
  libplexus-component-annotations-java libplexus-interpolation-java libplexus-sec-dispatcher-java libplexus-utils2-java libsisu-inject-java libsisu-plexus-java libslf4j-java libwagon-file-java libwagon-http-shaded-java
  libwagon-provider-api-java maven
0 upgraded, 32 newly installed, 0 to remove and 0 not upgraded.
Need to get 10.1 MB of archives.
After this operation, 13.1 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libapache-pom-java all 29-2 [5284 B]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libatinject-jsr330-api-java all 1.0+ds1-5 [5348 B]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libgeronimo-interceptor-3.0-spec-java all 1.0.1-4fakesync [8616 B]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libcdi-api-java all 1.2-3 [54.3 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libcommons-cli-java all 1.6.0-1 [59.9 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libcommons-parent-java all 56-1 [10.7 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libcommons-io-java all 2.11.0-2 [297 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libcommons-lang3-java all 3.14.0-1 [586 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libjsr305-java all 0.1~+svn49-11 [27.6 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libguava-java all 32.0.1-1 [2692 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 liberror-prone-java all 2.18.0-1 [22.5 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libgeronimo-annotation-1.3-spec-java all 1.3-1 [11.2 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libaopalliance-java all 20070526-7 [8166 B]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libguice-java all 4.2.3-2 [1434 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libjansi-java all 2.4.1-2 [83.0 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libmaven-parent-java all 35-1 [5810 B]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libplexus-utils2-java all 3.4.2-1 [256 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libwagon-provider-api-java all 3.5.3-1 [47.9 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libmaven-resolver-java all 1.6.3-1 [544 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libmaven-shared-utils-java all 3.3.4-1 [137 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libplexus-cipher-java all 2.0-1 [14.7 kB]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libplexus-classworlds-java all 2.7.0-1 [50.0 kB]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libplexus-component-annotations-java all 2.1.1-1 [6550 B]
Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libplexus-interpolation-java all 1.26-1 [76.8 kB]
Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libplexus-sec-dispatcher-java all 2.0-3 [28.1 kB]
Get:26 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 liblslf4j-java all 1.7.32-1 [141 kB]
Get:27 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libsisu-inject-java all 0.3.4-2 [347 kB]
Get:28 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libsisu-plexus-java all 0.3.4-3 [181 kB]
Get:29 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libmaven3-core-java all 3.8.7-2 [1565 kB]
Get:30 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libwagon-file-java all 3.5.3-1 [7918 B]
Get:31 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libwagon-http-shaded-java all 3.5.3-1 [1332 kB]
Get:32 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 maven all 3.8.7-2 [18.3 kB]
Fetched 10.1 MB in 0s (45.8 MB/s)
Extracting templates from packages: 100%
Selecting previously unselected package libapache-pom-java.
(Reading database ... 87173 files and directories currently installed.)
Preparing to unpack .../00-libapache-pom-java_29-2_all.deb ...
Unpacking libapache-pom-java (29-2) ...
Selecting previously unselected package libatinject-jsr330-api-java.
Preparing to unpack .../01-libatinject-jsr330-api-java_1.0+ds1-5_all.deb ...
Unpacking libatinject-jsr330-api-java (1.0+ds1-5) ...
Selecting previously unselected package libgeronimo-interceptor-3.0-spec-java.
Preparing to unpack .../02-libgeronimo-interceptor-3.0-spec-java_1.0.1-4fakesync_all.deb ...
Unpacking libgeronimo-interceptor-3.0-spec-java (1.0.1-4fakesync) ...
Selecting previously unselected package libcdi-api-java.
Preparing to unpack .../03-libcdi-api-java_1.2-3_all.deb ...
Unpacking libcdi-api-java (1.2-3) ...
Selecting previously unselected package libcommons-cli-java.
Preparing to unpack .../04-libcommons-cli-java_1.6.0-1_all.deb ...
Unpacking libcommons-cli-java (1.6.0-1) ...
Selecting previously unselected package libcommons-parent-java.
Preparing to unpack .../05-libcommons-parent-java_56-1_all.deb ...
Unpacking libcommons-parent-java (56-1) ...
```

```
ubuntu@ip-172-31-22-255:~$ sudo apt install git
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
git is already the newest version (1:2.43.0-1ubuntu7).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-22-255:~$ java -version && mvn -version && git --version
openjdk version "21.0.3" 2024-04-16
OpenJDK Runtime Environment (build 21.0.3+9-Ubuntu-1ubuntu1)
OpenJDK 64-Bit Server VM (build 21.0.3+9-Ubuntu-1ubuntu1, mixed mode, sharing)
Apache Maven 3.8.7
Maven home: /usr/share/maven
Java version: 21.0.3, vendor: Ubuntu, runtime: /usr/lib/jvm/java-21-openjdk-amd64
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "6.8.0-1008-aws", arch: "amd64", family: "unix"
git version 2.43.0
ubuntu@ip-172-31-22-255:~$
```

5. L5 - Install Tomcat web application server in AWS EC2 Ubuntu Instance and access Tomcat using a web browser

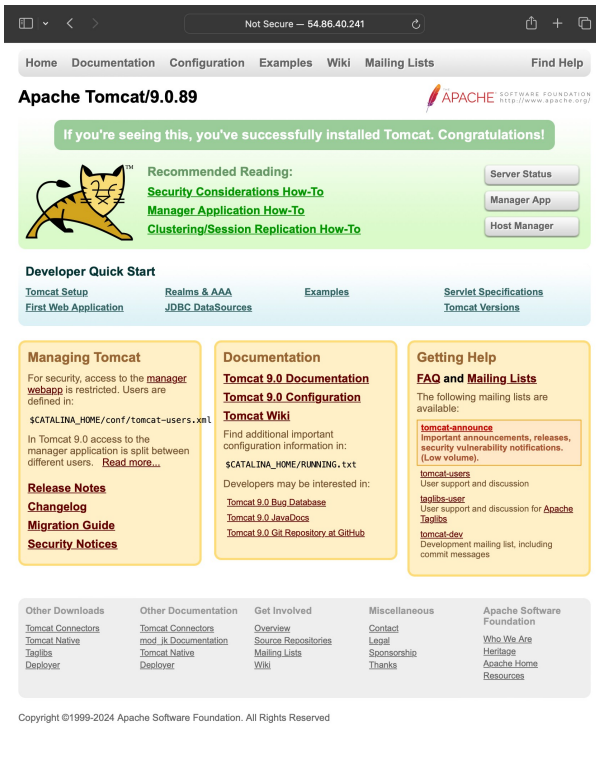




```
suguresh@sugureshs-MBP Downloads % ssh -i "sugu-key.pem" ubuntu@ec2-54-86-40-241.compute-1.amazonaws.com
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1008-aws x86_64)

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

 System information as of Thu May 23 11:45:19 UTC 2024

  System load:  0.0               Processes:             104
  Usage of /:   35.2% of 6.71GB   Users logged in:       0
  Memory usage: 22%               IPv4 address for enX0: 172.31.18.31
  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


*** System restart required ***
Last login: Thu May 23 11:39:22 2024 from 103.39.127.33
ubuntu@ip-172-31-18-31:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
ubuntu@ip-172-31-18-31:~$ sudo apt install default-jdk -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
default-jdk is already the newest version (2:1.21-75+exp1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-18-31:~$ wget https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.89/bin/apache-tomcat-9.0.89.tar.gz
--2024-05-23 11:45:55--  https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.89/bin/apache-tomcat-9.0.89.tar.gz
Resolving dlcdn.apache.org (dlcdn.apache.org)... 151.101.2.132, 2a04:4e42::644
Connecting to dlcdn.apache.org (dlcdn.apache.org)|151.101.2.132|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 11756919 (11M) [application/x-gzip]
Saving to: 'apache-tomcat-9.0.89.tar.gz'

apache-tomcat-9.0.89.tar.gz                         100%[=================================================================================================================>]  11.21M  --.-KB/s    in 0.07s

