

Cloud Computing Seminar

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Term: Spring 2025

Topic: Workshop

Network SETUP

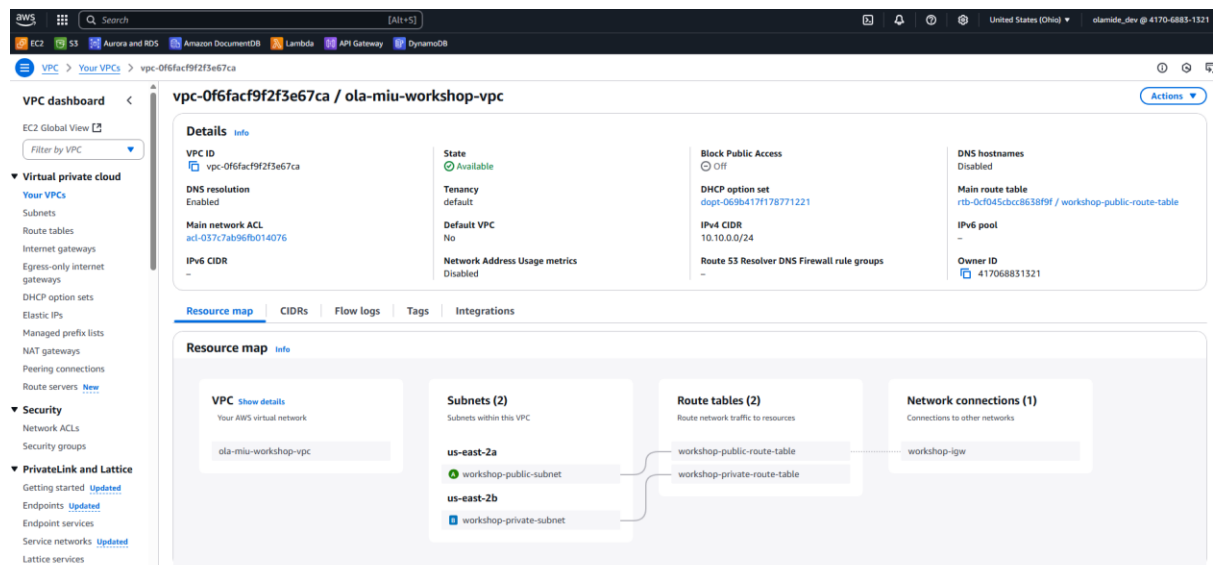


Fig 1.1 Setup of VPC, Private and public Subnets, Route Tables and Internet Gateway.

