

Project - 1: Deploying a Multi-Tier Website Using AWS EC2

AWS Solutions Architect Training



Description:

Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) cloud. Using Amazon EC2 eliminates your need to invest in hardware up front so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.

Problem Statement:

Company ABC wants to move their product to AWS. They have the following things set up right now:

1. MySQL DB
2. Website (PHP)

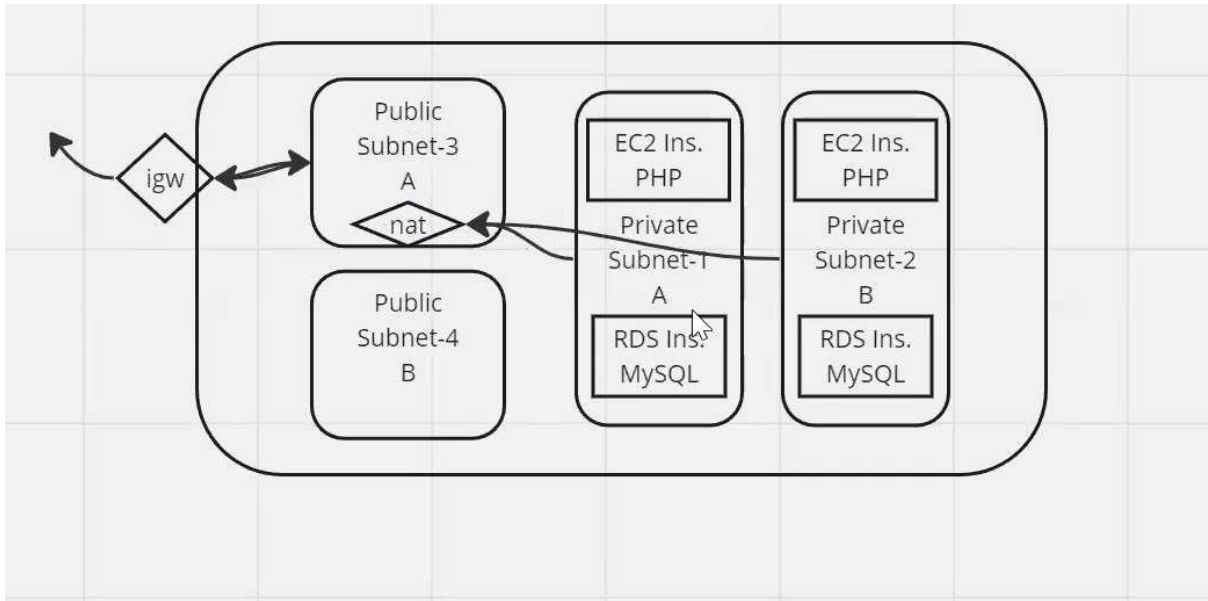
The company wants high availability on this product, therefore wants Auto Scaling to be enabled on this website.

Steps To Solve:

1. Launch an EC2 Instance
2. Enable Auto Scaling on these instances (minimum 2)
3. Create an RDS Instance
4. Create Database & Table in RDS instance:
 - a. Database name: intel
 - b. Table name: data
 - c. Database password: intel123
5. Change hostname in website
6. Allow traffic from EC2 to RDS instance
7. Allow all-traffic to EC2 instance

Solution:

Architecture



VPC > **Your VPCs** > **Create VPC**

Create VPC info

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances. Mouse over a resource to highlight the related resources.

VPC settings

Resources to create info
Create only the VPC resource or the VPC and other networking resources.

☐ VPC only ☒ VPC and more

Name tag auto-generation info
Enter a value for the name tag. This value will be used to auto-generate Name tags for all resources in the VPC.

☒ Auto-generate
project1

IPv4 CIDR block info
Determine the starting IP and the size of your VPC using CIDR notation.

10.0.0.0/24 256 IPs
CIDR block size must be between /16 and /28.

IPv6 CIDR block info
☒ No IPv6 CIDR block
☐ Amazon-provided IPv6 CIDR block

Tenancy info

Preview

VPC Show details
Your AWS virtual network
project1-vpc

Subnets (4)
Subnets within this VPC

us-east-1a
project1-subnet-public1-us-east-1a
project1-subnet-private1-us-east-1a

us-east-1b
project1-subnet-public2-us-east-1b
project1-subnet-private2-us-east-1b

Route tables (3)
Route network traffic to resources

project1-rtb-public
project1-rtb-private1-us-east-1a
project1-rtb-private2-us-east-1b

Network connections
Connections to or from the VPC

project1-igw
project1-nat-p

Number of Availability Zones (AZs) [Info](#)
Choose the number of AZs in which to provision subnets. We recommend at least two AZs for high availability.