2024-05-23 11:45:56 (154 MB/s) - 'apache-tomcat-9.0.89.tar.gz' saved [11756919/11756919]

ubuntu@ip-172-31-18-31:~$
```

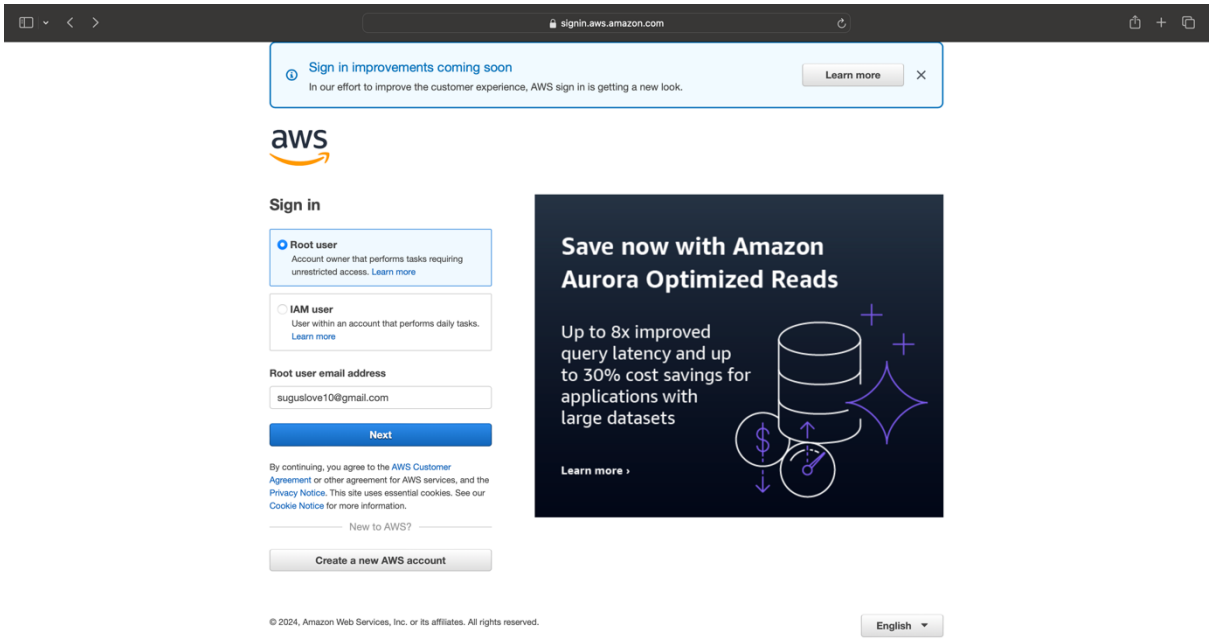
```
suguresh@sugureshs-MBP Downloads % ssh -i "sugu-key.pem" ubuntu@ec2-54-86-40-241.compute-1.amazonaws.com
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1008-aws x86_64)

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

 System information as of Thu May 23 11:45:19 UTC 2024

  System load:  0.0               Processes:             104
  Usage of /:   35.2% of 6.71GB   Users logged in:       0
  Memory usage: 22%               IPv4 address for enX0: 172.31.18.31
  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


*** System restart required ***
Last login: Thu May 23 11:39:22 2024 from 103.39.127.33
ubuntu@ip-172-31-18-31:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
ubuntu@ip-172-31-18-31:~$ sudo apt install default-jdk -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
default-jdk is already the newest version (2:1.21-75+exp1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-18-31:~$ wget https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.89/bin/apache-tomcat-9.0.89.tar.gz
--2024-05-23 11:45:55--  https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.89/bin/apache-tomcat-9.0.89.tar.gz
Resolving dlcdn.apache.org (dlcdn.apache.org)... 151.101.2.132, 2a04:4e42::644
Connecting to dlcdn.apache.org (dlcdn.apache.org)|151.101.2.132|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 11756919 (11M) [application/x-gzip]
Saving to: 'apache-tomcat-9.0.89.tar.gz'

apache-tomcat-9.0.89.tar.gz                         100%[=================================================================================================================>]  11.21M  --.-KB/s    in 0.07s

2024-05-23 11:45:56 (154 MB/s) - 'apache-tomcat-9.0.89.tar.gz' saved [11756919/11756919]

