

Sri Lanka Institute of Information Technology

Cloud Computing – IT4090

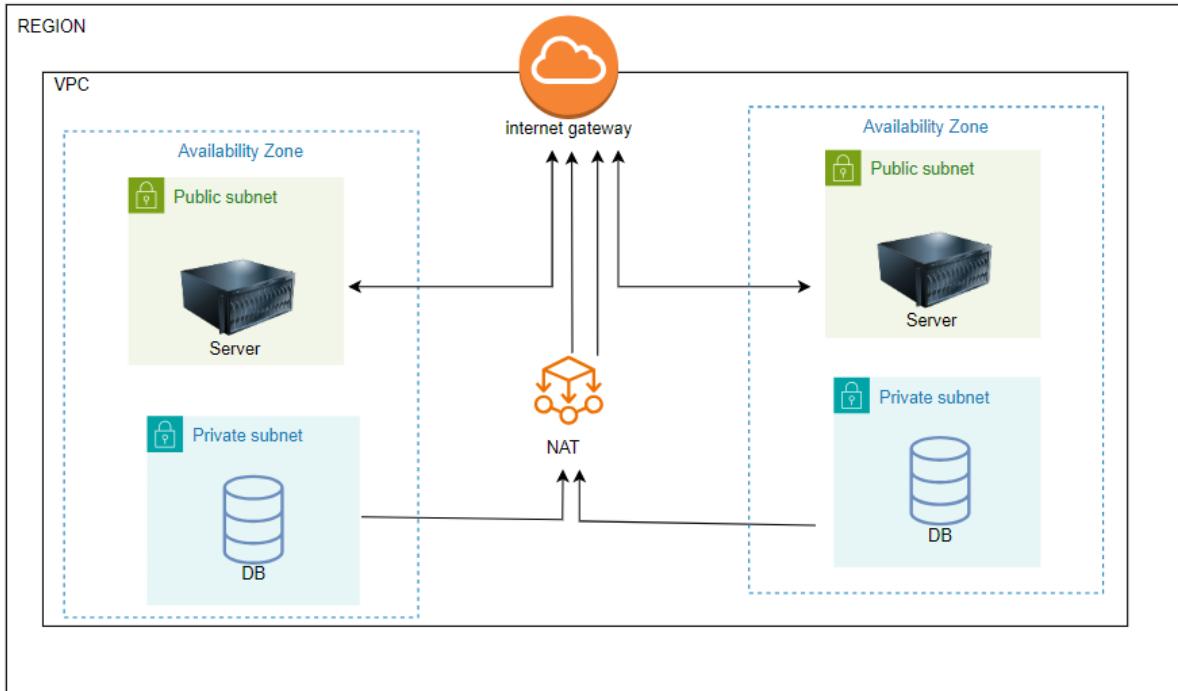
Assignment 03 – 2024, Year 4 Semester 1



IT21228094-MENDIS A.R.P.

Submission Date – 7/10/2024

Task 1: Creating an architectural diagram



01. Solution Overview

This diagram's architecture is intended to meet the needs for hosting ABC University's student records web application on the AWS Cloud. By adhering to the AWS Well-Architected Framework's best practices, the architecture guarantees high availability, scalability, load balancing, security, and cost optimization.

This solution uses a Virtual Private Cloud (VPC) with a CIDR block of 10.0.0.0/16 to host the web application. To improve availability and redundancy, the VPC is split into two public subnets that are dispersed throughout Availability Zones A and B. Through the use of an Application Load Balancer, which evenly distributes traffic among the EC2 instances deployed in both availability zones, an Internet Gateway permits public access to the application. By doing this, the chance of any one application server becoming overloaded is decreased because user traffic is distributed evenly among the application servers.

The web application is served by Amazon EC2 instances, which are a component of an Auto Scaling group. In order to ensure scalability during peak admissions periods, the auto-scaling configuration enables the architecture to automatically adjust the number of instances based on demand. Only traffic from the load balancer is permitted by the security group linked to the instances, protecting the communication channel and preventing illegal access.

As stated in the assignment requirements, the database, hosted on Amazon RDS, is deployed in a single availability zone. The student records are stored in the RDS instance, and the database cannot be accessed directly from the public internet. An extra degree of security is added by the fact that it can only be accessed from the EC2 instances. This configuration permits the web application to communicate with the database while guaranteeing the security of sensitive student data.

In conclusion, this architecture satisfies the assignment's functional and non-functional requirements by utilizing AWS services like VPC, EC2, Auto Scaling, Elastic Load Balancer, and RDS to build a scalable, load-balanced, secure, and high-performing web application.

Task 2: Implementation using any Cloud Service Provider

Number of private subnets [Info](#)
 The number of private subnets to add to your VPC. Use private subnets to secure backend resources that don't need public access.

▶ [Customize subnets CIDR blocks](#)

NAT gateways (\$ [Info](#)
 Choose the number of Availability Zones (AZs) in which to create NAT gateways. Note that there is a charge for each NAT gateway.

VPC endpoints [Info](#)
 Endpoints can help reduce NAT gateway charges and improve security by accessing S3 directly from the VPC. By default, full access policy is used. You can customize this policy at any time.

DNS options [Info](#)
 Enable DNS hostnames
 Enable DNS resolution

▶ [Additional tags](#)

[Cancel](#) [Create VPC](#)

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[VPC](#) > [Your VPCs](#) > [Create VPC](#) > [Create VPC resources](#)

Create VPC workflow

Success

▼ Details

- Create VPC: vpc-0a83b07d1150f0874 [View](#)
- Enable DNS hostnames
- Enable DNS resolution
- Verifying VPC creation: vpc-0a83b07d1150f0874 [View](#)
- Create subnet: subnet-06087261e1e21287a [View](#)
- Create subnet: subnet-0d7e27cf186d29fb [View](#)
- Create subnet: subnet-0a99b6ea97e705096e [View](#)
- Create subnet: subnet-04007346e5647524a [View](#)
- Create internet gateway: igw-0c9ecc09592af20d3 [View](#)
- Attach internet gateway to the VPC
- Create route table: rtb-08d9ebde438d9fbac [View](#)
- Create route
- Associate route table
- Associate route table
- Allocate elastic IP: eipalloc-08f0b39aef2ddda62 [View](#)
- Create NAT gateway: nat-00446f04615f1061e [View](#)
- Wait for NAT Gateways to activate
- Create route table: rtb-0989d25ef711f87c3 [View](#)
- Create route
- Associate route table

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Screenshot of the AWS VPC dashboard showing the details of a VPC.

VPC ID: vpc-0a83b07d1150f0874

State: Available

Tenancy: Default

Default VPC: No

IPv4 CIDR: 10.0.0.0/16

Network Address Usage metrics: Disabled

DNS hostnames: Enabled

Main route table: rtb-0cb967c5ee919c0aa

IPv6 pool: -

Route 53 Resolver DNS Firewall rule groups: -

Owner ID: 579827691462

DNS resolution: Enabled

Main network ACL: acl-0b23aa2b61eb0a56b

IPv6 CIDR (Network border group): -

Actions: Actions ▾

Resource map: Subnets (4), Route tables (4)

VPC: Show details

Subnets: Subnets within this VPC

Route tables: Route network traffic to resources

Network ACLs: it21228094 -rtb-public

CloudShell: Feedback

Feedback: Type here to search

Toolbar: Home, Services, Search, [Alt+S], Help, N. Virginia, vclabs/user3565389=it21228094@my.slit.it @ 5798-2769-1462, Actions ▾, Resource map, CIDRs, Flow logs, Tags, Integrations, VPC, Show details, Subnets (4), Route tables (4), Network ACLs, it21228094 -rtb-public, it21228094 -rtb-private2-us-east-1b, it21228094 -rtb-private1-us-east-1a, rtb-0cb967c5ee919c0aa, © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, Cookie preferences, Near record, 11:53 PM, 10/6/2024

Screenshot of the AWS VPC dashboard showing the details of a VPC and its resources.

VPC ID: vpc-0a83b07d1150f0874

State: Available

Tenancy: Default

Default VPC: No

IPv4 CIDR: 10.0.0.0/16

Network Address Usage metrics: Disabled

DNS hostnames: Enabled

Main route table: rtb-0cb967c5ee919c0aa

IPv6 pool: -

Route 53 Resolver DNS Firewall rule groups: -

Owner ID: 579827691462

DNS resolution: Enabled

Main network ACL: acl-0b23aa2b61eb0a56b

IPv6 CIDR (Network border group): -

Actions: Actions ▾

Resource map: Subnets (4), Route tables (4)