1 2 3

► **Customize AZs**

Number of public subnets [Info](#)
The number of public subnets to add to your VPC. Use public subnets for web applications that need to be publicly accessible over the internet.

0 2

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.

0 2 4

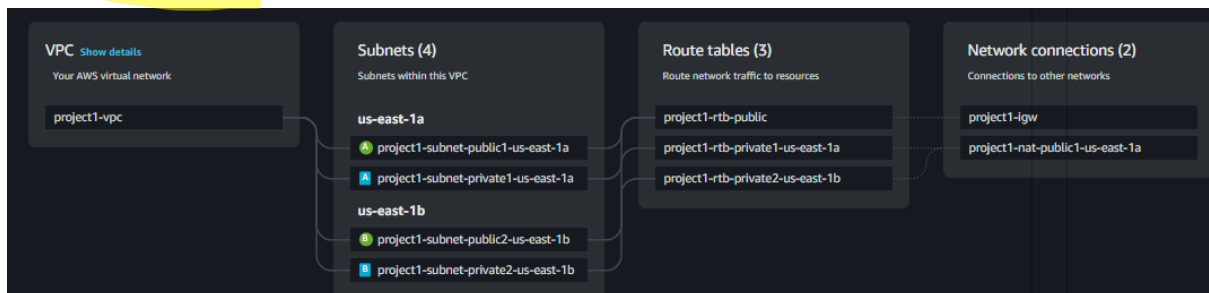
► **Customize subnets CIDR blocks**

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.

None In 1 AZ 1 per AZ

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.

None S3 Gateway



✓ Success

▼ Details

- ✓ Create VPC: vpc-0f73ad7adc4223289
- ✓ Enable DNS hostnames
- ✓ Enable DNS resolution
- ✓ Verifying VPC creation: vpc-0f73ad7adc4223289
- ✓ Create subnet: subnet-0a8ca8544739f3c21
- ✓ Create subnet: subnet-01f30964ae759cc12
- ✓ Create subnet: subnet-0d8e0c249b2dc2566
- ✓ Create subnet: subnet-0c0599de435bf6835
- ✓ Create internet gateway: igw-0d529b116c8f839d5
- ✓ Attach internet gateway to the VPC
- ✓ Create route table: rtb-0ad4d6f234f807d3e
- ✓ Create route
- ✓ Associate route table
- ✓ Associate route table
- ✓ Allocate elastic IP: eipalloc-0b468c978e868d183
- ✓ Create NAT gateway: nat-090c91692f127679c
- ✓ Wait for NAT Gateways to activate
- ✓ Create route table: rtb-085b2ec00306e1a88
- ✓ Create route
- ✓ Associate route table
- ✓ Create route table: rtb-087fc741e30b6eab8
- ✓ Create route
- ✓ Associate route table
- ✓ Verifying route table creation

[View VPC](#)

Route tables (1/5) Info

Find resources by attribute or tag

< 1 >

ⓘ

Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC	Owner ID
-	rtb-093c559ac5871e356	-	-	Yes	vpc-0f73ad7adc4223289 proj...	211125783778
<input checked="" type="checkbox"/> project1-rtb-private1-us-east-1a	rtb-085b2ec00306e1a88	subnet-0d8e0c249b2dc2...	-	No	vpc-0f73ad7adc4223289 proj...	211125783778
<input type="checkbox"/> project1-rtb-public	rtb-0ad4d6f234f807d3e	2 subnets	-	No	vpc-0f73ad7adc4223289 proj...	211125783778
-	rtb-0daba5ac7c4e092a2	-	-	Yes	vpc-052c6fc0932543ae9	211125783778
<input type="checkbox"/> project1-rtb-private2-us-east-1b	rtb-087fc741e30b6eab8	subnet-0c0599de435bf6...	-	No	vpc-0f73ad7adc4223289 proj...	211125783778

Explicit subnet associations (1)

Find subnet association

< 1 >

ⓘ

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
project1-subnet-private1-us-east-1a	subnet-0d8e0c249b2dc2566	10.0.0.128/28	-

Subnets without explicit associations (0)

The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table.