ubuntu@ip-172-31-18-31:~$ tar -xvzf apache-tomcat-9.0.89.tar.gz
apache-tomcat-9.0.89/conf/
apache-tomcat-9.0.89/conf/catalina.policy
apache-tomcat-9.0.89/conf/catalina.properties
apache-tomcat-9.0.89/conf/context.xml
apache-tomcat-9.0.89/conf/jaspic-providers.xml
apache-tomcat-9.0.89/conf/jaspic-providers.xsd
apache-tomcat-9.0.89/conf/logging.properties
apache-tomcat-9.0.89/conf/server.xml
apache-tomcat-9.0.89/conf/tomcat-users.xml
apache-tomcat-9.0.89/conf/tomcat-users.xsd
apache-tomcat-9.0.89/conf/web.xml
apache-tomcat-9.0.89/bin/
apache-tomcat-9.0.89/lib/
apache-tomcat-9.0.89/logs/
apache-tomcat-9.0.89/temp/
apache-tomcat-9.0.89/webapps/
apache-tomcat-9.0.89/webapps/ROOT/
apache-tomcat-9.0.89/webapps/ROOT/WEB-INF/
apache-tomcat-9.0.89/webapps/docs/
apache-tomcat-9.0.89/webapps/docs/META-INF/
apache-tomcat-9.0.89/webapps/docs/WEB-INF/
```

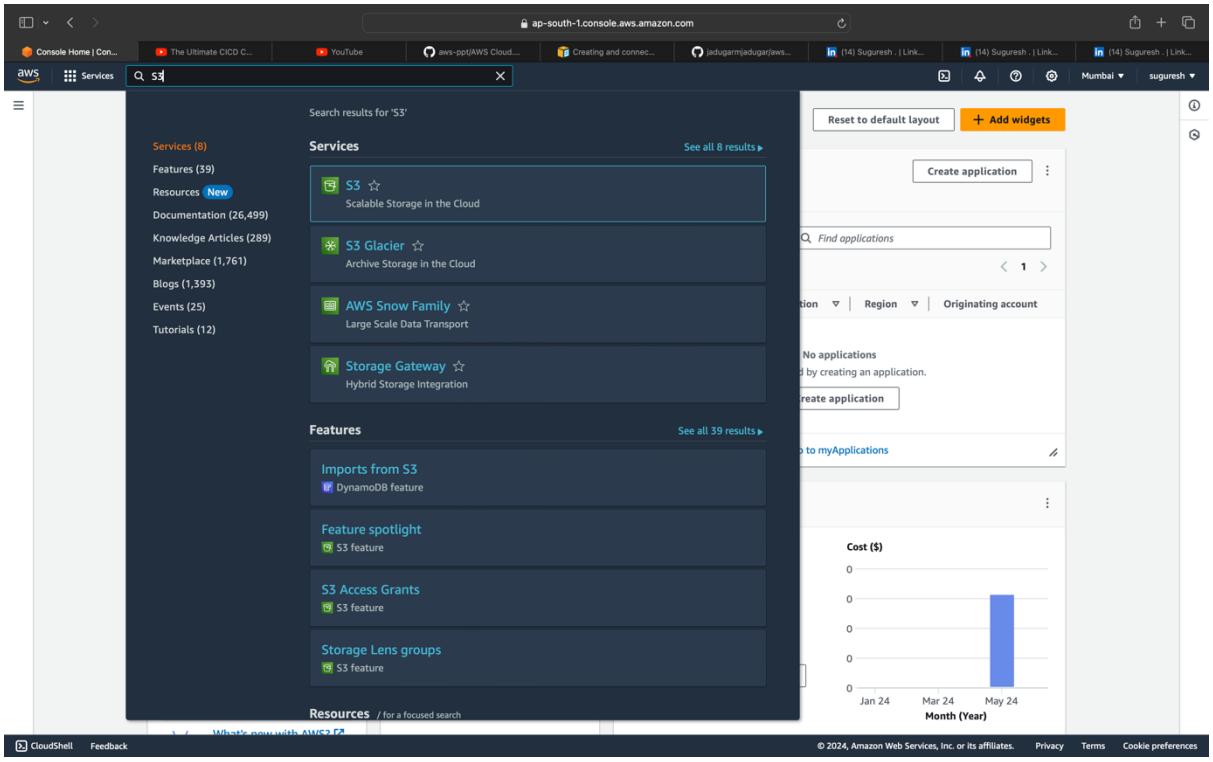
```
apache-tomcat-9.0.89/webapps/examples/jsp/xml/xml.html
apache-tomcat-9.0.89/webapps/examples/jsp/xml/xml.jsp
apache-tomcat-9.0.89/webapps/examples/jsp/xml/xml.jsp.html
apache-tomcat-9.0.89/webapps/examples/servlets/cookies.html
apache-tomcat-9.0.89/webapps/examples/servlets/helloworld.html
apache-tomcat-9.0.89/webapps/examples/servlets/images/code.gif
apache-tomcat-9.0.89/webapps/examples/servlets/images/execute.gif
apache-tomcat-9.0.89/webapps/examples/servlets/images/return.gif
apache-tomcat-9.0.89/webapps/examples/servlets/index.html
apache-tomcat-9.0.89/webapps/examples/servlets/nonblocking/bytecounter.html
apache-tomcat-9.0.89/webapps/examples/servlets/reqheaders.html
apache-tomcat-9.0.89/webapps/examples/servlets/reqinfo.html
apache-tomcat-9.0.89/webapps/examples/servlets/reqparams.html
apache-tomcat-9.0.89/webapps/examples/servlets/sessions.html
apache-tomcat-9.0.89/webapps/examples/websocket/chat.xhtml
apache-tomcat-9.0.89/webapps/examples/websocket/drawboard.xhtml
apache-tomcat-9.0.89/webapps/examples/websocket/echo.xhtml
apache-tomcat-9.0.89/webapps/examples/websocket/index.xhtml
apache-tomcat-9.0.89/webapps/examples/websocket/snake.xhtml
apache-tomcat-9.0.89/webapps/host-manager/META-INF/context.xml
apache-tomcat-9.0.89/webapps/host-manager/WEB-INF/jsp/401.jsp
apache-tomcat-9.0.89/webapps/host-manager/WEB-INF/jsp/403.jsp
apache-tomcat-9.0.89/webapps/host-manager/WEB-INF/jsp/404.jsp
apache-tomcat-9.0.89/webapps/host-manager/WEB-INF/manager.xml
apache-tomcat-9.0.89/webapps/host-manager/WEB-INF/web.xml
apache-tomcat-9.0.89/webapps/host-manager/css/manager.css
apache-tomcat-9.0.89/webapps/host-manager/images/asf-logo.svg
apache-tomcat-9.0.89/webapps/host-manager/images/tomcat.svg
apache-tomcat-9.0.89/webapps/host-manager/index.jsp
apache-tomcat-9.0.89/webapps/manager/META-INF/context.xml