VPC: Show details

Subnets: Subnets within this VPC

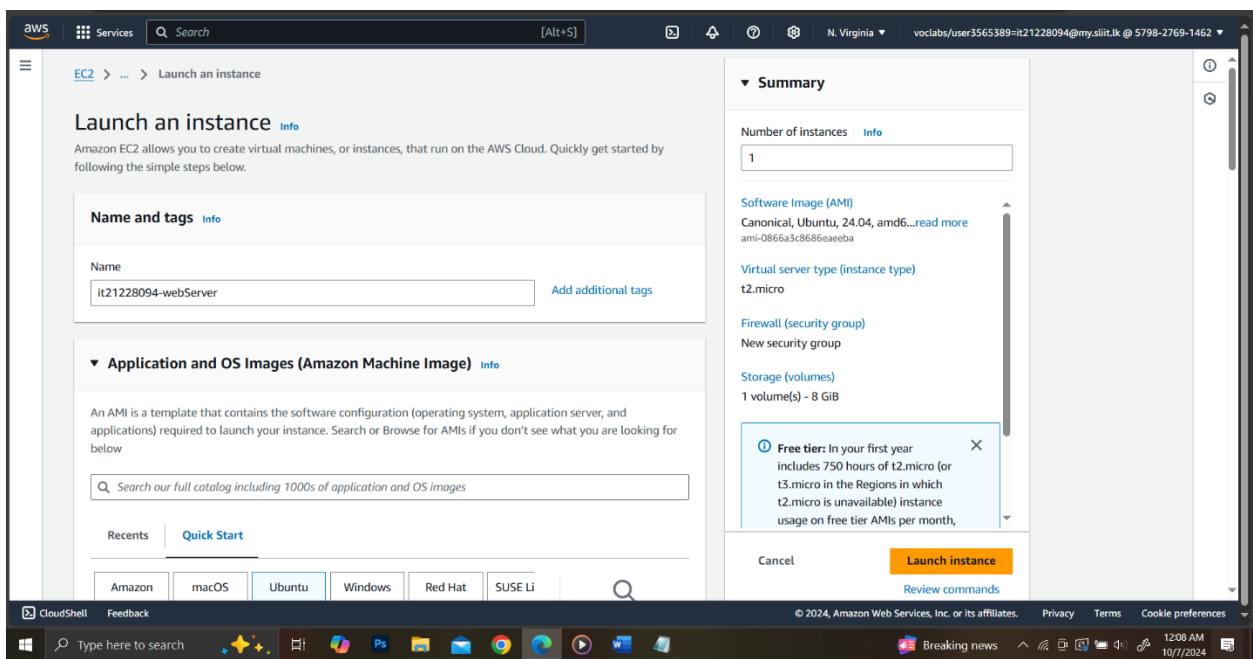
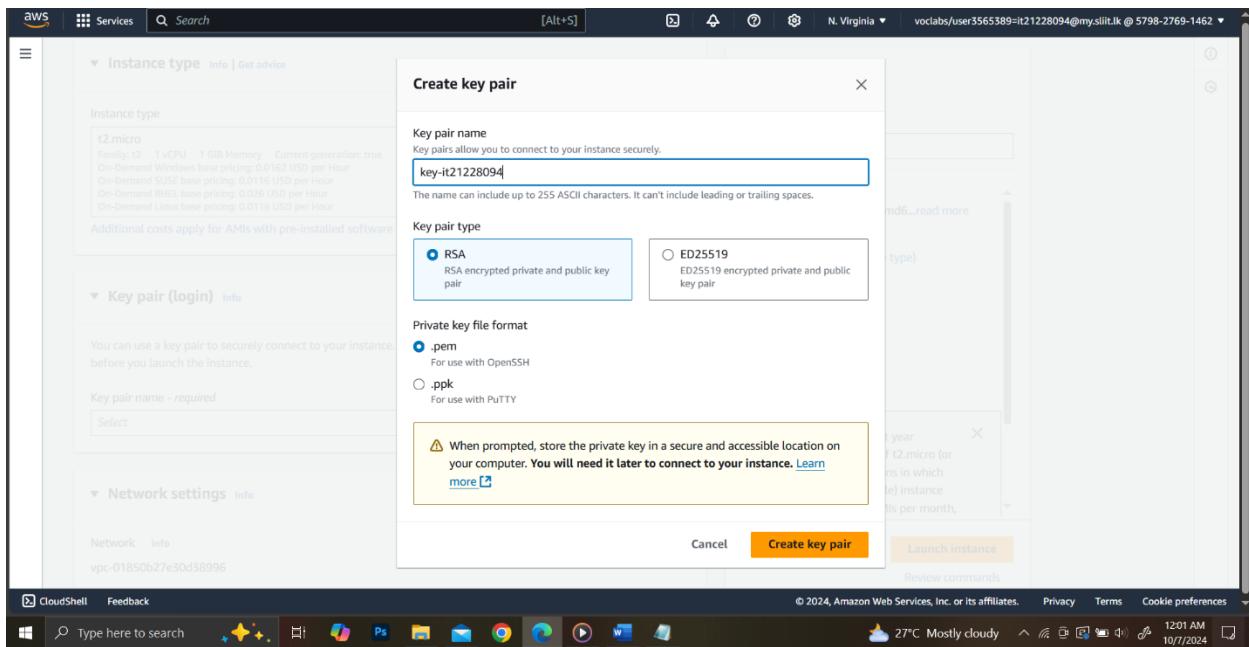
Route tables: Route network traffic to resources

Network ACLs: it21228094 -rtb-public

CloudShell: Feedback

Feedback: Type here to search

Toolbar: Home, Services, Search, [Alt+S], Help, N. Virginia, vclabs/user3565389=it21228094@my.slit.it @ 5798-2769-1462, Actions ▾, Resource map, CIDRs, Flow logs, Tags, Integrations, VPC, Show details, Subnets (4), Route tables (4), Network ACLs, it21228094 -rtb-public, it21228094 -rtb-private2-us-east-1b, it21228094 -rtb-private1-us-east-1a, rtb-0cb967c5ee919c0aa, © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, Cookie preferences, Near record, 11:53 PM, 10/6/2024



Screenshot of the AWS CloudFormation console showing the creation of a new stack. The 'Quick Start' section is selected, displaying various AMI options. The 'Amazon Machine Image (AMI)' section shows the 'Ubuntu Server 24.04 LTS (HVM), SSD Volume Type' AMI selected. The 'Instance type' section shows a t2.micro instance type selected. The 'Summary' section shows the stack configuration: 1 instance, Canonical, Ubuntu, 24.04, amd64 AMI, t2.micro instance type, and 1 volume (8 GiB). A 'Free tier' information box is visible. The bottom navigation bar shows the AWS logo, CloudShell, Feedback, and a search bar.

Screenshot of the AWS CloudFormation console showing the creation of a new stack. The 'Instance type' section is selected, showing a t2.micro instance type selected. The 'Summary' section shows the stack configuration: 1 instance, Canonical, Ubuntu, 24.04, amd64 AMI, t2.micro instance type, and 1 volume (8 GiB). A 'Free tier' information box is visible. The bottom navigation bar shows the AWS logo, CloudShell, Feedback, and a search bar.

Screenshot of the AWS CloudShell interface showing the configuration of a new EC2 instance.

Network settings

- VPC - required**: [Info](#)
vpc-0a83b07d1150f0874 (it21228094 -vpc)
10.0.0.0/16
- Subnet**: [Info](#)
subnet-06087261e1e21287a it21228094 -subnet-public1-us-east-1a
VPC: vpc-0a83b07d1150f0874 Owner: 579827691462
Availability Zone: us-east-1a Zone type: Availability Zone
IP addresses available: 4090 CIDR: 10.0.0.0/20
- Create new subnet**
- Auto-assign public IP**: [Info](#)
Enable
- Additional charges apply** when outside of [free tier allowance](#)
- Firewall (security groups)**: [Info](#)
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.
- Create security group** (radio button selected)
- Select existing security group**
- Security group name - required**: webSweverSG-it21228094
- This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and _-~!@#\$%^&*()
- Description - required**: [Info](#)
Security Group of assignment

Summary

- Number of instances**: [Info](#)
1
- Software Image (AMI)**: Canonical, Ubuntu, 24.04, amd64... [read more](#)
ami-0866a3c8686eaeeba
- 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, [Learn more](#)

Launch instance

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Screenshot of the AWS CloudShell interface showing the successful launch of a new EC2 instance.

Success
Successfully initiated launch of instance (i-080a86ba1f09618d8)

Next Steps

What would you like to do next with this instance, for example "create alarm" or "create backup"

Create billing and free tier usage alerts
To manage costs and avoid surprise bills, set up email notifications for billing and free tier usage thresholds.
[Create billing alerts](#)

Connect to your instance
Once your instance is running, log into it from your local computer.
[Connect to instance](#) [Learn more](#)

Connect an RDS database
Configure the connection between an EC2 instance and a database to allow traffic flow between them.
[Connect an RDS database](#) [Create a new RDS database](#) [Learn more](#)

Create EBS snapshot policy
Create a policy that automates the creation, retention, and deletion of EBS snapshots.
[Create EBS snapshot policy](#)

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EC2 Instances i-080a86baf109618d8 Connect to instance

Connect to instance Info

Connect to your instance i-080a86baf109618d8 (it21228094-webServer) using any of these options

EC2 Instance Connect Session Manager SSH client EC2 serial console

⚠ Port 22 (SSH) is open to all IPv4 addresses
Port 22 (SSH) is currently open to all IPv4 addresses, indicated by **0.0.0.0/0** in the inbound rule in [your security group](#). For increased security, consider restricting access to only the EC2 Instance Connect service IP addresses for your Region: 18.206.107.24/29. [Learn more](#).

Instance ID i-080a86baf109618d8 (it21228094-webServer)

Connection Type Connect using EC2 Instance Connect Connect using EC2 Instance Connect Endpoint

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

Public IPv4 address 54.83.94.129
 IPv6 address

Username Enter the username defined in the AMI used to launch the instance. If you didn't define a custom username, use the default username,

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AWS Services Search [Alt+S] N. Virginia vocabs/user3565389=it21228094@my.slit.lk @ 5798-2769-1462

EC2 Security Groups sg-093737ac10a466371 - webSweverSG-it21228094 Edit inbound rules

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Security group rule ID	Type <small>Info</small>	Protocol <small>Info</small>	Port range	Source <small>Info</small>	Description - optional <small>Info</small>
sgr-0b842fd76e237dfc9	SSH	TCP	22	Custom <input type="button" value="Delete"/> <input type="text" value="0.0.0.0/0"/> <input type="button" value="X"/>	
-	HTTP	TCP	80	Anywh... <input type="button" value="Delete"/> <input type="text" value="0.0.0.0/0"/> <input type="button" value="X"/>	

⚠ Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel Preview changes

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sg-093737ac10a466371 - webSweverSG-it21228094

Details

Security group name	sg-093737ac10a466371	Description	VPC ID
Owner	579827691462	Inbound rules count	vpc-0a83b07d1150f0874
		Outbound rules count	
		1 Permission entry	

Inbound rules (2)

Name	Security group rule...	IP version	Type	Protocol	Port range
-	sgr-0a8ca9a86fde85e71	IPv4	HTTP	TCP	80
-	sgr-0b842fd76e237dfc9	IPv4	SSH	TCP	22

```
① Keyboard shortcut
To tab out of the terminal window and select the next button element, press the left and right Shift keys together.

Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1016-aws x86_64)

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

System information as of Sun Oct 6 18:45:16 UTC 2024

System load: 0.0          Processes:          106
Usage of /: 22.9% of 6.71GB  Users logged in: 0
Memory usage: 20%          IPv4 address for enX0: 10.0.3.22
Swap usage: 0%             IPv6 address for enX0: fe80::503:3ff:fe0:22c%enX0

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.

i-080a86baf109618d8 (it21228094-webServer)
PublicIPs: 54.83.94.129  PrivateIPs: 10.0.3.22
```

aws Services Search [Alt+S] N. Virginia vocabs/user3565389=it21228094@my.sliit.lk @ 5798-2769-1462 Close permanently

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-10-0-3-22:~$ sudo -i
root@ip-10-0-3-22:~# apt install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-utils libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblbu5.4-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libaprilt64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblbu5.4-0 ssl-cert
0 upgraded, 10 newly installed, 0 to remove and 0 not upgraded.
Need to get 2084 kB of archives.
After this operation, 8094 kB 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-updates/main amd64 libaprilt64 amd64 1.7.2-3.lubuntu0.1 [108 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1t64 amd64 1.6.3-1.lubuntu7 [91.9 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.3-1.lubuntu7 [11.2 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-ldap amd64 1.6.3-1.lubuntu7 [9116 B]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 liblbu5.4-0 amd64 5.4.6-3build2 [166 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-bin amd64 2.4.58-lubuntu8.4 [1329 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-data all 2.4.58-lubuntu8.4 [163 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-utils amd64 2.4.58-lubuntu8.4 [97.1 kB]
```

i-080a86baf109618d8 (it21228094-webServer)

PublicIPs: 54.83.94.129 PrivateIPs: 10.0.3.22

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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.