Find subnet association

< 1 >

ⓘ

VPC > Route tables > rtb-085b2ec00306e1a88 > Edit subnet associations

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (2/4)

Filter subnet associations

< 1 >

ⓘ

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/> project1-subnet-private2-us-east-1b	subnet-0c0599de435bf6835	10.0.0.144/28	-	rtb-087fc741e30b6eab8 / project1-rtb-priv...
<input type="checkbox"/> project1-subnet-public2-us-east-1b	subnet-01f30964ae759cc12	10.0.0.16/28	-	rtb-0ad4d6f234f807d3e / project1-rtb-publi...
<input checked="" type="checkbox"/> project1-subnet-private1-us-east-1a	subnet-0d8e0c249b2dc2566	10.0.0.128/28	-	rtb-085b2ec00306e1a88 / project1-rtb-priv...
<input type="checkbox"/> project1-subnet-public1-us-east-1a	subnet-0a8ca8544739f3c21	10.0.0.0/28	-	rtb-0ad4d6f234f807d3e / project1-rtb-publi...

Selected subnets

subnet-0d8e0c249b2dc2566 / project1-subnet-private1-us-east-1a X subnet-0c0599de435bf6835 / project1-subnet-private2-us-east-1b X

Cancel

Save associations

Route tables (1/5) Info

Find resources by attribute or tag

< 1 >

ⓘ

Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC	Owner ID
-	rtb-093c559ac5871e356	-	-	Yes	vpc-0f73ad7adc4223289 proj...	211125783778
<input type="checkbox"/> project1-rtb-private1-us-east-1a	rtb-085b2ec00306e1a88	2 subnets	-	No	vpc-0f73ad7adc4223289 proj...	211125783778
<input type="checkbox"/> project1-rtb-public	rtb-0ad4d6f234f807d3e	2 subnets	-	No	vpc-0f73ad7adc4223289 proj...	211125783778
-	rtb-0daba5ac7c4e092a2	-	-	Yes	vpc-052c6fc0932543ae9	211125783778
<input checked="" type="checkbox"/> project1-rtb-private2-us-east-1b	rtb-087fc741e30b6eab8	-	-	No	vpc-0f73ad7adc4223289 proj...	211125783778

Actions

View details

Set main route table

Edit subnet associations

Edit edge associations

Edit route propagation

Edit routes

Manage tags

Delete route table

Details

Resource map

CIDRs

Flow logs

Tags

Integrations

Resource map Info

VPC

Show details

Your AWS virtual network

project1-vpc

Subnets (4)

Subnets within this VPC

us-east-1a

project1-subnet-public1-us-east-1a

project1-subnet-private1-us-east-1a

us-east-1b

project1-subnet-public2-us-east-1b

project1-subnet-private2-us-east-1b

Route tables (3)

Route network traffic to resources

rtb-093c559ac5871e356

project1-rtb-private1-us-east-1a

project1-rtb-public

Network connections (2)

Connections to other networks

project1-igw

project1-nat-public1-us-east-1a

RDS > Subnet groups > Create DB subnet group

Create DB subnet group

To create a new subnet group, give it a name and a description, and choose an existing VPC. You will then be able to add subnets related to that 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
Choose the Availability Zones that include the subnets you want to add.

Subnets
Choose the subnets that you want to add. The list includes the subnets in the selected Availability Zones.

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-0c0599de435bf6835	10.0.0.144/28
us-east-1a	subnet-0d8e0c249b2dc2566	10.0.0.128/28

Successfully Created SubnetGroups

RDS > Subnet groups

Subnet groups (1)

<input type="checkbox"/>	Name	Description	Status	VPC
<input type="checkbox"/>	project-rds-subnetgroup	This will be going to launch the db in private subnet only	Complete	vpc-0f73ad7adc4223289

RDS

Create database

Create database

Choose a database creation method

Info


☒ Standard create
You set all of the configuration options, including ones for availability, security, backups, and maintenance.


☐ Easy create
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.


Engine options


Engine type

Info

☐ Aurora (MySQL Compatible)


☐ Aurora (PostgreSQL Compatible)


☒ MySQL


☐ MariaDB


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

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.

project1-RDS

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

▼ 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

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

Confirm master password

Info

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.

project1-vpc (vpc-0f73ad7adc4223289)
4 Subnets, 2 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

ⓘ After a database is created, you can't change its VPC.

DB subnet group [Info](#)

Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

project-rds-subnetgroup
2 Subnets, 2 Availability Zones

Public access [Info](#)

☐ **Yes**
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.

☒ **No**
RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to

New VPC security group name

project1-RDS-SG

Availability Zone [Info](#)

No preference

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.

Database options

Initial database name [Info](#)

Intel

If you do not specify a database name, Amazon RDS does not create a database.