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/401.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/403.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/404.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/connectorCerts.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/connectorCiphers.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/connectorTrustedCerts.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/sessionDetail.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/sessionsList.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/web.xml
apache-tomcat-9.0.89/webapps/manager/css/manager.css
apache-tomcat-9.0.89/webapps/manager/images/asf-logo.svg
apache-tomcat-9.0.89/webapps/manager/images/tomcat.svg
apache-tomcat-9.0.89/webapps/manager/index.jsp
apache-tomcat-9.0.89/webapps/manager/status.xsd
apache-tomcat-9.0.89/webapps/manager/xform.xsl
apache-tomcat-9.0.89/bin/catalina.sh
apache-tomcat-9.0.89/bin/ciphers.sh
apache-tomcat-9.0.89/bin/configtest.sh
apache-tomcat-9.0.89/bin/daemon.sh
apache-tomcat-9.0.89/bin/digest.sh
apache-tomcat-9.0.89/bin/makebase.sh
apache-tomcat-9.0.89/bin/setclasspath.sh
apache-tomcat-9.0.89/bin/shutdown.sh
apache-tomcat-9.0.89/bin/startup.sh
apache-tomcat-9.0.89/bin/tool-wrapper.sh
apache-tomcat-9.0.89/bin/version.sh
ubuntu@ip-172-31-18-31:~$ ls
apache-tomcat-9.0.89  apache-tomcat-9.0.89.tar.gz
ubuntu@ip-172-31-18-31:~$ cd apache-tomcat-9.0.89/
ubuntu@ip-172-31-18-31:~/apache-tomcat-9.0.89$ ls
BUILDING.txt  CONTRIBUTING.md  LICENSE  NOTICE  README.md  RELEASE-NOTES  RUNNING.txt  bin  conf  lib  logs  temp  webapps  work
ubuntu@ip-172-31-18-31:~/apache-tomcat-9.0.89$ cd bin/
ubuntu@ip-172-31-18-31:~/apache-tomcat-9.0.89/bin$ ls
bootstrap.jar       catalina.bat  ciphers.bat  commons-daemon-native.tar.gz  configtest.bat  daemon.sh   digest.sh     makebase.sh       setclasspath.sh  shutdown.sh  startup.sh       tomcat-native.tar.gz  tool-wrapper.sh  version.sh
catalina-tasks.xml  catalina.sh   ciphers.sh   commons-daemon.jar            configtest.sh   digest.bat  makebase.bat  setclasspath.bat  shutdown.bat     startup.bat  tomcat-juli.jar  tool-wrapper.bat      version.bat
ubuntu@ip-172-31-18-31:~/apache-tomcat-9.0.89/bin$ ./startup.sh
Using CATALINA_BASE:   /home/ubuntu/apache-tomcat-9.0.89
Using CATALINA_HOME:   /home/ubuntu/apache-tomcat-9.0.89
Using CATALINA_TMPDIR: /home/ubuntu/apache-tomcat-9.0.89/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /home/ubuntu/apache-tomcat-9.0.89/bin/bootstrap.jar:/home/ubuntu/apache-tomcat-9.0.89/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
ubuntu@ip-172-31-18-31:~/apache-tomcat-9.0.89/bin$
```

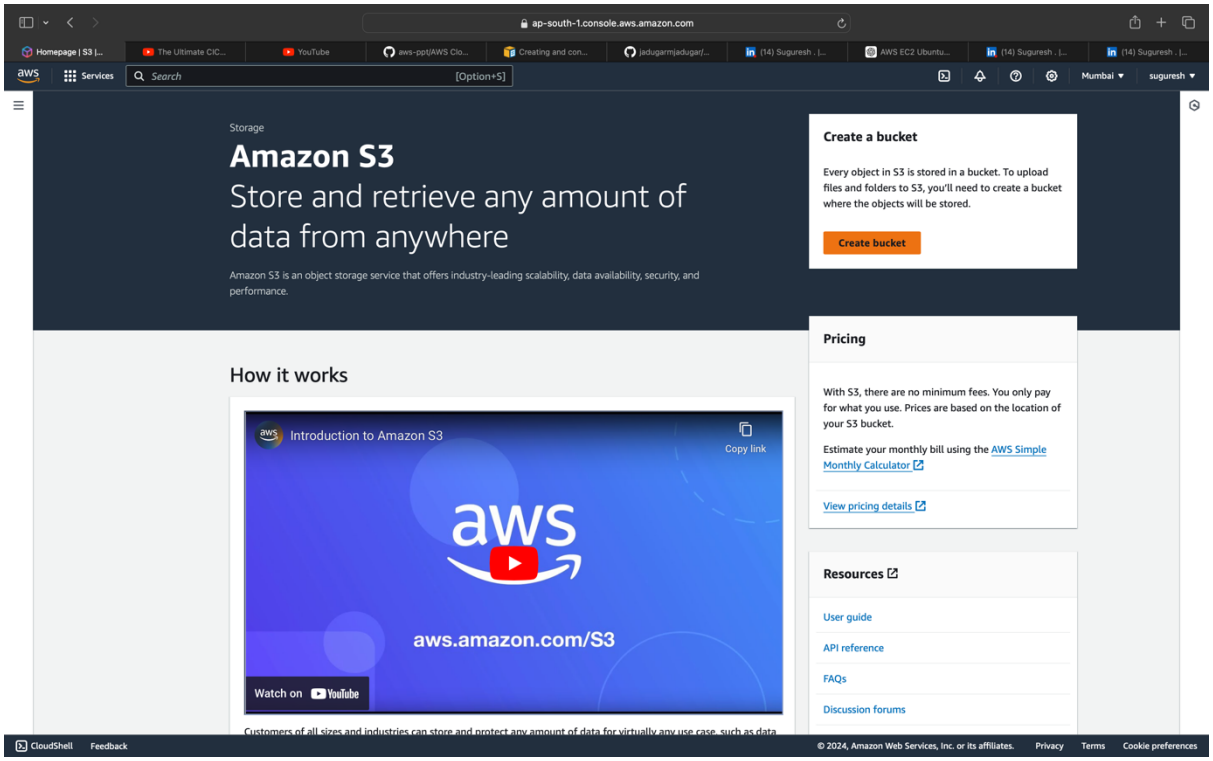


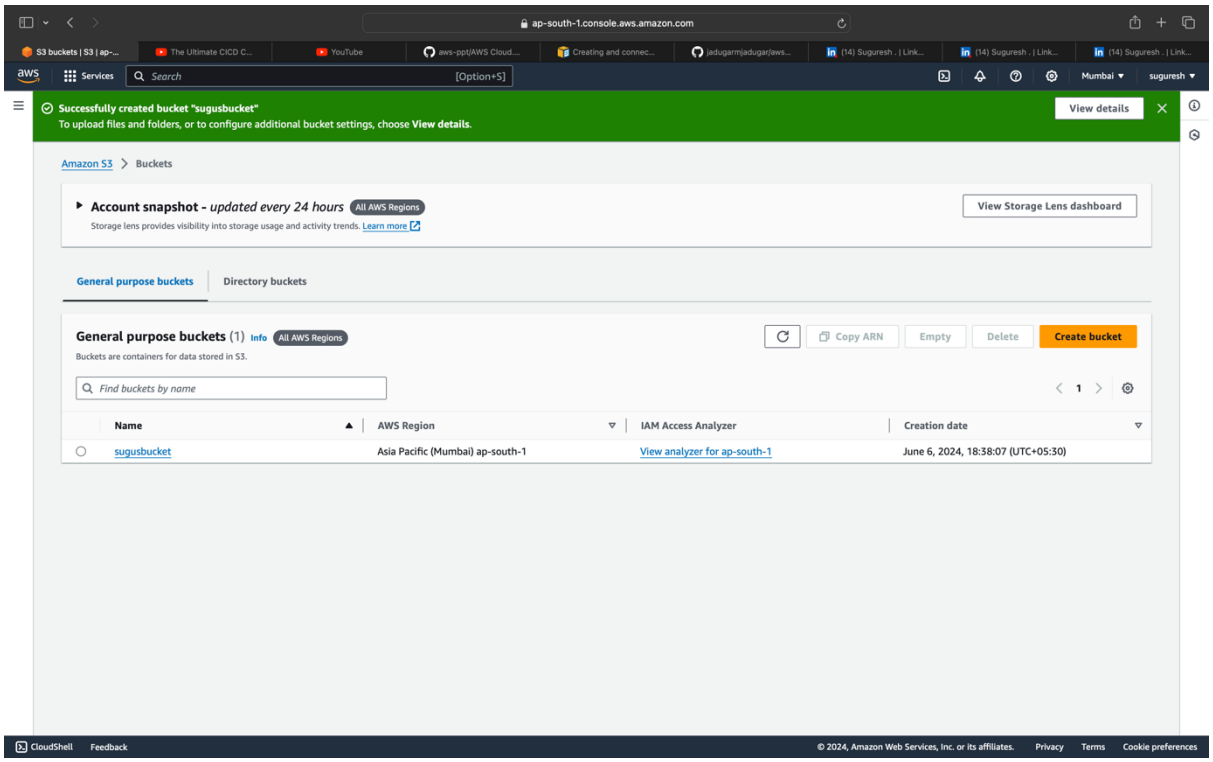