```
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2 amd64 2.4.58-lubuntu8.4 [90.2 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 ssl-cert all 1.1.2ubuntu1 [17.8 kB]
Fetched 2084 kB in 0s (30.1 MB/s)
Preconfiguring packages ...
Selecting previously unselected package libaprilt64:amd64.
(Reading database ... 67836 files and directories currently installed.)
Preparing to unpack .../0-libaprilt64 1.7.2-3.lubuntu0.1_amd64.deb ...
Unpacking libaprilt64:amd64 (1.7.2-3.lubuntu0.1) ...
Selecting previously unselected package libaprutil1-dbd-sqlite3:amd64.
Preparing to unpack .../1-libaprutil1t64 1.6.3-1.lubuntu7_amd64.deb ...
Unpacking libaprutil1t64:amd64 (1.6.3-1.lubuntu7) ...
Selecting previously unselected package libaprutil1-dbd-sqlite3:amd64.
Preparing to unpack .../2-libaprutil1-dbd-sqlite3 1.6.3-1.lubuntu7_amd64.deb ...
Unpacking libaprutil1-dbd-sqlite3:amd64 (1.6.3-1.lubuntu7) ...
Selecting previously unselected package libaprutil1-ldap:amd64.
Preparing to unpack .../3-libaprutil1-ldap 1.6.3-1.lubuntu7_amd64.deb ...
Unpacking libaprutil1-ldap:amd64 (1.6.3-1.lubuntu7) ...
Selecting previously unselected package liblbu5.4-0:amd64.
Preparing to unpack .../4-liblbu5.4-0_5.4.6-3build2_amd64.deb ...
Unpacking liblbu5.4-0:amd64 (5.4.6-3build2) ...
Selecting previously unselected package apache2-bin.
Preparing to unpack .../5-apache2-bin 2.4.58-lubuntu8.4_amd64.deb ...
Unpacking apache2-bin (2.4.58-lubuntu8.4) ...
Selecting previously unselected package apache2-data.
Preparing to unpack .../6-apache2-data 2.4.58-lubuntu8.4_all.deb ...
Unpacking apache2-data (2.4.58-lubuntu8.4) ...
Selecting previously unselected package apache2-utils.
Preparing to unpack .../7-apache2-utils 2.4.58-lubuntu8.4_amd64.deb ...
Unpacking apache2-utils (2.4.58-lubuntu8.4) ...
```

i-080a86baf109618d8 (it21228094-webServer)

PublicIPs: 54.83.94.129 PrivateIPs: 10.0.3.22

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Keyboard shortcut
To tab out of the terminal window and select the next button element, press the left and right Shift keys together.

```
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /usr/lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /usr/lib/systemd/system/apache-htcacheclean.service.
Processing triggers for ufw (0.36.2-6) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.3) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@ip-10-0-3-22:~# systemctl status apache2
● apache2.service - The Apache HTTP Server
  Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
  Active: active (running) since Sun 2024-10-06 18:50:49 UTC; 3min 3s ago
    Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 2112 (apache2)
     Tasks: 55 (limit: 1130)
    Memory: 5.4M (peak: 5.6M)
      CPU: 41ms

i-080a86baf109618d8 (it21228094-webServer)
PublicIPs: 54.83.94.129 PrivateIPs: 10.0.3.22
```

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Keyboard shortcut
To tab out of the terminal window and select the next button element, press the left and right Shift keys together.

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@ip-10-0-3-22:~# systemctl status apache2
● apache2.service - The Apache HTTP Server
  Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
  Active: active (running) since Sun 2024-10-06 18:50:49 UTC; 3min 3s ago
    Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 2112 (apache2)
     Tasks: 55 (limit: 1130)
    Memory: 5.4M (peak: 5.6M)
      CPU: 41ms
     CGroup: /system.slice/apache2.service
             └─2112 /usr/sbin/apache2 -k start
                   ├─2114 /usr/sbin/apache2 -k start
                   ├─2116 /usr/sbin/apache2 -k start

Oct 06 18:50:49 ip-10-0-3-22 systemd[1]: Starting apache2.service - The Apache HTTP Server...
Oct 06 18:50:49 ip-10-0-3-22 systemd[1]: Started apache2.service - The Apache HTTP Server.
root@ip-10-0-3-22:~# systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
root@ip-10-0-3-22:~# cd/var/www/html
-bash: cd/var/www/html: No such file or directory
root@ip-10-0-3-22:~# cd /var/www/html
root@ip-10-0-3-22:/var/www/html:~> index.html
root@ip-10-0-3-22:/var/www/html:~> vim index.html
root@ip-10-0-3-22:/var/www/html:~> cat index.html
<!DOCTYPE html>
<html lang="en">
```

i-080a86baf109618d8 (it21228094-webServer)
PublicIPs: 54.83.94.129 PrivateIPs: 10.0.3.22

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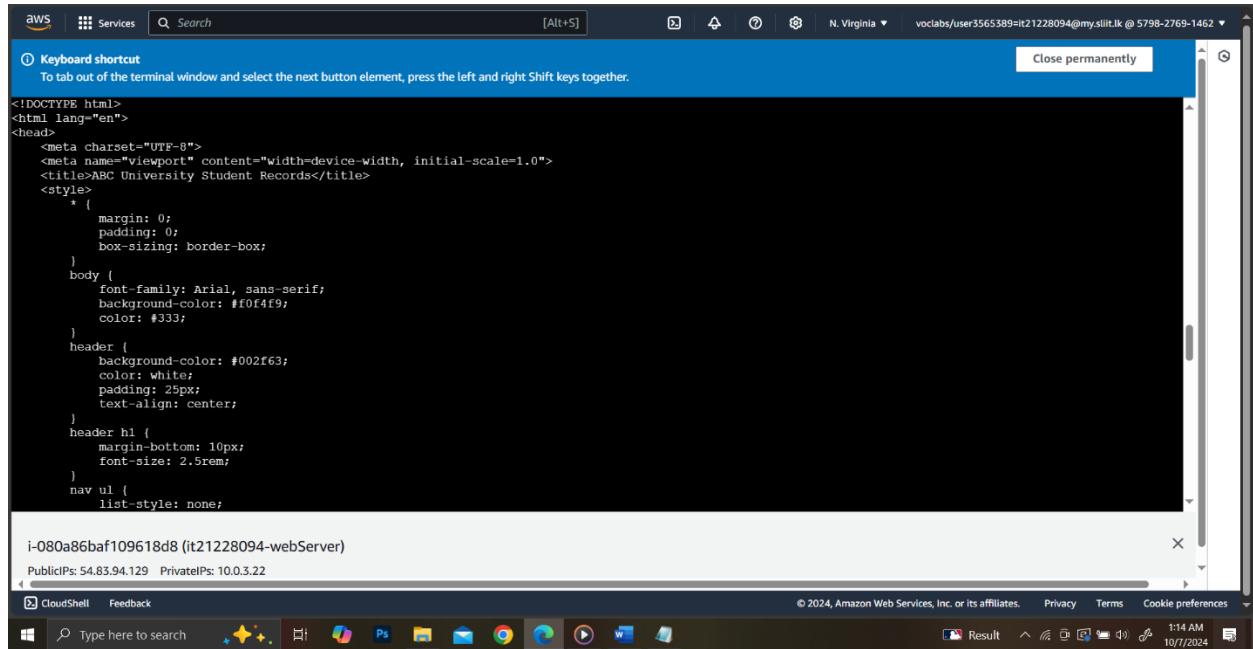
aws Services Search [Alt+S] N. Virginia v vocabs/user3565389@it21228094@my.sliit.lk @ 5798-2769-1462 ▾

① Keyboard shortcut
To tab out of the terminal window and select the next button element, press the left and right Shift keys together.