DB parameter group [Info](#)

default.mysql8.0

Option group [Info](#)

default:mysql-8-0

Backup

☐ Enable automated backups

Creates a point-in-time snapshot of your database

Encryption

☒ Enable encryption

Choose to encrypt the given instance. Master key IDs and aliases appear in the list after they have been created using the AWS Key Management Service console. [Info](#)

AWS KMS key [Info](#)

(default) aws/rds

Created MySQL Database

RDS > Databases

Databases (1) [Group resources](#) [Refresh](#) [Modify](#) [Actions](#) [Restore from S3](#) [Create database](#)

Filter by databases

	DB identifier ▲	Status ▼	Role ▼	Engine ▼	Region & AZ ▼	Size ▼	Recommendations ▼	CPU ▼	Current activity ▼
	project1-rds	Available	Instance	MySQL Community	us-east-1a	db.t3.micro			

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

Project1-Webserver [Add additional tags](#)

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 22, 0.0.0.0/0) Remove

Type Info	Protocol Info	Port range Info
ssh	TCP	22
Source type Info	Source Info	Description - optional Info
Anywhere	<input type="text" value="Add CIDR, prefix list or security group"/> 0.0.0.0/0	<input type="text" value="e.g. SSH for admin desktop"/>

▼ Security group rule 2 (TCP, 80, 0.0.0.0/0) Remove

Type Info	Protocol Info	Port range Info
HTTP	TCP	80
Source type Info	Source Info	Description - optional Info
Anywhere	<input type="text" value="Add CIDR, prefix list or security group"/>	<input type="text" value="e.g. SSH for admin desktop"/>

Created Instances

Instances (1/1) Info								
<input type="text" value="Find Instance by attribute or tag (case-sensitive)"/>				All states ▼				
<input checked="" type="checkbox"/>	Name ↗	Instance ID	Instance state ▼	Instance type ▼	Status check	Alarm status	Availability Zone ▼	
<input checked="" type="checkbox"/>	Project1-Webserver	i-0915c4ccce796af14	Running	t2.micro	-	View alarms +	us-east-1a	

VPC > Endpoints > Create endpoint

Create endpoint Info

There are three types of VPC endpoints – Interface endpoints, Gateway Load Balancer endpoints, and Gateway endpoints. Interface endpoints and Gateway Load Balancer endpoints are powered by AWS PrivateLink, and use an (ENI) as an entry point for traffic destined to the service. Interface endpoints are typically accessed using the public or private DNS name associated with the service, while Gateway endpoints and Gateway Load Balancer endpoints are accessed using the route table in your route table for traffic destined for the service.

Endpoint settings

Name tag - optional
Creates a tag with a key of 'Name' and a value that you specify.

Service category
Select the service category

☐ AWS services
Services provided by Amazon

☐ PrivateLink Ready partner services
Services with an AWS Service Ready designation

☐ AWS Marketplace services
Services that you've purchased through AWS Marketplace

☒ EC2 Instance Connect Endpoint
An elastic network interface that allows you to connect to resources in a private subnet

☐ Other endpoint services
Find services shared with you by service name

VPC

Select the VPC in which to create the endpoint

VPC
The VPC in which to create your endpoint.

Additional settings

Security groups (1/3) Info

<input type="checkbox"/>	Group ID	Group name	VPC ID	Description
<input type="checkbox"/>	sg-020f35144ad12af34	project1-RDS-SG	vpc-0f73ad7adc4223289	Created by RDS management console
<input type="checkbox"/>	sg-07e84e0328f0b3cf2	default	vpc-0f73ad7adc4223289	default VPC security group
<input checked="" type="checkbox"/>	sg-084306fb208cc0dc8	Project1-webserver-SG	vpc-0f73ad7adc4223289	Allow SSH and HTTP Access to Private Subnet Group

Subnet
Select the Subnet in which to create the endpoint

Subnet
Select the subnets in which to create the endpoint.

subnet-0d8e0c249b2dc2566 (project1-subnet-private1-us-east-1a)

Tags

Key Value - optional

Q Name X Q Project1-Webserver-Endpoint X Remove

Add new tag

Created Endpoint

Endpoints (1/1) Info

Search

Name	VPC endpoint ID	VPC ID	Service name	Endpoint type
Project1-Webserver-En...	eice-06712ab3edf5be926	vpc-0f73ad7adc4223289 project1-vpc		EC2 Instance Connect Endpo

EC2 > Instances > i-0915c4ccce796af14 > Connect to instance

Connect to instance Info

Connect to your instance i-0915c4ccce796af14 (Project1-Webserver) using any of these options

EC2 Instance Connect Session Manager SSH client EC2 serial console

Instance ID

i-0915c4ccce796af14 (Project1-Webserver)

Connection Type

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

☒ **Connect using EC2 Instance Connect Endpoint**
Connect using the EC2 Instance Connect browser-based client, with a private IPv4 address and a VPC endpoint.