```
apache-tomcat-9.0.89/webapps/examples/servlets/helloworld.html
apache-tomcat-9.0.89/webapps/examples/servlets/images/code.gif
apache-tomcat-9.0.89/webapps/examples/servlets/images/execute.gif
apache-tomcat-9.0.89/webapps/examples/servlets/images/return.gif
apache-tomcat-9.0.89/webapps/examples/servlets/index.html
apache-tomcat-9.0.89/webapps/examples/servlets/nonblocking/bytecounter.html
apache-tomcat-9.0.89/webapps/examples/servlets/reqheaders.html
apache-tomcat-9.0.89/webapps/examples/servlets/reqinfo.html
apache-tomcat-9.0.89/webapps/examples/servlets/reqparams.html
apache-tomcat-9.0.89/webapps/examples/servlets/sessions.html
apache-tomcat-9.0.89/webapps/examples/websocket/chat.xhtml
apache-tomcat-9.0.89/webapps/examples/websocket/drawboard.xhtml
apache-tomcat-9.0.89/webapps/examples/websocket/echo.xhtml
apache-tomcat-9.0.89/webapps/examples/websocket/index.xhtml
apache-tomcat-9.0.89/webapps/examples/websocket/snake.xhtml
apache-tomcat-9.0.89/webapps/host-manager/META-INF/context.xml
apache-tomcat-9.0.89/webapps/host-manager/WEB-INF/jsp/401.jsp
apache-tomcat-9.0.89/webapps/host-manager/WEB-INF/jsp/403.jsp
apache-tomcat-9.0.89/webapps/host-manager/WEB-INF/jsp/404.jsp
apache-tomcat-9.0.89/webapps/host-manager/WEB-INF/manager.xml
apache-tomcat-9.0.89/webapps/host-manager/WEB-INF/web.xml
apache-tomcat-9.0.89/webapps/host-manager/css/manager.css
apache-tomcat-9.0.89/webapps/host-manager/images/asf-logo.svg
apache-tomcat-9.0.89/webapps/host-manager/images/tomcat.svg
apache-tomcat-9.0.89/webapps/host-manager/index.jsp
apache-tomcat-9.0.89/webapps/manager/META-INF/context.xml
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/401.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/403.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/404.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/connectorCerts.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/connectorCiphers.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/connectorTrustedCerts.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/sessionDetail.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/jsp/sessionsList.jsp
apache-tomcat-9.0.89/webapps/manager/WEB-INF/web.xml
apache-tomcat-9.0.89/webapps/manager/css/manager.css
apache-tomcat-9.0.89/webapps/manager/images/asf-logo.svg
apache-tomcat-9.0.89/webapps/manager/images/tomcat.svg
apache-tomcat-9.0.89/webapps/manager/index.jsp
apache-tomcat-9.0.89/webapps/manager/status.xsd
apache-tomcat-9.0.89/webapps/manager/xform.xsl
apache-tomcat-9.0.89/bin/catalina.sh
apache-tomcat-9.0.89/bin/ciphers.sh
apache-tomcat-9.0.89/bin/configtest.sh