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>ABC University Student Records</title>
<style>
* {
  margin: 0;
  padding: 0;
  box-sizing: border-box;
}
body {
  font-family: Arial, sans-serif;
  background-color: #f0f4f9;
  color: #333;
}
header {
  background-color: #002f63;
  color: white;
  padding: 25px;
  text-align: center;
}
header h1 {
  margin-bottom: 10px;
  font-size: 2.5rem;
}
nav ul {
  list-style: none;
}
```

i-080a86ba109618d8 (it21228094-webServer)
PublicIPs: 54.83.94.129 PrivateIPs: 10.0.3.22

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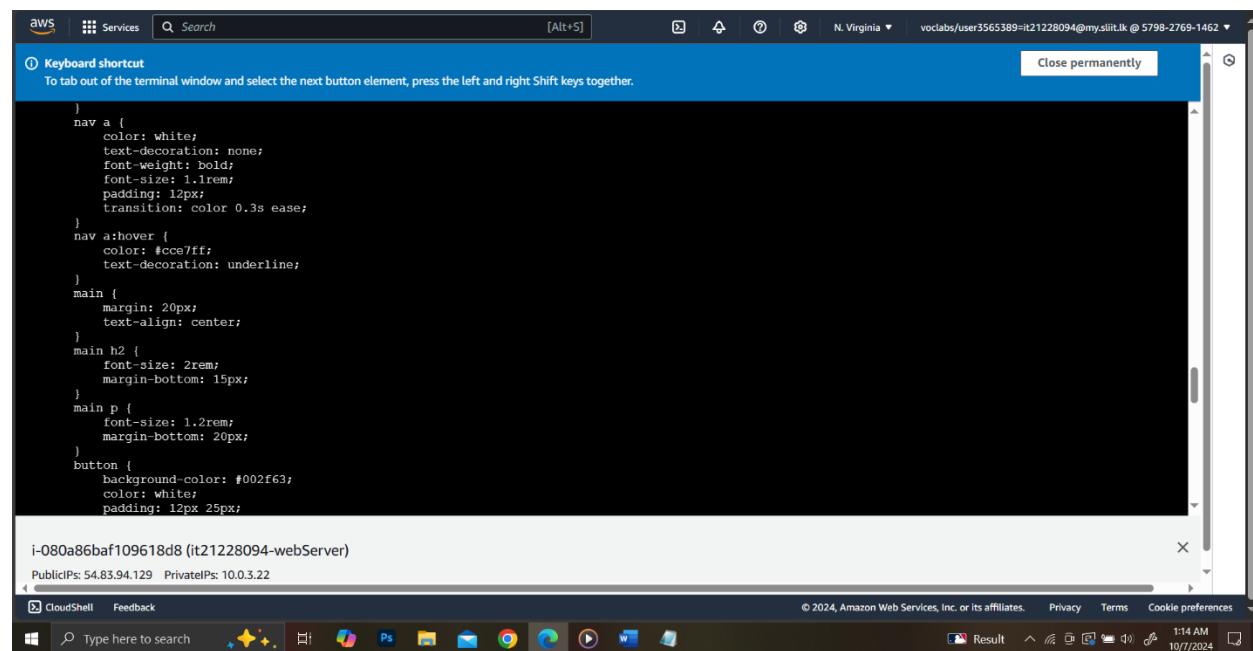
aws Services Search [Alt+S] N. Virginia v vocabs/user3565389@it21228094@my.sliit.lk @ 5798-2769-1462 ▾

① Keyboard shortcut
To tab out of the terminal window and select the next button element, press the left and right Shift keys together.

```
nav a {
  color: white;
  text-decoration: none;
  font-weight: bold;
  font-size: 1.1rem;
  padding: 12px;
  transition: color 0.3s ease;
}
nav a:hover {
  color: #cce7ff;
  text-decoration: underline;
}
main {
  margin: 20px;
  text-align: center;
}
main h2 {
  font-size: 2rem;
  margin-bottom: 15px;
}
main p {
  font-size: 1.2rem;
  margin-bottom: 20px;
}
button {
  background-color: #002f63;
  color: white;
  padding: 12px 25px;
}
```

i-080a86ba109618d8 (it21228094-webServer)
PublicIPs: 54.83.94.129 PrivateIPs: 10.0.3.22

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```
aws Services Search [Alt+S] N. Virginia vocabs/user3565389:it21228094@imy.sliit.lk @ 5798-2769-1462 Close permanently

① Keyboard shortcut
To tab out of the terminal window and select the next button element, press the left and right Shift keys together.

button:hover {
  background-color: #001f43;
}
footer {
  background-color: #002f63;
  color: white;
  text-align: center;
  padding: 15px;
  position: fixed;
  width: 100%;
  bottom: 0;
  font-size: 0.9rem;
}
@media (max-width: 600px) {
  header h1 {
    font-size: 1.75rem;
  }
  nav a {
    font-size: 0.9rem;
    padding: 10px;
  }
  main h2 {
    font-size: 1.6rem;
  }
  main p {
    font-size: 1rem;
  }
  button {
    font-size: 0.9rem;
  }
}

i-080a86baf109618d8 (it21228094-webServer)
PublicIPs: 54.83.94.129 PrivateIPs: 10.0.3.22
CloudShell Feedback
Type here to search 27°C Light rain 1:15 AM 10/7/2024
```

```
aws Services Search [Alt+S] N. Virginia vocabs/user3565389:it21228094@imy.sliit.lk @ 5798-2769-1462 Close permanently

① Keyboard shortcut
To tab out of the terminal window and select the next button element, press the left and right Shift keys together.

}
footer {
  font-size: 0.8rem;
}

```

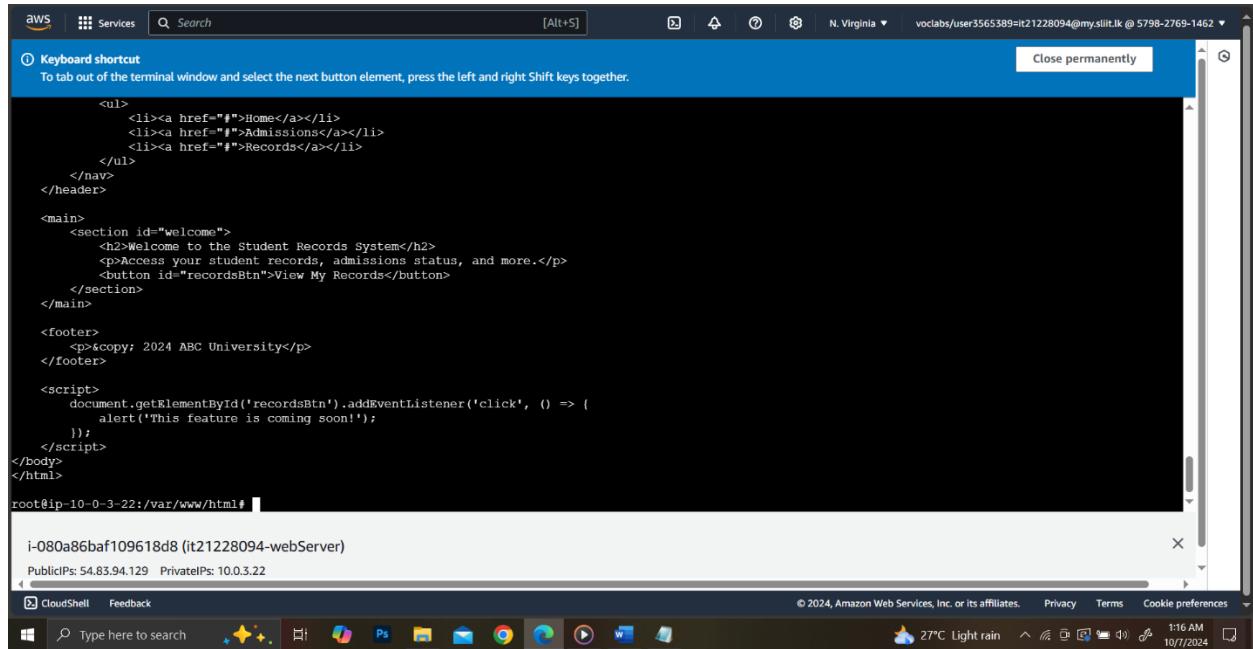
```
</style>
</head>
<body>
  <header>
    <h1>ABC University</h1>
    <nav aria-label="Main Navigation">
      <ul>
        <li><a href="#">Home</a></li>
        <li><a href="#">Admissions</a></li>
        <li><a href="#">Records</a></li>
      </ul>
    </nav>
  </header>

  <main>
    <section id="welcome">
      <h2>Welcome to the Student Records System</h2>
      <p>Access your student records, admissions status, and more.</p>
      <button id="recordsBtn">View My Records</button>
    </section>
  </main>

  <footer>
    <p>© 2024 ABC University</p>
  </footer>

```

```
i-080a86baf109618d8 (it21228094-webServer)
PublicIPs: 54.83.94.129 PrivateIPs: 10.0.3.22
CloudShell Feedback
Type here to search 27°C Light rain 1:15 AM 10/7/2024
```



```
<ul>
    <li><a href="#">Home</a></li>
    <li><a href="#">Admissions</a></li>
    <li><a href="#">Records</a></li>
</ul>
</nav>
</header>

<main>
    <section id="welcome">
        <h2>Welcome to the Student Records System</h2>
        <p>Access your student records, admissions status, and more.</p>
        <button id="recordsBtn">View My Records</button>
    </section>
</main>

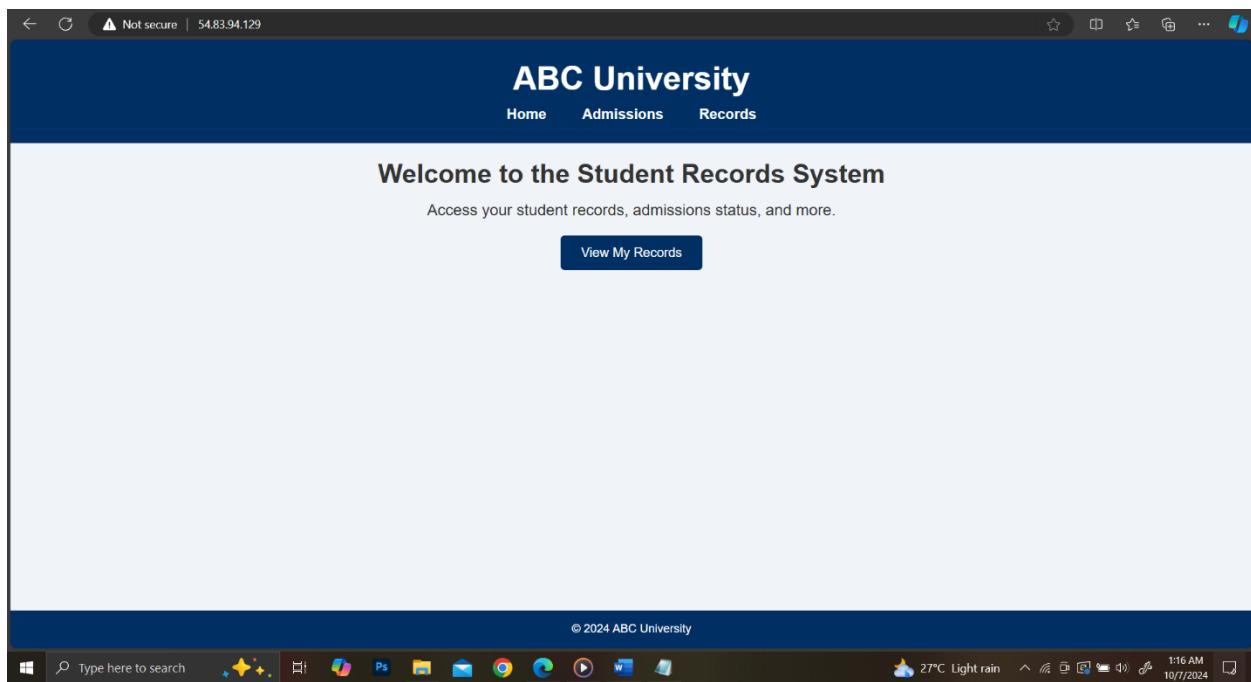
<footer>
    <p>© 2024 ABC University</p>
</footer>

<script>
    document.getElementById('recordsBtn').addEventListener('click', () => {
        alert('This feature is coming soon!');
    });
</script>
</body>
</html>
root@ip-10-0-3-22:/var/www/html#
```

i-080a86baf109618d8 (it21228094-webServer)
Public IPs: 54.83.94.129 Private IPs: 10.0.3.22