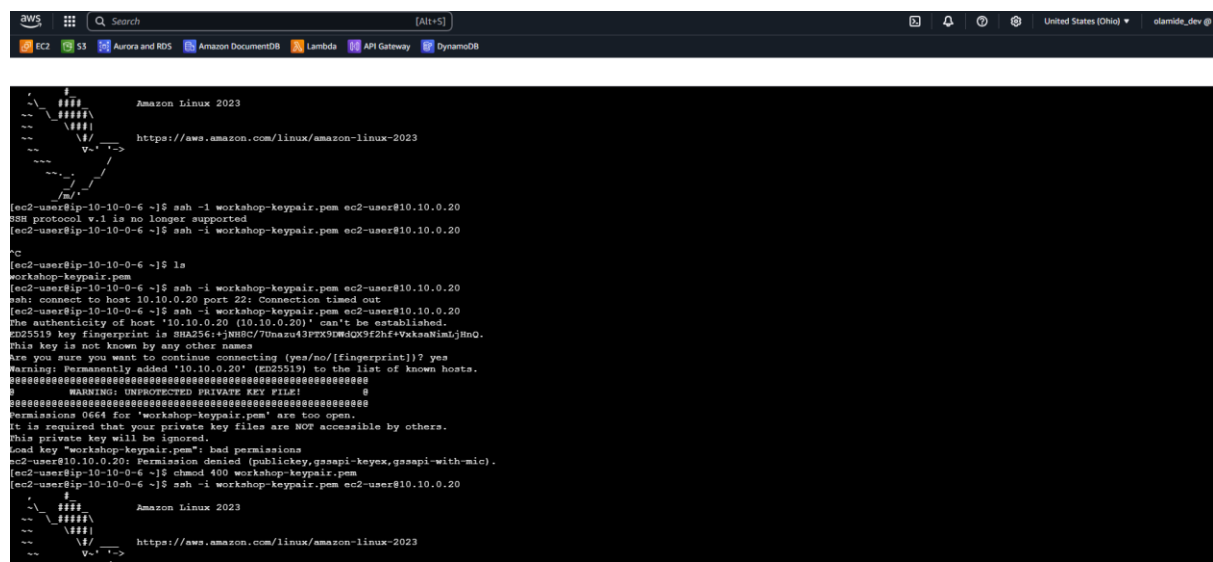


Fig 1.2 Connecting from the public EC2 to the private EC2 and Installing nginx

Launch an RDS/Aurora (MySQL) database.

```
awscli [Alt+S] Search [Alt+S] United States (Ohio) olamide_dev @ 4170
EC2 S3 Aurora and RDS Amazon DocumentDB Lambda API Gateway DynamoDB

mariaDB-connector-c-config          noarch          3.3.10-1.amzn2023.0.1          amazonlinux
mariaDB105-common                  x86_64          3:10.5.25-1.amzn2023.0.1      amazonlinux
perl-Sys-Hostname                   x86_64          1.23-477.amzn2023.0.6         amazonlinux

Transaction Summary
-----
install 5 Packages

Total download size: 1.9 M
Installed size: 19 M
Downloading Packages:
1/5): mariaDB-connector-c-config-3.3.10-1.amzn2023.0.1.noarch.rpm          164 kB/s | 9.9 kB 0
2/5): mariaDB105-common-3:10.5.25-1.amzn2023.0.1.x86_64.rpm             3.0 MB/s | 211 kB 0
3/5): mariaDB105-common-10.5.25-1.amzn2023.0.1.x86_64.rpm               1.4 MB/s | 29 kB 0
4/5): perl-Sys-Hostname-1.23-477.amzn2023.0.6.x86_64.rpm                 539 kB/s | 18 kB 0
5/5): mariaDB105-10.5.25-1.amzn2023.0.1.x86_64.rpm                       7.7 MB/s | 1.6 MB 0

Total
-----
8.1 MB/s | 1.9 MB 0

Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing :
Installing : mariaDB-connector-c-config-3.3.10-1.amzn2023.0.1.noarch
Installing : mariaDB-connector-c-3.3.10-1.amzn2023.0.1.x86_64
Installing : mariaDB105-common-3:10.5.25-1.amzn2023.0.1.x86_64
Installing : perl-Sys-Hostname-1.23-477.amzn2023.0.6.x86_64
Installing : mariaDB105-3:10.5.25-1.amzn2023.0.1.x86_64
Running scriptlet: mariaDB105-3:10.5.25-1.amzn2023.0.1.x86_64
Verifying : mariaDB-connector-c-config-3.3.10-1.amzn2023.0.1.noarch
Verifying : mariaDB-connector-c-3.3.10-1.amzn2023.0.1.x86_64
Verifying : mariaDB105-3:10.5.25-1.amzn2023.0.1.x86_64
Verifying : mariaDB105-common-3:10.5.25-1.amzn2023.0.1.x86_64
Verifying : perl-Sys-Hostname-1.23-477.amzn2023.0.6.x86_64

Installed:
mariaDB-connector-c-3.3.10-1.amzn2023.0.1.x86_64  mariaDB-connector-c-config-3.3.10-1.amzn2023.0.1.noarch  mariaDB105-3:10.5.25-1.amzn2023.0.1.x86_64  mariaDB105-common-3:10.5.25-1.amzn2023.0.1.x86_64
perl-Sys-Hostname-1.23-477.amzn2023.0.6.x86_64

complete!
ec2-user@ip-10-10-0-13 ~$ []

i-0aacd1aca1ed37c87 (workshop-db-server)
```

Database installed.

```
awscli [Alt+S] Search [Alt+S] United States (Ohio) olamide_dev @ 4170
EC2 S3 Aurora and RDS Amazon DocumentDB Lambda API Gateway DynamoDB

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]> create database workshopdb
->
[1]* Stopped          mysql -h workshop-db.c94c2ue6evi.us-east-2.rds.amazonaws.com -u admin -p
ec2-user@ip-10-10-0-13 ~$ create database workshopdb;
-bash: create: command not found
ec2-user@ip-10-10-0-13 ~$ mysql -h workshop-db.c94c2ue6evi.us-east-2.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 32
Server version: 8.0.41 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]> create database workshopdb;
Query OK, 1 row affected (0.009 sec)

MySQL [(none)]> use workshop db
ERROR 1049 (42000): Unknown database 'workshop'
MySQL [(none)]> use workshopdb
Database changed
MySQL [workshopdb]> CREATE TABLE student(id INT PRIMARY KEY, name VARCHAR(255) NOT NULL);
Query OK, 0 rows affected (0.054 sec)

MySQL [workshopdb]> insert into student values (1, 'Olamide Akinoso');
Query OK, 1 row affected (0.009 sec)

MySQL [workshopdb]> select * from student
-> ;
+----+-----+
| id | name |
+----+-----+
| 1  | Olamide Akinoso |
+----+-----+
1 row in set (0.001 sec)

MySQL [workshopdb]> []
```