Private IP address

Use: "eice-06712ab3edf5be926 (Project1-Webserver-Endpoint)"

eice-06712ab3edf5be926
State: create-complete | AZ: us-east-1a
Name: Project1-Webserver-Endpoint

process can take up to 15 minutes. If you create an endpoint,

Q eice-06712ab3edf5be926 X

```

Fetchd 31.0 MB in 6s (5429 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
52 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-10-0-0-134:~$

```

Installing apache2 web server

```
Enabling module sslenv.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
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 → /lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /lib/systemd/system/apache-htcacheclean.service.
Processing triggers for ufw (0.36.1-4ubuntu0.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.6) ...
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.
```

Created Target Group

EC2 > Target groups

Target groups [info](#)

Filter target groups

No target groups

You don't have any target groups in us-east-1

Create target group

EC2 > Target groups > Create target group

Step 1

Specify group details

Step 2

Register targets

Specify group details

Your load balancer routes requests to the targets in a target group and performs health checks on the targets.

Basic configuration

Settings in this section can't be changed after the target group is created.

Choose a target type

- ☒ **Instances**
 - Supports load balancing to instances within a specific VPC.
 - Facilitates the use of [Amazon EC2 Auto Scaling](#) to manage and scale your EC2 capacity.
- ☐ **IP addresses**
 - 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.
- ☐ **Lambda function**
 - Facilitates routing to a single Lambda function.
 - Accessible to Application Load Balancers only.
- ☐ **Application Load Balancer**
 - Offers the flexibility for a Network Load Balancer to accept and route TCP requests within a specific VPC.
 - Facilitates using static IP addresses and PrivateLink with an Application Load Balancer.

Target group name

Project1-TG

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.

project1-vpc

vpc-0f73ad7adc4223289

IPv4 VPC CIDR: 10.0.0.0/24

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.

EC2 > Target groups > Create target group

Step 1
Specify group details

Step 2
Register targets

Register targets

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must register your targets.

Available instances (1/1)

Q. Filter instances

☒

Instance ID

☒

Name

☒

State

☒

Security groups

☒

Zone

☒

Private IPv4

☒

I-0915c4ccce796af14

Project1-Webserver

Running

Project1-webserver-SG

us-east-1a

10.0.0.134

1 selected

Ports for the selected instances

Ports for routing traffic to the selected instances.

80

1-65535 (separate multiple ports with commas)

Include as pending below

Review targets

Targets (1)

Q. Filter targets

☐ Show only pending

Remove all pending

☒

Instance ID

☒

Name

☒

Port

☒

State

☒

Security groups

☒

Zone

☒

Private IPv4 address

☒

Subnet ID

☒

Launch tin

☒

I-0915c4ccce796af14

Project1-Webserver

80

Running

Project1-webserver-SG

us-east-1a

10.0.0.134

subnet-0d8e0c249b2dc2566

April 24, 21

1 pending

Cancel

Previous

Create target group

EC2 > Target groups > Project1-TG

Project1-TG

Actions

Details

arn:aws-elasticloadbalancing:us-east-1:2011:2276778:targetgroup/Project1-TG/2ae6d7608d27de

Target type	Protocol: Port	Protocol version	VPC
Instance	HTTP: 80	HTTP1	vpc-0f79a7ad-4211269
IP address type	Load balancer		
IPv4	Name associated		

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

Registered targets (1) [Info](#)

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 1 healthy targets.

[Anomaly mitigations: Not applicable](#) [Refresh](#) [Deregister](#) [Register targets](#)

Filter targets

Instance ID	Name	Port	Zone	Health status	Health status details	Launch...	Anomaly detection result
i-02f3a5c0b1a1a1a1a	Project1-Web...	80	us-east-1a	Unhealthy	Target group is not co...	April 24, 2...	Normal

EC2 > Load balancers

Load balancers

Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

Filter load balancers

Name	DNS name	State	VPC ID	Availability Zones	Type	Date created
No load balancers						
You don't have any load balancers in us-east-1						
Create load balancer						

EC2 > Load balancers > Compare and select load balancer type

Compare and select load balancer type

A complete feature-by-feature comparison along with detailed highlights is also available. [Learn more](#)

Load balancer types

Application Load Balancer [Info](#)

Network Load Balancer [Info](#)

Gateway Load Balancer [Info](#)

Create load balancer

[EC2](#) > [Load balancers](#) > [Create Application Load Balancer](#)

Create Application Load Balancer [Info](#)

The Application Load Balancer distributes incoming HTTP and HTTPS traffic across multiple targets such as Amazon EC2 instances, microservices, and containers, based on request attributes. When the load balancer receives a connection request, it evaluates the listener rules in priority order to determine which rule to apply, and if applicable, it selects a target from the target group for the rule action.