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ABC University

Home Admissions Records

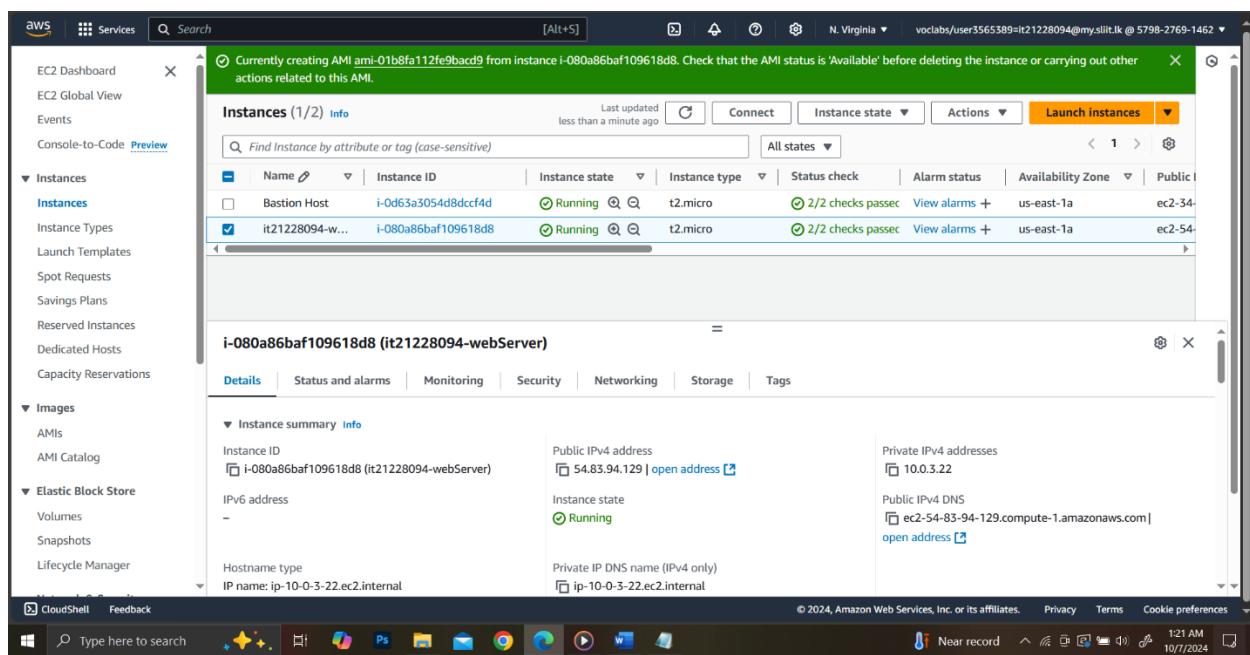
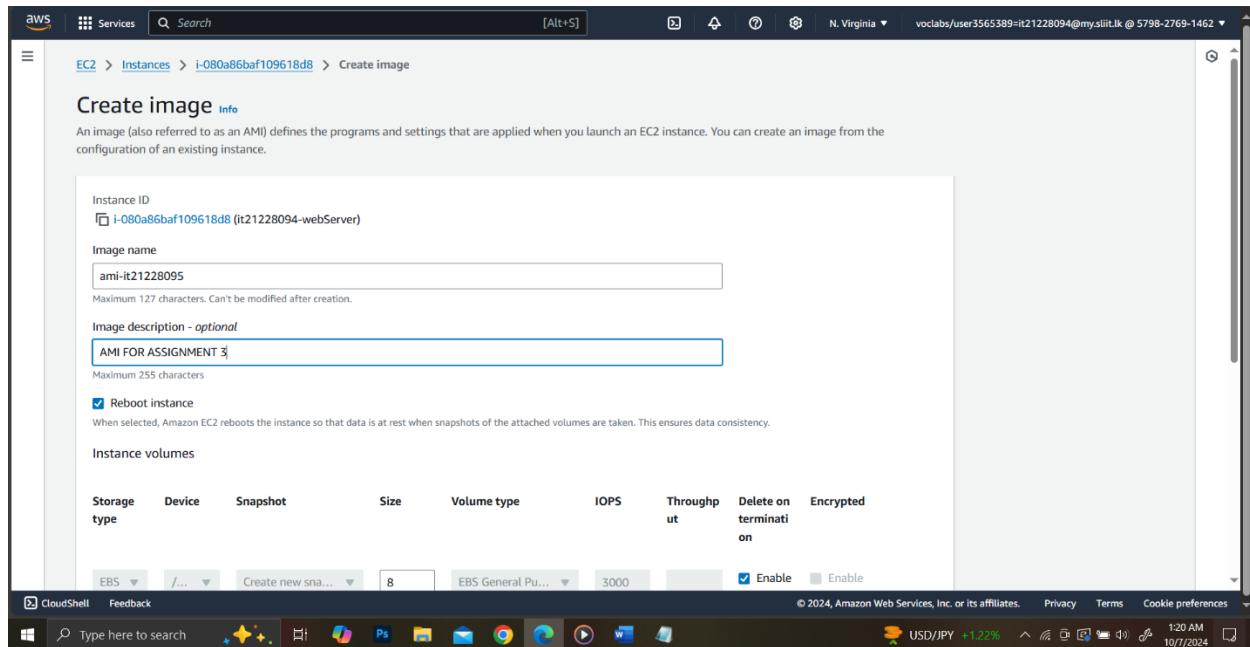
Welcome to the Student Records System

Access your student records, admissions status, and more.

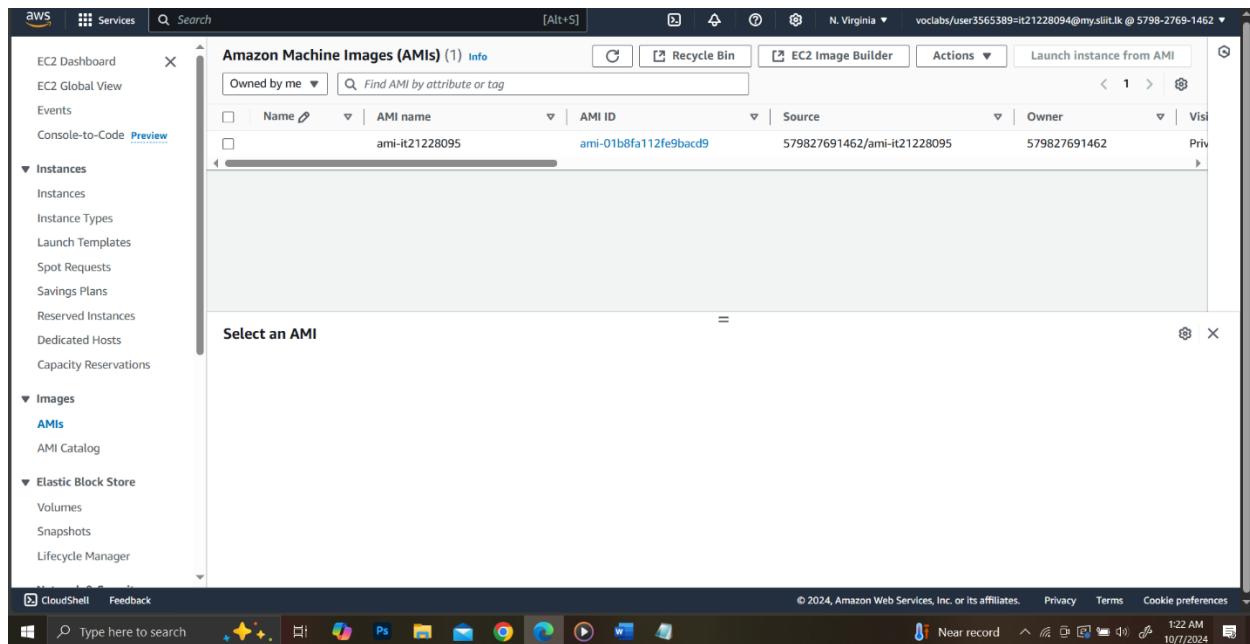
View My Records

© 2024 ABC University

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Screenshot of the AWS EC2 Dashboard showing the 'Amazon Machine Images (AMIs)' list. The list contains one item: 'ami-it21228095' (ami-01b8fa112fe9bcd9). A modal window titled 'Select an AMI' is open, indicating the user is about to select this AMI for launching an instance.



Screenshot of the AWS RDS 'Create DB subnet group' wizard. The 'Subnet group details' step is shown, where the user is defining the subnet group name, description, and VPC.