Database and table created

Successfully created the target group: **workshop-tg**. Anomaly detection is automatically applied to all registered targets. Results can be viewed in the **Targets** tab.

workshop-tg

Details

arn:aws:elasticloadbalancing:us-east-2:417068831321:targetgroup/workshop-tg/43b0cd61b24274a3

Target type Instance	Protocol - Port HTTP: 80	Protocol version HTTP1	VPC vpc-0f6fac9f2f3e67ca
IP address type IPv4	Load balancer None associated		

3 Total targets	0 Healthy 0 Anomalous	0 Unhealthy	3 Unused	0 Initial	0 Draining
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Distribution of targets by Availability Zone (AZ)
Select values in this table to see corresponding filters applied to the Registered targets table below.

Targets | Monitoring | Health checks | Attributes | Tags

Registered targets (3) [Info](#) [Anomaly mitigation: Not applicable](#) [Deregister](#) [Register targets](#)

Target groups route requests to individual registered targets using the protocol and port number specified. Health checks are performed on all registered targets according to the target group's health check settings. Anomaly detection is automatically applied to HTTP/HTTPS target groups with at least 3 healthy targets.

Filter targets

<input type="checkbox"/>	Instance ID	Name	Port	Zone	Health status	Health status details	Administrative o...	Override details	Launch...	Anon
<input type="checkbox"/>	i-0aacd1aca1ed37c87	workshop-db-s...	80	us-east-2a (us...	Unused	Target group is not co...	-	-	May 8, 20...	Ne

Target group created

Application Load Balancers now support public IPv4 IP Address Management (IPAM)
You can get started with this feature by configuring IP pools in the **Network mapping** section.

workshop-alb

Details

Load balancer type Application	Status Active	VPC vpc-04e7349e179d64db6	Load balancer IP address type IPv4
Scheme Internet-facing	Hosted zone Z3AADJGX6KTTL2	Availability Zones subnet-0b3a43ac78aed46f us-east-2c (use2-az3) subnet-0571c747fea3f2f06 us-east-2b (use2-az2) subnet-01a0ce70ffa3e3ef1 us-east-2a (use2-az1)	Date created May 9, 2025, 19:25 (UTC-05:00)

Load balancer ARN
arn:aws:elasticloadbalancing:us-east-2:417068831321:loadbalancer/app/workshop-alb/96739774f0d979f

DNS name [Info](#)
[workshop-alb-552720549.us-east-2.elb.amazonaws.com](#) (A Record)

Listeners and rules (1) [Info](#) [Manage rules](#) [Manage listener](#) [Add list](#)

A listener checks for connection requests on its configured protocol and port. Traffic received by the listener is routed according to the default action and any additional rules.

Filter listeners

<input type="checkbox"/>	Protocol/Port	Default action	Rules	ARN	Security policy	Default SSL/TLS certificate	mTLS
<input type="checkbox"/>	HTTP:80	Forward to target group <ul style="list-style-type: none">workshop-tg 1 (100%)Target group is stickiness: Off	1 rule	ARN	Not applicable	Not applicable	Not applicable

Load balancer Created

Account snapshot - updated every 24 hours [All AWS Regions](#) [View Storage Lens dash](#)

Storage lens provides visibility into storage usage and activity trends. Metrics don't include directory buckets. [Learn more](#)

General purpose buckets | Directory buckets

General purpose buckets (1) [Info](#) [All AWS Regions](#) [Copy ARN](#) [Empty](#) [Delete](#) [Create](#)

Buckets are containers for data stored in S3.

Find buckets by name

<input type="radio"/>	Name	AWS Region	IAM Access Analyzer	Creation date
<input type="radio"/>	cc-workshop-s3	US East (N. Virginia) us-east-1	View analyzer for us-east-1	May 9, 2025, 23:16:31 (UTC-05:00)

Bucket Created

The screenshot shows the AWS CloudFront console. The top navigation bar includes links to S3, Aurora and RDS, Amazon DocumentDB, Lambda, API Gateway, DynamoDB, and CloudFront. The breadcrumb trail is CloudFront > Distributions > E39WYHFG3EW4EW. The main content area has tabs for General, Security, Origins, Behaviors, Error pages, Invalidations, Tags, and Logging. The 'General' tab is active, showing details and settings for the distribution E39WYHFG3EW4EW.