► How Application Load Balancers work

Basic configuration

Load balancer name

Name must be unique within your AWS account and can't be changed after the load balancer is created.

Project1-ALB

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

Scheme [Info](#)

Scheme can't be changed after the load balancer is created.

☒ Internet-facing

An Internet-facing load balancer routes requests from clients over the Internet to targets. Requires a public subnet. [Learn more](#)

☐ Internal

An internal load balancer routes requests from clients to targets using private IP addresses.

IP address type [Info](#)

Select the type of IP addresses that your subnets use.

☒ IPv4

Includes only IPv4 addresses.

☐ Dualstack

Includes IPv4 and IPv6 addresses.

Network mapping [Info](#)

The load balancer routes traffic to targets in the selected subnets, and in accordance with your IP address settings.

VPC [Info](#)

Select the virtual private cloud (VPC) for your targets or you can [create a new VPC](#). Only VPCs with an internet gateway are enabled for selection. The selected VPC can't be changed after the load balancer is created. To confirm the VPC for your targets, [view your target groups](#).

project1-vpc

vpc-0f73ad7adc4223289

IPv4 VPC CIDR: 10.0.0.0/24



Mappings [Info](#)

Select at least two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer or the VPC are not available for selection.

☒ us-east-1a (use1-az4)

Subnet

subnet-0a8ca8544739f3c21

project1-subnet-public1-us-east-1a

IPv4 address

Assigned by AWS

☒ us-east-1b (use1-az6)

Subnet

subnet-0c0599de435bf6835

project1-subnet-private2-us-east-1b



The selected subnet does not have a route to an Internet gateway. This means that your load balancer will not receive Internet traffic.

You can proceed with this selection; however, for Internet traffic to reach your load balancer, you must update the subnet's route table in the [VPC console](#).

IPv4 address

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

Application Load Balancers require at least one security group. If none are selected, the VPC's default security group will be applied.

Created Security group

EC2 > Security Groups > Create security group

Create security group Info

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

Basic details

Security group name Info

Project1-ALB-SG

Name cannot be edited after creation.

Description Info

Security group for Application LoadBalancer

VPC Info

vpc-0f73ad7adc4223289 (project1-vpc)

Inbound rules Info

This security group has no inbound rules.

Add rule

Outbound rules Info

Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Destination <small>Info</small>	Description - optional <small>Info</small>	
HTTP	TCP	80	Anywher...		
			0.0.0.0/0		Delete

EC2 > Security Groups > sg-02aafb1f371ef242b - Project1-ALB-SG

sg-02aafb1f371ef242b - Project1-ALB-SG

Actions

Details

Security group name

Project1-ALB-SG

Security group ID

sg-02aafb1f371ef242b

Description

Security group for Application LoadBalancer

VPC ID

vpc-0f73ad7adc4223289

Owner

211125783778

Inbound rules count

1 Permission entry

Outbound rules count

1 Permission entry

Inbound rules

Outbound rules

Tags

Inbound rules (1)

Manage tags

Edit inbound rules

Search

	Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
<input type="checkbox"/>	-	sg-0342a948e9eb5f611	IPv4	HTTP	TCP	80	0.0.0.0/0	

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

Project1-ALB-SG

sg-02aafb1f371ef242b VPC: vpc-0f73ad7adc4223289

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

Remove

Protocol HTTP

Port 80

Default action

Forward to Project1-TG

Target type: Instance, IPv4

HTTP

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

You can add up to 50 more tags.

Add listener

EC2 > Load balancers > Project1-ALB

Project1-ALB

⌂ Actions

▼ Details

Load balancer type

Application

Status

Active

VPC

vpc-0f73ad7adc4223289

IP address type

IPv4

Scheme

Internet-facing

Hosted zone

Z35SXDOTRQ7X7K

Availability Zones

subnet-0c0599de435bf6835 us-east-1b (use1-az6)
subnet-0a8ca8544739f3c21 us-east-1a (use1-az4)

Date created

April 24, 2024, 12:06 (UTC+05:30)

Load balancer ARN

arn:aws:elasticloadbalancing:us-east-1:211125783778:loadbalancer/app/Project1-ALB/c73725fc6e816c4a

DNS name info

Project1-ALB-1133489280.us-east-1.elb.amazonaws.com (A Record)