Subnet group details

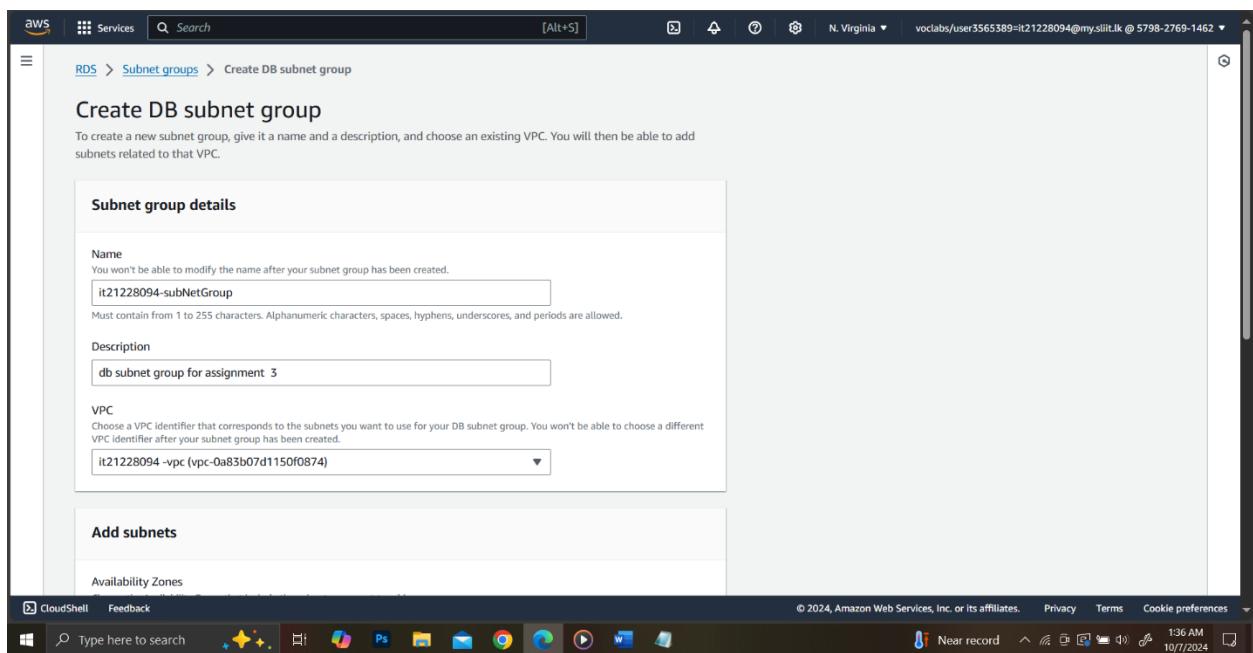
Name
You won't be able to modify the name after your subnet group has been created.
 Must contain from 1 to 255 characters. Alphanumeric characters, spaces, hyphens, underscores, and periods are allowed.

Description

VPC
Choose a VPC identifier that corresponds to the subnets you want to use for your DB subnet group. You won't be able to choose a different VPC identifier after your subnet group has been created.

Add subnets

Availability Zones



Screenshot of the AWS VPC console showing the 'Add subnets' wizard.

Availability Zones
Choose the Availability Zones that include the subnets you want to add.
Choose an availability zone ▾
us-east-1a X us-east-1b X

Subnets
Choose the subnets that you want to add. The list includes the subnets in the selected Availability Zones.
Select subnets ▾
subnet-04007346e5647524a (10.0.144.0/20) X
subnet-0a99b6ea97e75096e (10.0.128.0/20) X

For Multi-AZ DB clusters, you must select 3 subnets in 3 different Availability Zones.

Subnets selected (2)

Availability zone	Subnet ID	CIDR block
us-east-1b	subnet-04007346e5647524a	10.0.144.0/20
us-east-1a	subnet-0a99b6ea97e75096e	10.0.128.0/20

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Screenshot of the AWS RDS console showing the 'Subnet groups' page.

Successfully created it21228094-subNetGroup. View subnet group

RDS > Subnet groups

Subnet groups (1)

Name	Description	Status	VPC
it21228094-subnetgroup	db subnet group for assignment 3	Complete	vpc-0a83b07d1150f0874

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Screenshot of the AWS RDS 'Create database' wizard. The 'Standard create' option is selected. The 'MySQL' engine type is chosen. A modal on the right provides information about MySQL and its features.

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL Community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

Screenshot of the AWS RDS 'Create database' wizard. The 'MySQL' engine type is selected. The 'MySQL Community' edition is chosen. A modal on the right provides information about MySQL and its features.

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL Community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

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Engine version MySQL 8.0.35

Enable RDS Extended Support [Info](#)
Amazon RDS Extended Support is a paid offering [Info](#). By selecting this option, you consent to being charged for this offering if you are running your database major version past the RDS end of standard support date for that version. Check the end of standard support date for your major version in the [RDS for MySQL documentation](#) [Info](#).

Templates
Choose a sample template to meet your use case.

Production
Use defaults for high availability and fast, consistent performance.

Dev/Test
This instance is intended for development use outside of a production environment.

Free tier
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. [Info](#)

Availability and durability

Deployment options [Info](#)
The deployment options below are limited to those supported by the engine you selected above.

Multi-AZ DB Cluster
Creates a DB cluster with a primary DB instance and two readable standby DB instances, with each DB instance in a different Availability Zone (AZ). Provides high availability, data redundancy and increases capacity to serve read workloads.

Multi-AZ DB instance (not supported for Multi-AZ DB cluster snapshot)

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL Community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

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DB instance identifier [Info](#)
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.
database-it21228094

Credentials Settings

Master username [Info](#)
Type a login ID for the master user of your DB instance.
admin
1 to 16 alphanumeric characters. The first character must be a letter.

Credentials management
You can use AWS Secrets Manager or manage your master user credentials.

Managed in AWS Secrets Manager - most secure
RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.

Self managed
Create your own password or have RDS create a password that you manage.

Auto generate password
Amazon RDS can generate a password for you, or you can specify your own password.

Master password [Info](#)

Password strength **Strong**
Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / " * @

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL Community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

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Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

DB instance class [Info](#)

Hide filters

Show instance classes that support Amazon RDS Optimized Writes [Info](#)
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

Include previous generation classes

Standard classes (includes m classes)

Memory optimized classes (includes r and x classes)

Burstable classes (includes t classes)

db.t3.micro
2 vCPUs 1 GiB RAM Network: Up to 2,085 Mbps

Storage

Storage type [Info](#)
Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp3)
Performance scales independently from storage

Allocated storage [Info](#)
20 GiB

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

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Connectivity [Info](#)

Compute resource
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

Don't connect to an EC2 compute resource
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

Connect to an EC2 compute resource
Set up a connection to an EC2 compute resource for this database.

Virtual private cloud (VPC) [Info](#)
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

it21228094 -vpc (vpc-0a83b07d1150f0874)
4 Subnets, 2 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

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The screenshot shows the AWS RDS MySQL setup wizard. The left panel contains configuration fields for a VPC security group (choosing an existing one named 'webSweverSG-it21228094'), availability zone ('us-east-1a'), and RDS Proxy (unchecked). The right panel, titled 'MySQL', provides a summary: MySQL is the most popular open-source database, and the RDS edition offers rich features like community edition, compute resources, and storage capacity. It also lists several benefits of using RDS MySQL.

VPC security group (firewall) [Info](#)
Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.

[Choose existing](#)
Choose existing VPC security groups

[Create new](#)
Create new VPC security group

Existing VPC security groups
[Choose one or more options](#) ▾

[webSweverSG-it21228094](#) [X](#)

Availability Zone [Info](#)
[us-east-1a](#) ▾

RDS Proxy
RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.

[Create an RDS Proxy \[Info\]\(#\)](#)
RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more information, see [Amazon RDS Proxy pricing](#) [\[?\]](#)

Certificate authority - optional [Info](#)
Using a server certificate provides an extra layer of security by validating that the connection is being made to an Amazon database. It does so by checking the server certificate that is automatically installed on all databases that you provision.

[rds-ca-rsa2048-g1 \(default\)](#)
Expiry: May 26, 2061 ▾

If you don't select a certificate authority, RDS chooses one for you.

[► Additional configuration](#)

MySQL [X](#)

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

The screenshot shows the AWS RDS console. A red error banner at the top indicates a failed attempt to turn on Enhanced Monitoring for a database named 'null' due to missing permissions. The error message is: 'User: arn:aws:ssts::579827691462:assumed-role/volcabs/user3565589=it21228094@my.slit.tk is not authorized to perform: iam:CreateRole on resource: arn:aws:iam::579827691462:role/rds-monitoring-role because no identity-based policy allows the iam:CreateRole action'. Below this, a blue information card about 'Introducing Aurora I/O-Optimized' is displayed, stating that it offers predictable pricing and improved price-performance. The main content area shows the 'Databases' section with a single database entry: 'database-it21228094' (Status: Creating, Instance Type: MySQL, Region: us-east-1a, Engine: db.t3.micro). A 'Create database' button is visible at the top right of the table.

AWS Services Search [Alt+S] N. Virginia vocabs/user3565389=it21228094@my.sliit.lk @ 5798-2769-1462

Amazon RDS

Creating database **it21228094-database**
Your database might take a few minutes to launch. You can use settings from [it21228094-database](#) to simplify configuration of [suggested](#) database add-ons while we finish creating your DB for you. [View credential details](#)

Introducing Aurora I/O-Optimized
Aurora's I/O-Optimized [\[?\]](#) is a new cluster storage configuration that offers predictable pricing for all applications and improved price-performance, with up to 40% costs savings for I/O-intensive applications.

RDS > Databases

Consider creating a Blue/Green Deployment to minimize downtime during upgrades
You may want to consider using Amazon RDS Blue/Green Deployments and minimize your downtime during upgrades. A Blue/Green Deployment provides a staging environment for changes to production databases. [RDS User Guide](#) [Aurora User Guide](#)

Databases (2)

Group resources [\[?\]](#) Modify Actions [\[?\]](#) Restore from S3 [Create database](#)

DB identifier	Status	Role	Engine	Region ...	Size	Recommendations
database-it21228094	Available	Instance	MySQL Co...	us-east-1a	db.t3.micro	
it21228094-database	Creating	Instance	MySQL Co...	us-east-1b	db.t3.micro	

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EC2

Compute

EC2 launch templates

Streamline, simplify and standardize instance launches

Use launch templates to automate instance launches, simplify permission policies, and enforce best practices across your organization. Save launch parameters in a template that can be used for on-demand launches and with managed services, including EC2 Auto Scaling and EC2 Fleet. Easily update your launch parameters by creating a new launch template version.

New launch template [Create launch template](#)

Benefits and features

Streamline provisioning Minimize steps to provision instances. With EC2 Auto Scaling, updates to a launch template can be automatically passed to an Auto Scaling group. Learn more	Simplify permissions Create shorter, easier to manage IAM policies. Learn more
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

Documentation [Documentation](#) [API reference](#)

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EC2 > ... > Create launch template

Create launch template

Creating a launch template allows you to create a saved instance configuration that can be reused, shared and launched at a later time. Templates can have multiple versions.