apache-tomcat-9.0.89/bin/daemon.sh
apache-tomcat-9.0.89/bin/digest.sh
apache-tomcat-9.0.89/bin/makebase.sh
apache-tomcat-9.0.89/bin/setclasspath.sh
apache-tomcat-9.0.89/bin/shutdown.sh
apache-tomcat-9.0.89/bin/startup.sh
apache-tomcat-9.0.89/bin/tool-wrapper.sh
apache-tomcat-9.0.89/bin/version.sh
ubuntu@ip-172-31-18-31:~$ ls
apache-tomcat-9.0.89  apache-tomcat-9.0.89.tar.gz
ubuntu@ip-172-31-18-31:~$ cd apache-tomcat-9.0.89/
ubuntu@ip-172-31-18-31:~/apache-tomcat-9.0.89$ ls
BUILDING.txt  CONTRIBUTING.md  LICENSE  NOTICE  README.md  RELEASE-NOTES  RUNNING.txt  bin  conf  lib  logs  temp  webapps  work
ubuntu@ip-172-31-18-31:~/apache-tomcat-9.0.89$ cd bin/
ubuntu@ip-172-31-18-31:~/apache-tomcat-9.0.89/bin$ ls
bootstrap.jar       catalina.bat  ciphers.bat  commons-daemon-native.tar.gz  configtest.bat  daemon.sh   digest.sh     makebase.sh       setclasspath.sh  shutdown.sh  startup.sh       tomcat-native.tar.gz  tool-wrapper.sh  version.sh
catalina-tasks.xml  catalina.sh   ciphers.sh   commons-daemon.jar            configtest.sh   digest.bat  makebase.bat  setclasspath.bat  shutdown.bat     startup.bat  tomcat-juli.jar  tool-wrapper.bat      version.bat
ubuntu@ip-172-31-18-31:~/apache-tomcat-9.0.89/bin$ ./startup.sh
Using CATALINA_BASE:   /home/ubuntu/apache-tomcat-9.0.89
Using CATALINA_HOME:   /home/ubuntu/apache-tomcat-9.0.89
Using CATALINA_TMPDIR: /home/ubuntu/apache-tomcat-9.0.89/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /home/ubuntu/apache-tomcat-9.0.89/bin/bootstrap.jar:/home/ubuntu/apache-tomcat-9.0.89/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
ubuntu@ip-172-31-18-31:~/apache-tomcat-9.0.89/bin$
```

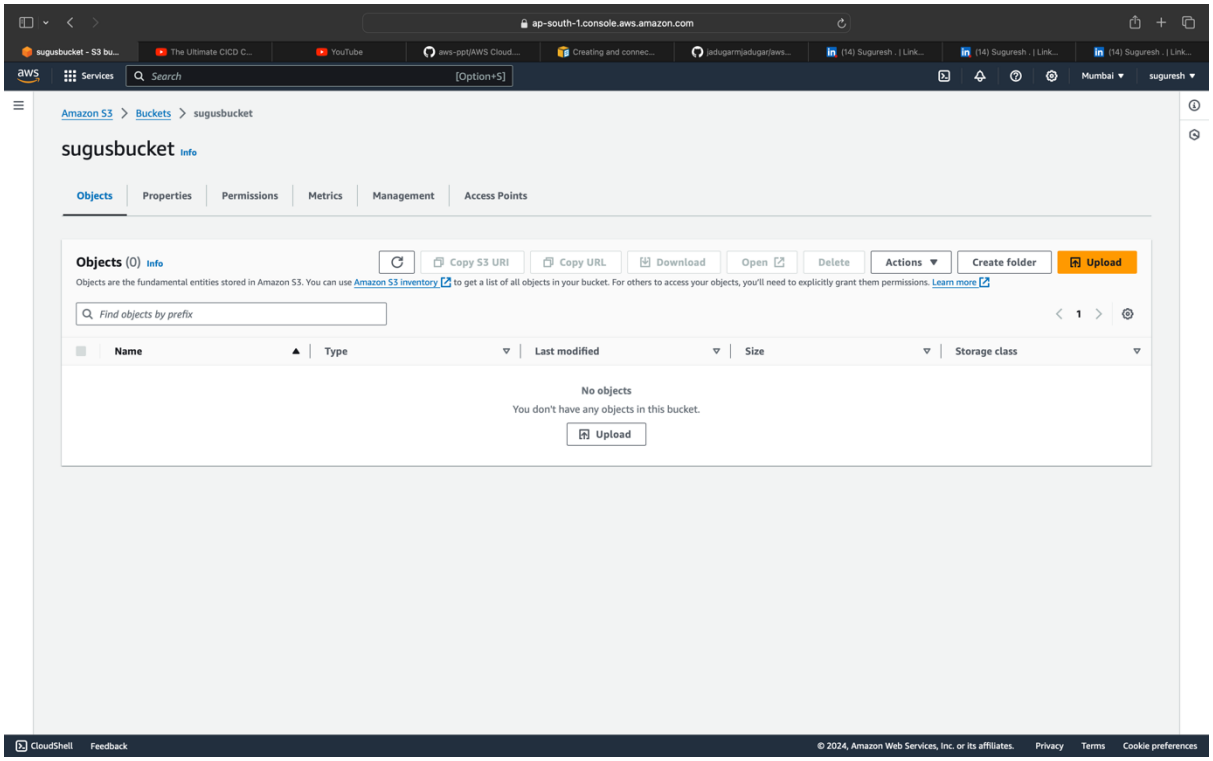
6. L6 - Create S3 Bucket and add folders and files

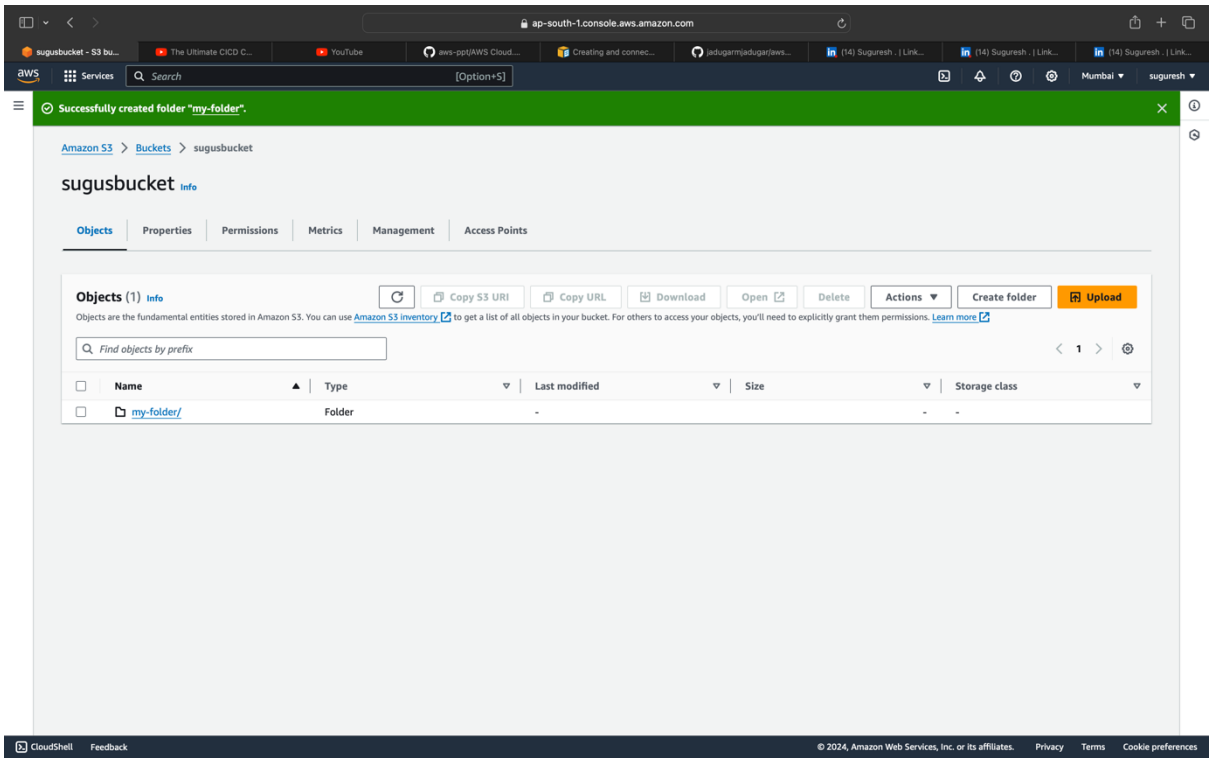


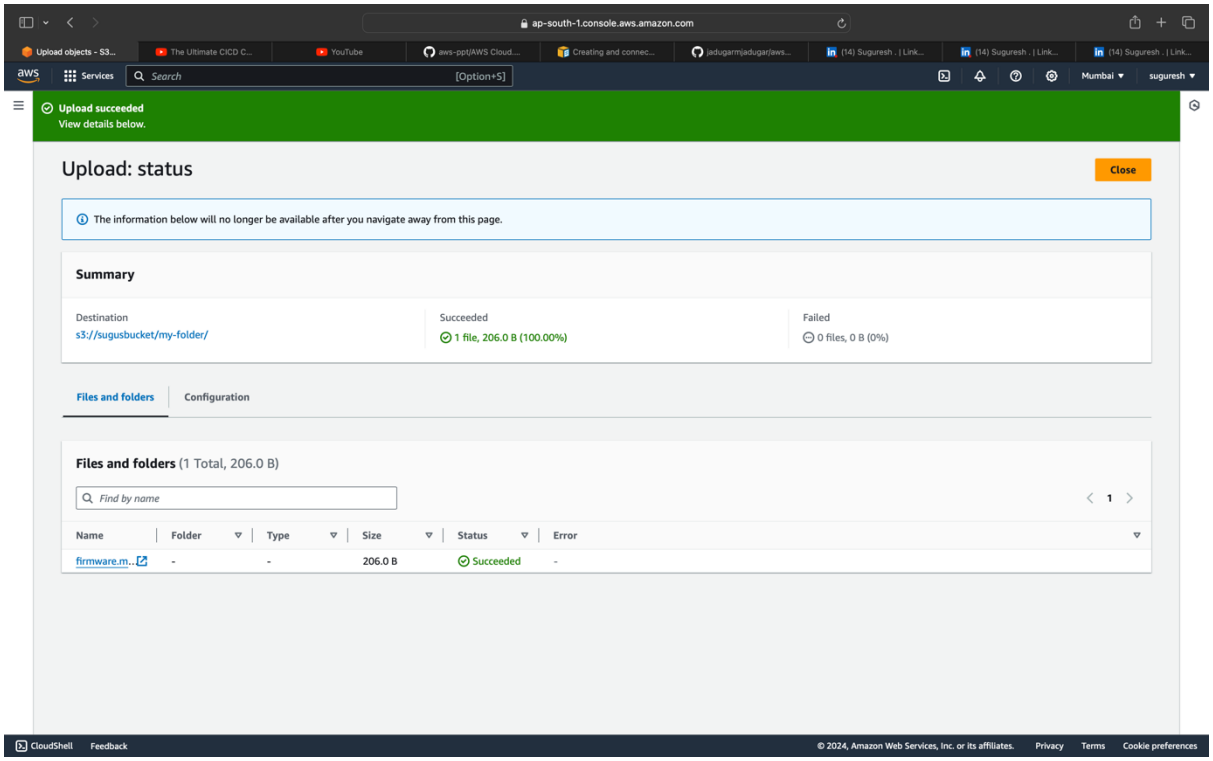


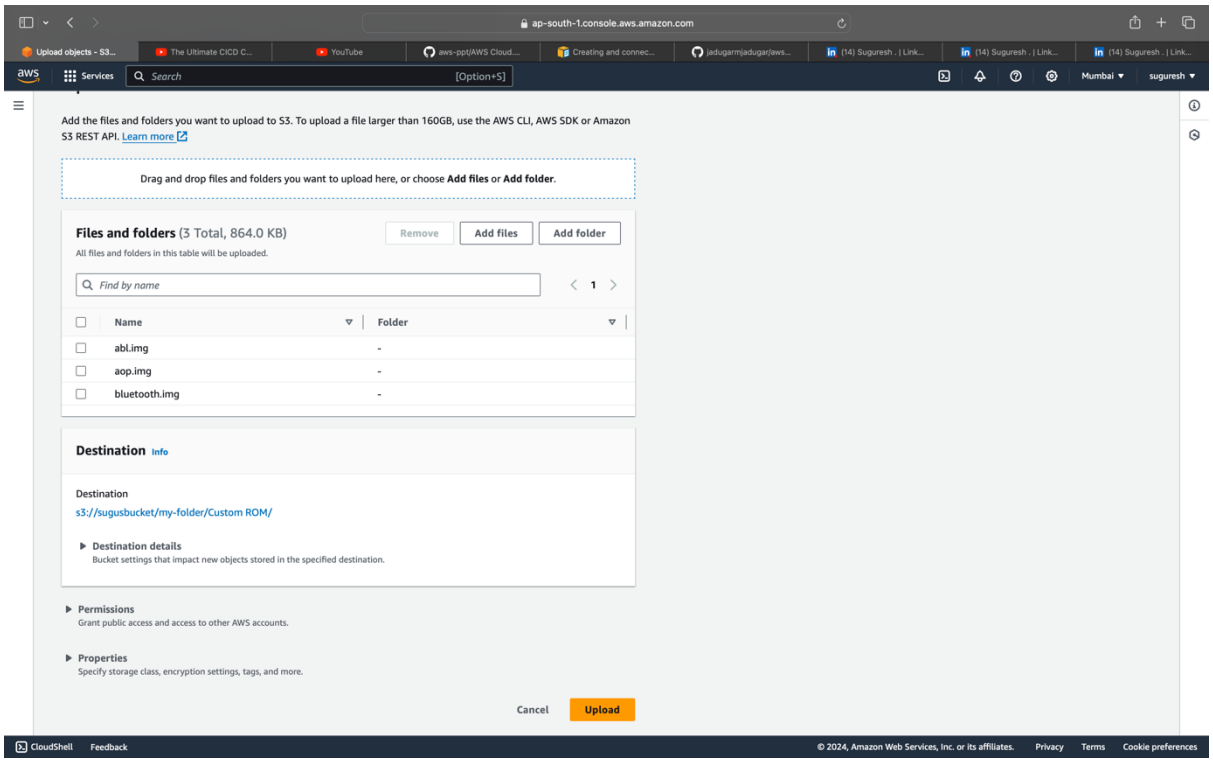

ap-south-1.console.aws.amazon.com
Services
Search
[Option+S]
Mumbai
suguresh
Storage
Amazon S3
Store and retrieve any amount of data from anywhere
Amazon S3 is an object storage service that offers industry-leading scalability, data availability, security, and performance.
Create a bucket
Every object in S3 is stored in a bucket. To upload files and folders to S3, you'll need to create a bucket where the objects will be stored.
Create bucket
Pricing
With S3, there are no minimum fees. You only pay for what you use. Prices are based on the location of your S3 bucket.
Estimate your monthly bill using the AWS Simple Monthly Calculator
View pricing details
Resources
User guide
API reference
FAQs
Discussion forums
How it works
Introduction to Amazon S3
Copy link