Listeners and rules

Network mapping

Resource map - new

Security

Monitoring

Integrations

Attributes

Tags

Listeners and rules (1) info

⌂ Manage rules Manage listener Add listener

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

< 1 >

☐

Protocol:Port

▼

☐

Default action

▼

☐

Rules

▼

☐

ARN

▼

☐

Security policy

▼

☐

Default SSL/TLS certificate

▼

☐

mTLS

▼

☐

Trust store

▼

HTTP:80

Forward to target group

- Project1-TG (2: 1 (100%))
- Group-level stickiness: Off

1 rule

ARN

Not applicable

Not applicable

Not applicable

Not applicable

project1-alb-1133489280.us-east-1.elb.amazonaws.com

loads

New Tab


Python Exercises: C...

MEGA

youtube - Polarity...

Women's Health: 2...

Imported



Apache2 Default Page

Ubuntu

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/  
|-- apache2.conf  
|   |-- ports.conf  
|-- mods-enabled  
|   |-- *.load  
|   |-- *.conf  
|-- conf-enabled  
|   |-- *.conf  
|-- sites-enabled  
|   |-- *.conf
```

wget <https://lms.intellipaat.com/mediaFiles/2020/10/code.zip>

```
ubuntu@ip-10-0-0-134:~$ wget https://lms.intellipaat.com/mediaFiles/2020/10/code.zip
--2024-04-24 06:43:11-- https://lms.intellipaat.com/mediaFiles/2020/10/code.zip
Resolving lms.intellipaat.com (lms.intellipaat.com)... 104.18.27.176, 104.18.26.176, 2606:4700::6812:1ab0, ...
Connecting to lms.intellipaat.com (lms.intellipaat.com)|104.18.27.176|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 787844 (769K) [application/zip]
Saving to: 'code.zip'

code.zip           0%[  
code.zip          100%[=====>] 769.38K --KB/s  in 0.006s

2024-04-24 06:43:11 (118 MB/s) - 'code.zip' saved [787844/787844]
```

```

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-10-0-0-134:~$ unzip code.zip
Archive:  code.zip
   creating: 1243/images/
  inflating: 1243/images/1.png
  inflating: 1243/images/2.png
  inflating: 1243/index.php
ubuntu@ip-10-0-0-134:~$ ls
1243  code.zip

```

```

ubuntu@ip-10-0-0-134:~$ cd 1243
ubuntu@ip-10-0-0-134:~/1243$ ls
images  index.php

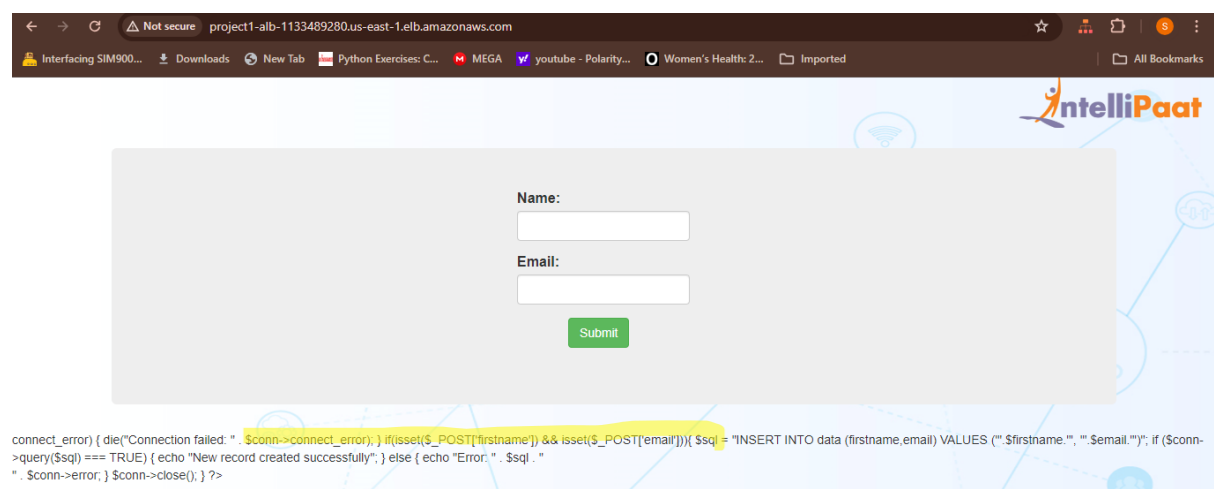
```

What Commands I Run its Marked In Yellow Mark