Launch template name and description

Launch template name - **required**
temp-it21228094
Must be unique to this account. Max 128 chars. No spaces or special characters like '&', '!', '@'.

Template version description
PROD WEB SERVER FOR ASSIGNMENT 3
Max 255 chars

Auto Scaling guidance [Info](#)
Select this if you intend to use this template with EC2 Auto Scaling
 Provide guidance to help me set up a template that I can use with EC2 Auto Scaling

▶ Template tags
▶ Source template

Summary

Software Image (AMI)
AMI FOR ASSIGNMENT 3
ami-01b8fa112fe9bacd9

Virtual server type (instance type)
t2.micro

Firewall (security group)
webSweverSG-it21228094

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 I/Os, 1 GB of snapshots, and 100 GB of

Create launch template

Launch template contents

Specify the details of your launch template below. Leaving a field blank will result in the field not being included in the launch template.

Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and application) 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 [My AMIs](#) Quick Start

Don't include in launch template Owned by me Shared with me

Browse more AMIs
Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)
ami-it21228095
ami-01b8fa112fe9bacd9
2024-10-06T19:51:40.000Z Virtualization: hvm ENA enabled: true Root device type: ebs

Description
AMI FOR ASSIGNMENT 3

Summary

Software Image (AMI)
AMI FOR ASSIGNMENT 3
ami-01b8fa112fe9bacd9

Virtual server type (instance type)
t2.micro

Firewall (security group)
webSweverSG-it21228094

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 I/Os, 1 GB of snapshots, and 100 GB of

Create launch template

Architecture
x86_64 AMI ID
ami-01b8fa112fe9bacd9

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

Instance type
t2.micro Family: t2 1 vCPU 1 GiB Memory Current generation: true Free tier eligible
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: 0.026 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
key-it21228094 [Create new key pair](#)

Summary

Software Image (AMI)
AMI FOR ASSIGNMENT 3
ami-01b8fa112fe9bacd9

Virtual server type (instance type)
t2.micro

Firewall (security group)
webSweverSG-it21228094

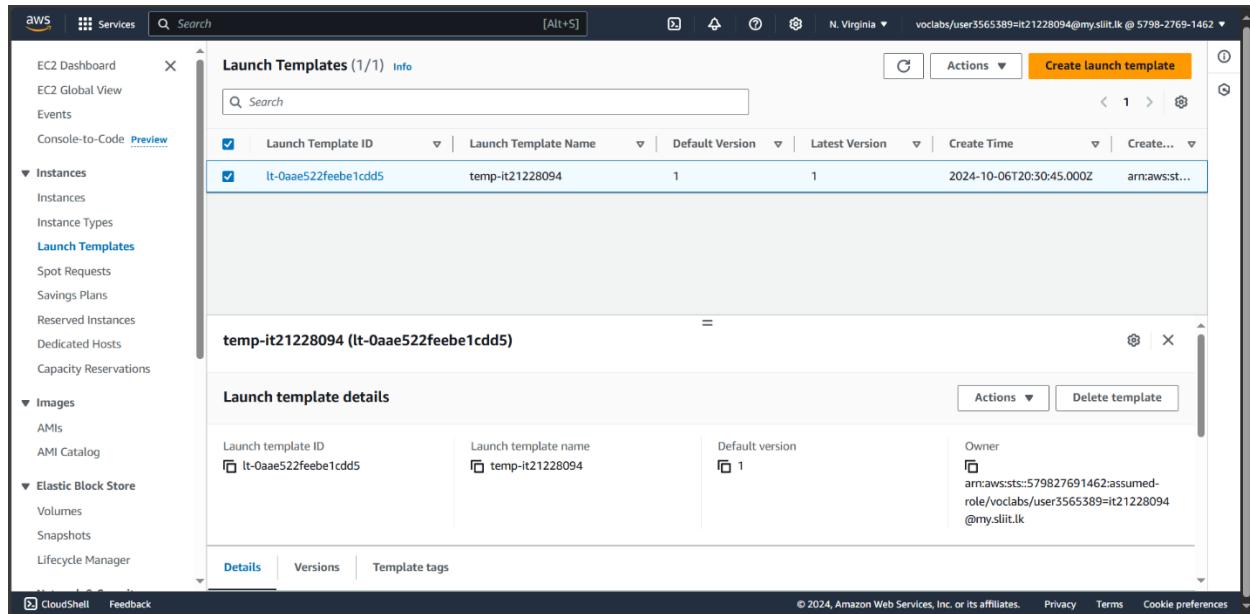
Storage (volumes)
1 volume(s) - 8 GiB

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 I/Os, 1 GB of snapshots, and 100 GB of

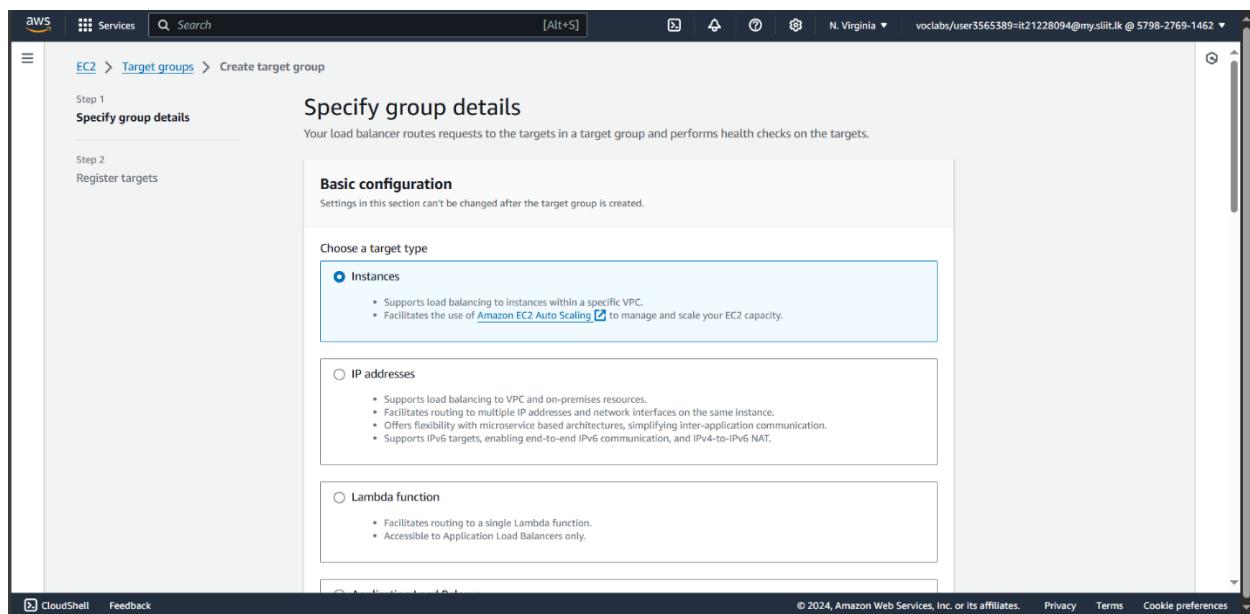
Create launch template

Screenshot of the AWS EC2 'Create new instance' wizard, Step 3: Configure Instance Details. The 'Network settings' section is expanded, showing a subnet named 'it21228094 -subnet-public1-us-east-1a'. The 'Summary' section on the right lists the AMI ('AMI FOR ASSIGNMENT 3'), instance type ('t2.micro'), and storage ('1 volume(s) - 8 GiB'). A tooltip for the 'Free tier' is displayed, stating: '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'. The 'Create launch template' button is highlighted in orange.

Screenshot of the AWS EC2 'Create launch template' success page. A green success message bar at the top states: 'Success Successfully created temp-it21228094(lt-0aae522febe1cdd5).'. Below the message, the 'Next Steps' section is visible, containing links for 'Launch an instance', 'Create an Auto Scaling group from your template', 'Create a Spot Fleet', and 'Create Spot Fleet'.



The screenshot shows the AWS EC2 Launch Templates page. The left sidebar is collapsed. The main content area displays a table titled "Launch Templates (1/1)". The table has columns: Launch Template ID, Launch Template Name, Default Version, Latest Version, Create Time, and Actions. One row is selected, showing "lt-0aae522febe1cdd5" as the Launch Template ID, "temp-it21228094" as the Launch Template Name, "1" as the Default Version, "1" as the Latest Version, and "2024-10-06T20:50:45.000Z" as the Create Time. The Actions column contains a "Create..." button. Below the table, a modal window titled "temp-it21228094 (lt-0aae522febe1cdd5)" is open, showing "Launch template details". It includes fields for Launch template ID (lt-0aae522febe1cdd5), Launch template name (temp-it21228094), Default version (1), and Owner (arn:aws:sts::579827691462:assumed-role/voclabs/user3565389=it21228094@my.sliit.lk). The modal also has tabs for "Details", "Versions", and "Template tags".



The screenshot shows the AWS EC2 Target Groups page. The left sidebar shows "EC2" and "Target groups". The main content area shows a breadcrumb trail: "EC2 > Target groups > Create target group". It is on "Step 1: Specify group details". The page title is "Specify group details" with the sub-instruction "Your load balancer routes requests to the targets in a target group and performs health checks on the targets." Below this is a "Basic configuration" section with the note "Settings in this section can't be changed after the target group is created." It contains a "Choose a target type" section with three options: "Instances" (selected), "IP addresses", and "Lambda function". Each option has a list of benefits. The "Instances" section includes: "Supports load balancing to instances within a specific VPC.", "Facilitates the use of Amazon EC2 Auto Scaling to manage and scale your EC2 capacity." The "IP addresses" section includes: "Supports load balancing to VPC and on-premises resources.", "Facilitates routing to multiple IP addresses and network interfaces on the same instance.", "Offers flexibility with microservice based architectures, simplifying inter-application communication.", "Supports IPv6 targets, enabling end-to-end IPv6 communication, and IPv4-to-IPv6 NAT." The "Lambda function" section includes: "Facilitates routing to a single Lambda function.", "Accessible to Application Load Balancers only." At the bottom of the page are "Next Step" and "Cancel" buttons.