Details

Distribution domain name d6gekz1okx0n8.cloudfront.net	ARN arn:aws:cloudfront::417068831321:distribution/E39WYHFG3EW4EW	Last modified May 10, 2025 at 4:21:36 AM UTC
--	---	---

Settings

Description -	Alternate domain names -	Standard logging Off
Price class Use all edge locations (best performance)		Cookie logging Off
Supported HTTP versions HTTP/2, HTTP/1.1, HTTP/1.0		Default root object index.html

Continuous deployment [Info](#)

[Create staging distribution](#)

CloudFront Created

The screenshot shows the AWS S3 console. The top navigation bar includes links to S3, Aurora and RDS, Amazon DocumentDB, Lambda, API Gateway, DynamoDB, and CloudFront. The breadcrumb trail is Amazon S3 > Buckets > cc-workshop-s3. The main content area shows the bucket policy for the bucket cc-workshop-s3.

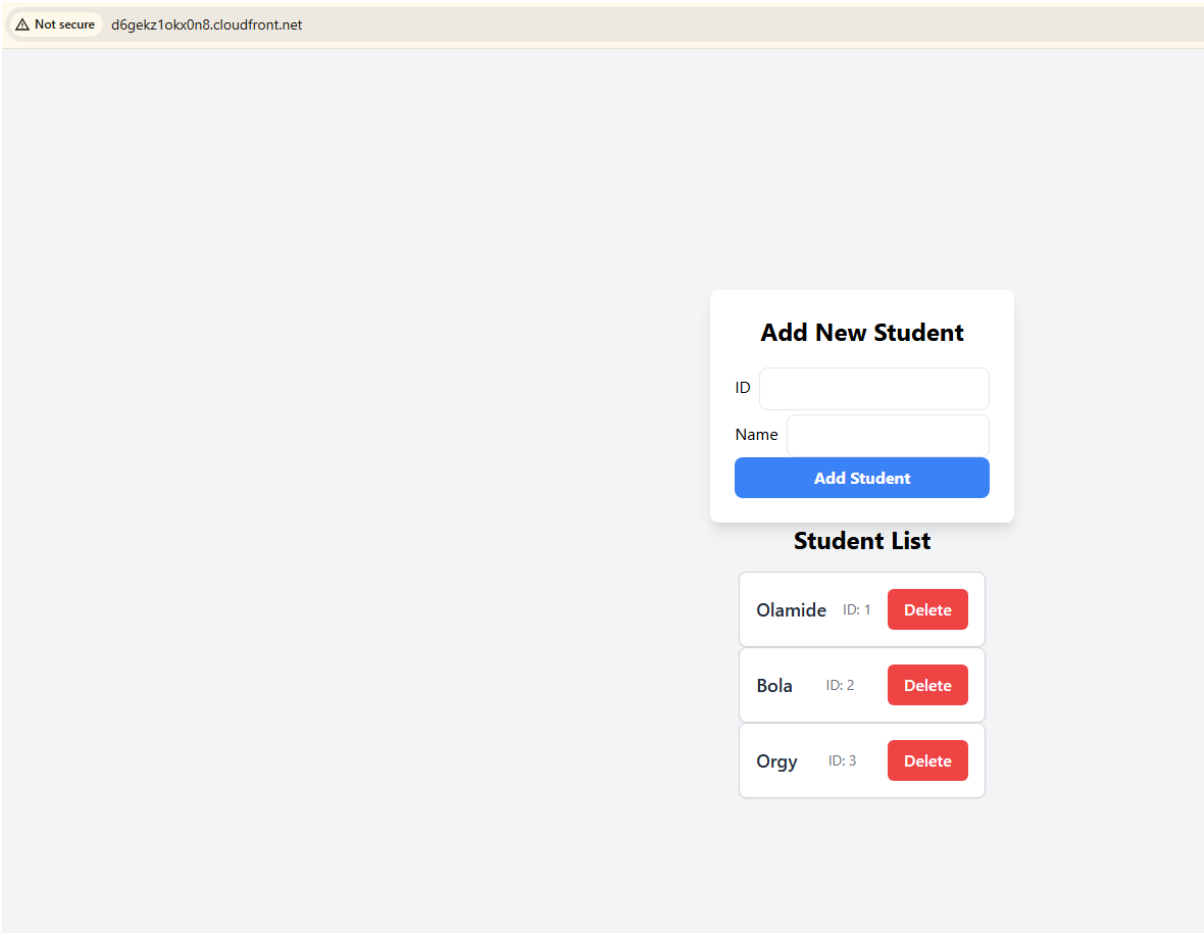
Bucket policy

The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts. [Learn more](#)