aws.amazon.com/S3
Watch on YouTube
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences

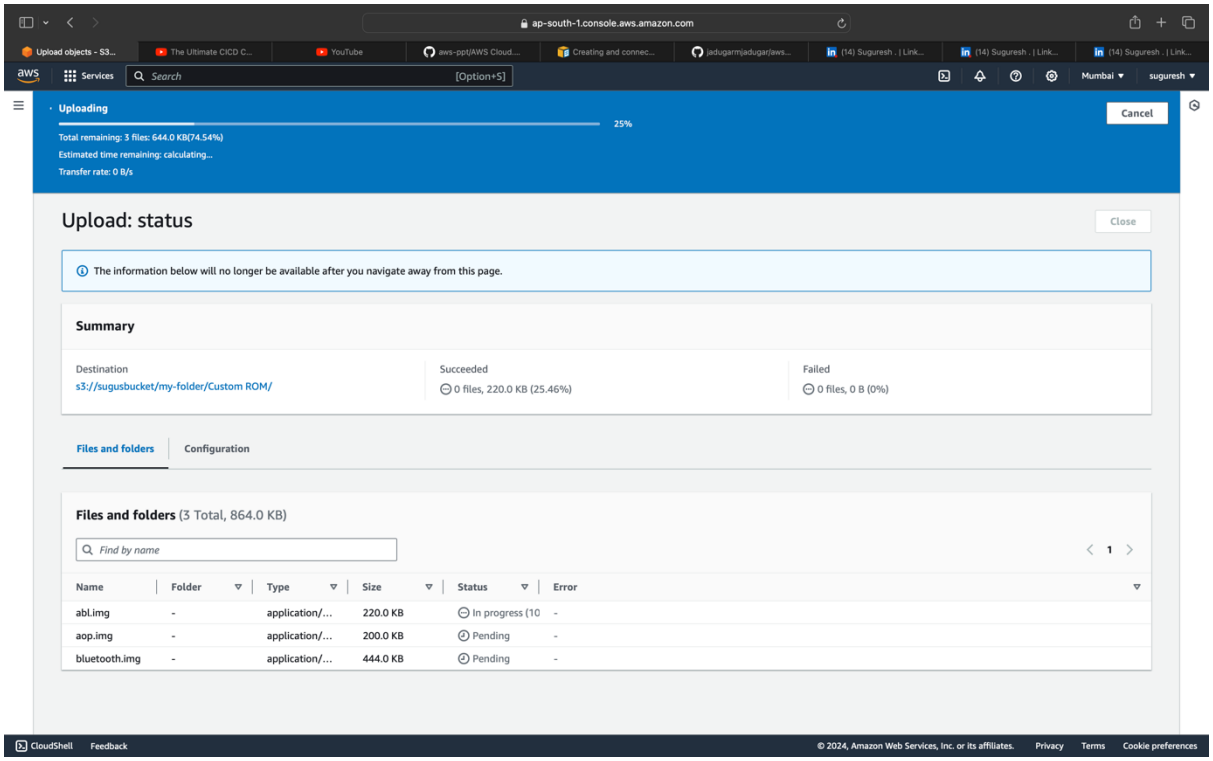

ap-south-1.console.aws.amazon.com
Services
Search
[Option+S]
Mumbai
suguresh
Successfully created bucket "sugusbucket"
To upload files and folders, or to configure additional bucket settings, choose View details.
View details
Amazon S3
Buckets
Account snapshot - updated every 24 hours
All AWS Regions
Storage lens provides visibility into storage usage and activity trends. Learn more
View Storage Lens dashboard
General purpose buckets
Directory buckets
General purpose buckets (1) Info
All AWS Regions
Buckets are containers for data stored in S3.
Copy ARN
Empty
Delete
Create bucket
Find buckets by name
Name
AWS Region
IAM Access Analyzer
Creation date
sugusbucket
Asia Pacific (Mumbai) ap-south-1
View analyzer for ap-south-1
June 6, 2024, 18:38:07 (UTC+05:30)
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


ap-south-1.console.aws.amazon.com
Services
Search
[Option+S]
Mumbai
suguresh
Amazon S3 > Buckets > sugusbucket
sugusbucket Info
Objects
Properties
Permissions
Metrics
Management
Access Points
Objects (0) Info
Copy S3 URI
Copy URL
Download
Open
Delete
Actions
Create folder
Upload
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more
Find objects by prefix
Name
Type
Last modified
Size
Storage class
No objects
You don't have any objects in this bucket.
Upload
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


ap-south-1.console.aws.amazon.com
Services
Search
[Option+S]
Mumbai
suguresh
Successfully created folder "my-folder".
Amazon S3 > Buckets > sugusbucket
sugusbucket Info
Objects
Properties
Permissions
Metrics
Management
Access Points
Objects (1) Info
Copy S3 URI
Copy URL
Download
Open
Delete
Actions
Create folder
Upload
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more
Find objects by prefix
Name
Type
Last modified
Size
Storage class
my-folder/
Folder
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


ap-south-1.console.aws.amazon.com
Upload succeeded
View details below.
Upload: status
Close
The information below will no longer be available after you navigate away from this page.
Summary
Destination
s3://sugusbucket/my-folder/
Succeeded
1 file, 206.0 B (100.00%)
Failed
0 files, 0 B (0%)
Files and folders
Configuration
Files and folders (1 Total, 206.0 B)
Find by name
Name
Folder
Type
Size
Status
Error
firmware.m...
206.0 B
Succeeded
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


ap-south-1.console.aws.amazon.com
Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. Learn more