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Target group name
targetGrop-it21228094
A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

Protocol : Port
Choose a protocol for your target group that corresponds to the Load Balancer type that will route traffic to it. Some protocols now include anomaly detection for the targets and you can set mitigation options once your target group is created. This choice cannot be changed after creation

HTTP 80 1-65535

IP address type
Only targets with the indicated IP address type can be registered to this target group.

IPv4
Each instance has a default network interface (eth0) that is assigned the primary private IPv4 address. The instance's primary private IPv4 address is the one that will be applied to the target.

IPv6
Each instance you register must have an assigned primary IPv6 address. This is configured on the instance's default network interface (eth0). [Learn more](#)

VPC
Select the VPC with the instances that you want to include in the target group. Only VPCs that support the IP address type selected above are available in this list.

it21228094 -vpc
vpc-0a83b07d1150f0874
IPv4 VPC CIDR: 10.0.0.0/16

Protocol version

HTTP1
Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.

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Protocol version

HTTP1
Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.

HTTP2
Send requests to targets using HTTP/2. Supported when the request protocol is HTTP/2 or gRPC, but gRPC-specific features are not available.

gRPC
Send requests to targets using gRPC. Supported when the request protocol is gRPC.

Health checks
The associated load balancer periodically sends requests, per the settings below, to the registered targets to test their status.

Health check protocol
HTTP

Health check path
Use the default path of "/" to perform health checks on the root, or specify a custom path if preferred.
/

Up to 1024 characters allowed.

► **Advanced health check settings**

Attributes

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Successfully created the target group: **tragetGrop-it21228094**. Anomaly detection is automatically applied to all registered targets. Results can be viewed in the Targets tab.

tragetGrop-it21228094

Target type	Protocol : Port	Protocol version	VPC
Instance	HTTP: 80	HTTP1	vpc-0a83b07d1150f0874
IP address type	Load balancer		
IPv4	None associated		

Total targets	Healthy	Unhealthy	Unused	Initial	Draining
1	0	0	1	0	0
	0 Anomalous				

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**

Instance	HTTP: 80	HTTP1	VPC
			vpc-0a83b07d1150f0874
IP address type	Load balancer		
IPv4	None associated		

Total targets	Healthy	Unhealthy	Unused	Initial	Draining
1	0	0	1	0	0
	0 Anomalous				

Registered targets (1) **Info** **Anomaly mitigation: Not applicable** **Filter targets** **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.

Instance ID	Name	Port	Zone	Health status	Health status details	Launch...
i-080a86baf109618d8	it21228094-w...	80	us-east-1a	Unused	Target group is not co...	October 7...

Screenshot of the AWS CloudFront Create Distribution page. The page shows the distribution configuration, including the distribution ID (d1150f0874), an origin (CloudFront Origin), and a default root object (index.html). The distribution is set to be publicly accessible and has a custom domain name (my.sliit.lk). The distribution is in the 'Deployed' state.

Screenshot of the AWS CloudFront Create Distribution page. The page shows the distribution configuration, including the distribution ID (d1150f0874), an origin (CloudFront Origin), and a default root object (index.html). The distribution is set to be publicly accessible and has a custom domain name (my.sliit.lk). The distribution is in the 'Deployed' state.

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Security groups [Info](#)

A security group is a set of firewall rules that control the traffic to your load balancer. Select an existing security group, or you can [create a new security group](#).

Security groups

Select up to 5 security groups

webSweverSG-it21228094 sg-093737ac10a466371 VPC: vpc-0a83b07d1150f0874

Listeners and routing [Info](#)

A listener is a process that checks for connection requests using the port and protocol you configure. The rules that you define for a listener determine how the load balancer routes requests to its registered targets.

▼ Listener HTTP:80

Protocol	Port	Default action	Info
HTTP	: 80	Forward to	targetGroup-it21228094 Target type: Instance, IPv4

HTTP 1-65535 Create target group

Listener tags - optional

Consider adding tags to your listener. Tags enable you to categorize your AWS resources so you can more easily manage them.

Add listener tag

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Load balancer tags - optional

Consider adding tags to your load balancer. Tags enable you to categorize your AWS resources so you can more easily manage them. The 'Key' is required, but 'Value' is optional. For example, you can have Key = production-webserver, or Key = webserver, and Value = production.

Optimize with service integrations - optional

Optimize your load balancing architecture by integrating AWS services with this load balancer at launch. You can also add these and other services after your load balancer is created by reviewing the load balancer's "Integrations" tab.

AWS Web Application Firewall (WAF) [Info](#) [Additional charges apply](#)

Optimizes: Security

Include WAF security protections behind the load balancer

Associates a pre-defined web ACL that includes the AWS-recommended security protections. Alternatively, you can associate any of your existing WAF web ACLs for custom protections.

AWS Global Accelerator [Info](#) [Additional charges apply](#)

Optimizes: Performance, Availability, Security

Create an accelerator

An accelerator will be created in your account. The accelerator provides 2 global static IPs that act as a fixed entry point to your load balancer.

Review

Review the load balancer configurations and make changes if needed. After you finish reviewing the configurations, choose [Create load balancer](#).

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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

Images AMIs AMI Catalog

Elastic Block Store Volumes Snapshots Lifecycle Manager

CloudShell Feedback

Successfully created load balancer: **loadBalan-it21228094**
It might take a few minutes for your load balancer to fully set up and route traffic. Targets will also take a few minutes to complete the registration process and pass initial health checks.

EC2 > Load balancers > loadBalan-it21228094

loadBalan-it21228094

Actions

▼ Details

Load balancer type Application	Status ⌚ Provisioning	VPC vpc-0a83b07d1150f0874	Load balancer IP address type IPv4
Scheme Internet-facing	Hosted zone Z35SX00TRQ7X7K	Availability Zones subnet-06087261e1e21287a us-east-1a (use1-az4) subnet-0d7e27cf186d29bfb us-east-1b (use1-az6)	Date created October 7, 2024, 02:21 (UTC+05:30)
Load balancer ARN arn:aws:elasticloadbalancing:us-east-1:579827691462:loadbalancer/app/loadBalan-it21228094/951ca761c2608039	DNS name Info loadBalan-it21228094-2044509832.us-east-1.elb.amazonaws.com (A Record)		

Listeners and rules Network mapping Resource map - new Security Monitoring Integrations Attributes Tags

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AMI Catalog

Elastic Block Store Volumes Snapshots Lifecycle Manager

Network & Security Security Groups Elastic IPs Placement Groups Key Pairs Network Interfaces

Load Balancing Load Balancers Target Groups Trust Stores [New](#)

Auto Scaling Auto Scaling Groups

Settings

CloudShell Feedback

Amazon EC2 Auto Scaling

helps maintain the availability of your applications

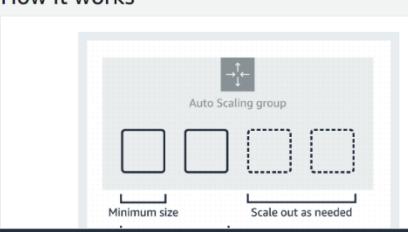
Auto Scaling groups are collections of Amazon EC2 instances that enable automatic scaling and fleet management features. These features help you maintain the health and availability of your applications.

Create Auto Scaling group

Get started with EC2 Auto Scaling by creating an Auto Scaling group.

[Create Auto Scaling group](#)

How it works



Auto Scaling group

Minimum size

Scale out as needed

Pricing

Amazon EC2 Auto Scaling features have no additional fees beyond the service fees for Amazon EC2, CloudWatch (for scaling policies), and the other AWS resources that you use. Visit the pricing page of each service to learn more.

Getting started

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Screenshot of the AWS EC2 Auto Scaling group creation wizard, Step 1: Choose launch template.

The page shows the following details:

- Step 1: Choose launch template**
- Step 2: Choose instance launch options**
- Step 3 - optional: Configure advanced options**
- Step 4 - optional: Configure group size and scaling**
- Step 5 - optional: Add notifications**
- Step 6 - optional: Add tags**
- Step 7: Review**

Choose launch template

Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group.

Name

Auto Scaling group name: ASG-it21228094

Must be unique to this account in the current Region and no more than 255 characters.

Launch template

For accounts created after May 31, 2023, the EC2 console only supports creating Auto Scaling groups with launch templates. Creating Auto Scaling groups with launch configurations is not recommended but still available via the CLI and API until December 31, 2023.

Launch template: temp-it21228094

Create a launch template

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Screenshot of the AWS EC2 Auto Scaling group creation wizard, Step 7: Review.

The page shows the following details:

Launch template

Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.

temp-it21228094

Create a launch template

Version

Default (1)

Additional details

Storage (volumes)	Date created
-	Mon Oct 07 2024 02:00:45 GMT+0530 (India Standard Time)

Cancel Next

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Screenshot of the AWS EC2 Auto Scaling group creation wizard, Step 1: Choose instance launch options.

Choose instance launch options Info

Choose the VPC network environment that your instances are launched into, and customize the instance types and purchase options.

Instance type requirements Info

You can keep the same instance attributes or instance type from your launch template, or you can choose to override the launch template by specifying different instance attributes or manually adding instance types.

Launch template	Version	Description
temp-it21228094 <small>lt-0aae522febe1cd5</small>	Default	PROD WEB SERVER FOR ASSIGNMENT 3

Instance type
t2.micro

Network Info

For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.

VPC
Choose the VPC that defines the virtual network for your Auto Scaling group.

vpc-0a83b07d1150f0874 (it21228094 -vpc) 10.0.0.0/16

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Screenshot of the AWS EC2 Auto Scaling group creation wizard, Step 7: Review.

For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.

VPC
Choose the VPC that defines the virtual network for your Auto Scaling group.

vpc-0a83b07d1150f0874 (it21228094 -vpc) 10.0.0.0/16

[Create a VPC](#)

Availability Zones and subnets
Define which Availability Zones and subnets your Auto Scaling group can use in the chosen VPC.

Select Availability Zones and subnets ▼

us-east-1b | subnet-0d7e27cf186d29fbfb (it21228094 -subnet-public2-us-east-1b) 10.0.16.0/20

us-east-1a | subnet-06087261e1e21287a (it21228094 -subnet-public1-us-east-1a) 10.0.0.0/20

[Create a subnet](#)

Invalid launch template specified in Step 1: You are not authorized to perform this operation Diagnose with Amazon

Cancel [Skip to review](#) [Previous](#) **Next**

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