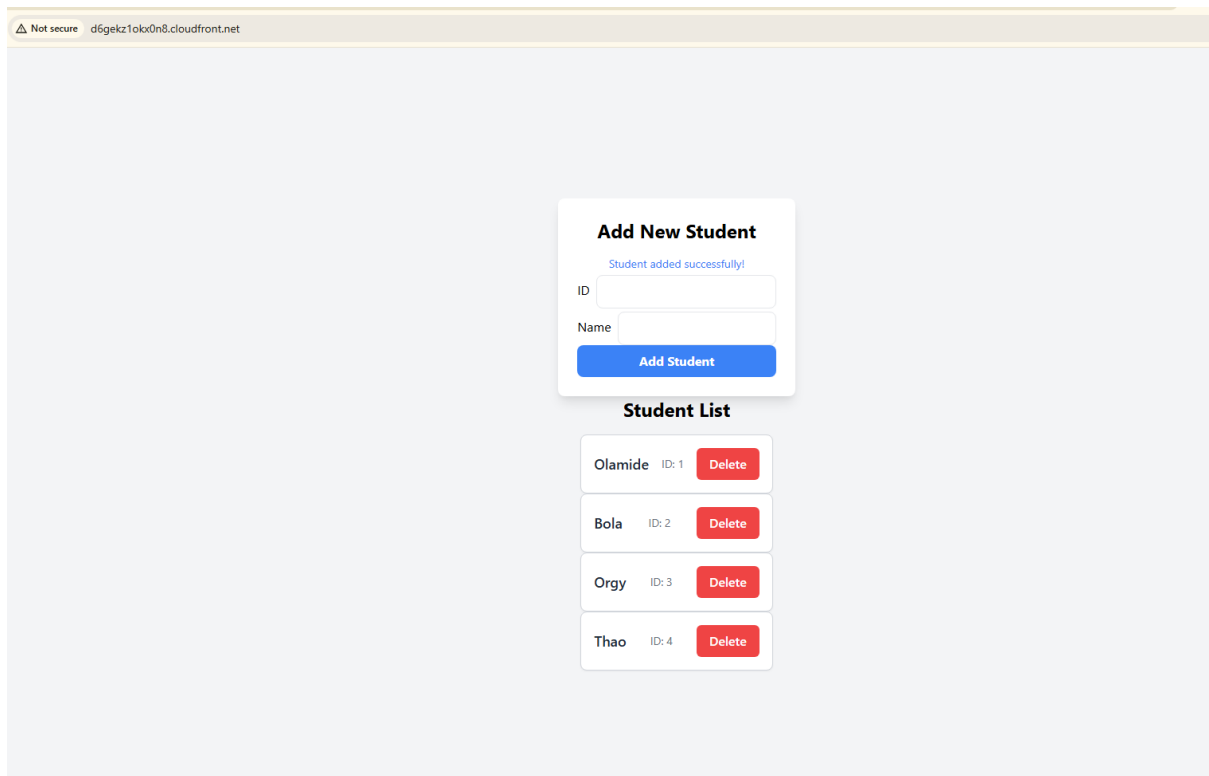
Public access is blocked because Block Public Access settings are turned on for this bucket
To determine which settings are turned on, check your Block Public Access settings for this bucket. Learn more about [using Amazon S3 Block Public Access](#)

```
{
  "Version": "2008-10-17",
  "Id": "PolicyForCloudFrontPrivateContent",
  "Statement": [
    {
      "Sid": "AllowCloudFrontServicePrincipal",
      "Effect": "Allow",
      "Principal": {
        "Service": "cloudfront.amazonaws.com"
      },
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3::cc-workshop-s3/*",
      "Condition": {
        "StringEquals": {
          "AWS:SourceArn": "arn:aws:cloudfront::417068831321:distribution/E39WYHFG3EW4EW"
        }
      }
    }
  ]
}
```

Grant permission to the S3 editing the bucket policy using the policy generated after creating CloudFront



Load page



Add Student

Add New Student

Student added successfully!

ID

Name

Add Student

Student List

Olamide ID: 1 [Delete](#)

Bola ID: 2 [Delete](#)

Orgy ID: 3 [Delete](#)

Delete Student