Drag and drop files and folders you want to upload here, or choose Add files or Add folder.
Files and folders (3 Total, 864.0 KB)
All files and folders in this table will be uploaded.
Remove
Add files
Add folder
Find by name
Name
Folder
abl.img
aop.img
bluetooth.img
Destination Info
Destination
s3://sugusbucket/my-folder/Custom ROM/
Destination details
Bucket settings that impact new objects stored in the specified destination.
Permissions
Grant public access and access to other AWS accounts.
Properties
Specify storage class, encryption settings, tags, and more.
Cancel
Upload
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


ap-south-1.console.aws.amazon.com
Uploading
25%
Total remaining: 3 files: 644.0 KB(74.54%)
Estimated time remaining: calculating...
Transfer rate: 0 B/s
Cancel
Upload: status
Close
The information below will no longer be available after you navigate away from this page.
Summary
Destination
s3://sugusbucket/my-folder/Custom ROM/
Succeeded
0 files, 220.0 KB (25.46%)
Failed
0 files, 0 B (0%)
Files and folders
Configuration
Files and folders (3 Total, 864.0 KB)
Find by name
Name
Folder
Type
Size
Status
Error
abl.img
application/...
220.0 KB
In progress (10
aop.img
application/...
200.0 KB
Pending
bluetooth.img
application/...
444.0 KB
Pending
CloudShell
Feedback
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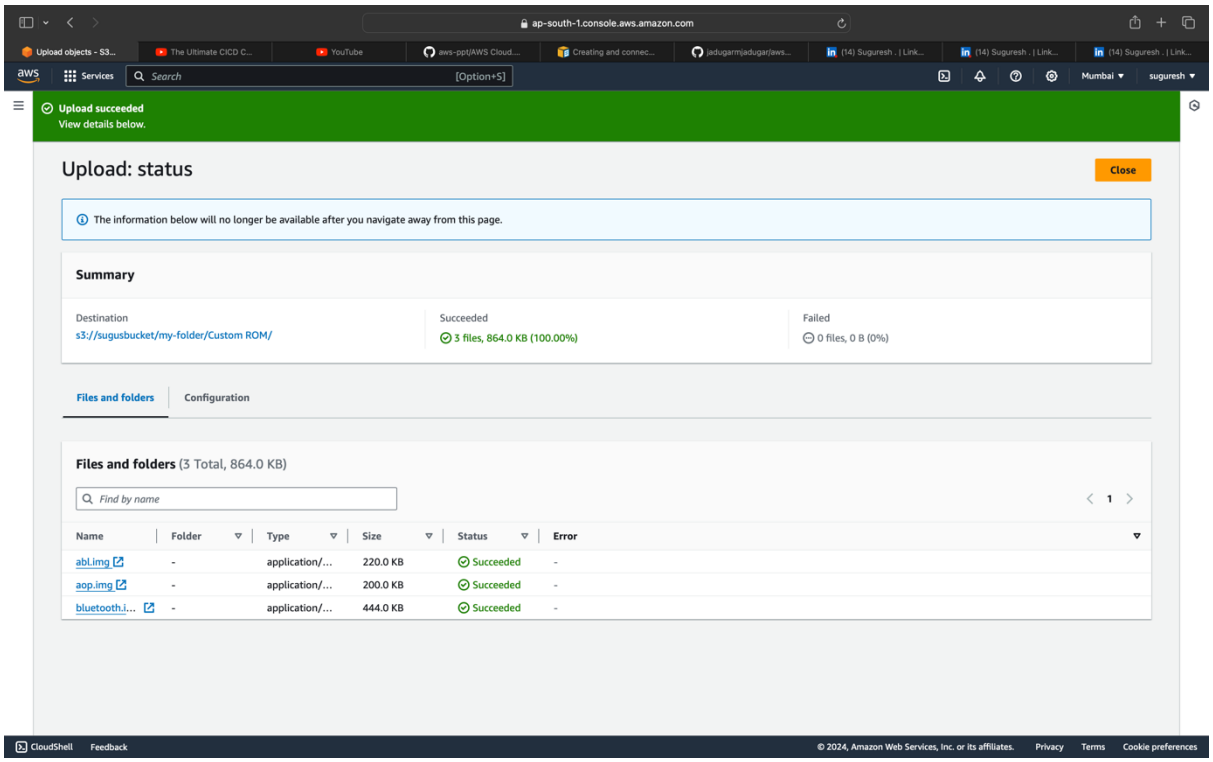
ap-south-1.console.aws.amazon.com
Upload succeeded
View details below.
Upload: status
Close
The information below will no longer be available after you navigate away from this page.
Summary
Destination
s3://sugusbucket/my-folder/Custom ROM/
Succeeded
3 files, 864.0 KB (100.00%)
Failed
0 files, 0 B (0%)
Files and folders
Configuration
Files and folders (3 Total, 864.0 KB)
Find by name
Name
Folder
Type
Size
Status
Error
abl.img
application/...
220.0 KB
Succeeded
aop.img
application/...
200.0 KB
Succeeded
bluetooth.i...
application/...
444.0 KB
Succeeded
CloudShell
Feedback
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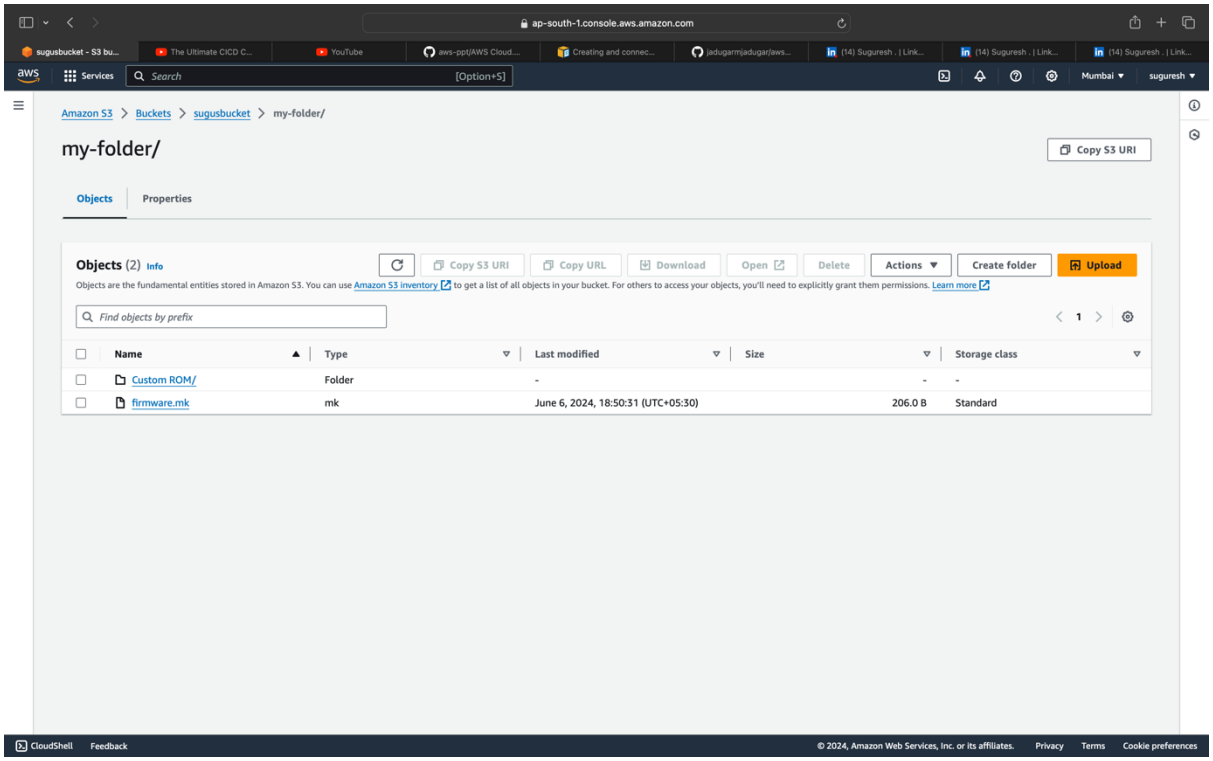
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Services
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[Option+S]
Mumbai
suguresh
Amazon S3 > Buckets > sugusbucket > my-folder/
my-folder/
Copy S3 URI
Objects
Properties
Objects (2) Info
Copy S3 URI
Copy URL
Download
Open
Delete
Actions
Create folder
Upload
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more
Find objects by prefix
Name
Type
Last modified
Size
Storage class
Custom ROM/
Folder
-
-
-
firmware.mk
mk
June 6, 2024, 18:50:31 (UTC+05:30)
206.0 B
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