```

ubuntu@ip-10-0-0-134:~/1243$ sudo mv * /var/www/html
ubuntu@ip-10-0-0-134:~/1243$ cd /var/www/html
ubuntu@ip-10-0-0-134:/var/www/html$ ls
images  index.html  index.php
ubuntu@ip-10-0-0-134:/var/www/html$ sudo rm index.html
ubuntu@ip-10-0-0-134:/var/www/html$ ls
images  index.php
ubuntu@ip-10-0-0-134:/var/www/html$

```

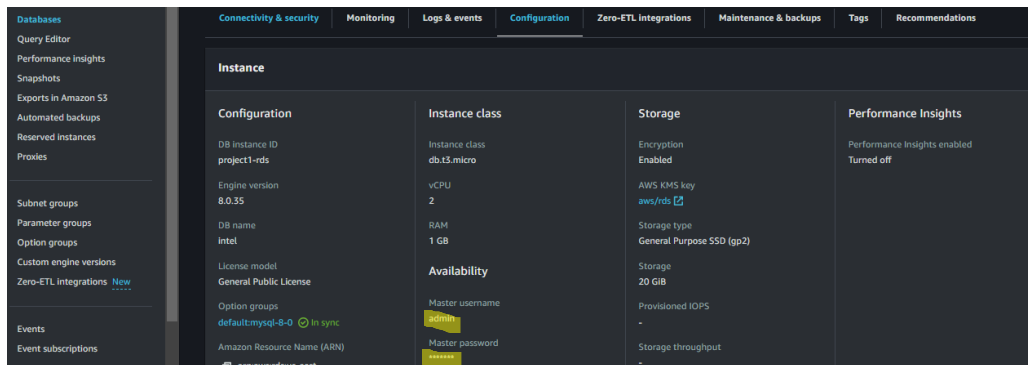


The screenshot shows a web browser window with the URL `project1-alb-1133489280.us-east-1.elb.amazonaws.com`. The page displays a form with fields for "Name:" and "Email:", and a "Submit" button. Below the form, a terminal window shows a SQL injection payload being executed. The payload is a shell script that uses a curl command to send a POST request to the web application, with a SQL injection payload in the email field. The payload is as follows:

```

connect_error { die("Connection failed: ". $conn->connect_error; } if(isset($_POST['firstname']) && isset($_POST['email'])) { $sql = "INSERT INTO data (firstname,email) VALUES ('".$_POST['firstname']."','".$_POST['email']."')"; if ($conn->query($sql) === TRUE) { echo "New record created successfully"; } else { echo "Error: ". $sql . " ". $conn->error; } $conn->close(); } ?>

```

Sudo nano index.php

Edit :Servername, Username, Password which u are given in the RDS

```

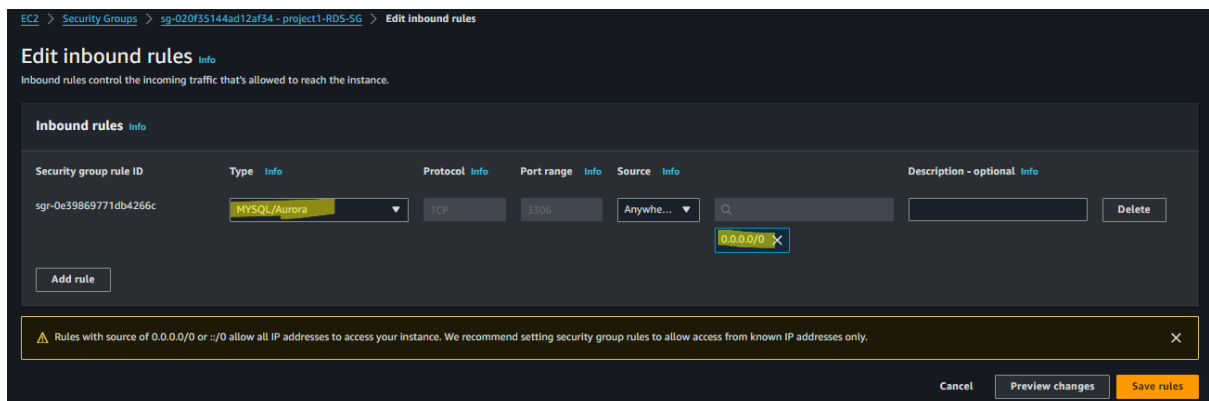
GNU nano 6.2 index.php *
</div>
</div>
<?php
$firstname=$_POST['firstname'];
$email=$_POST['email'];
$servername = "project1-rds.c1ieq60s1qr.us-east-1.rds.amazonaws.com";
$username = "admin";
$password = "admin123";
$db = "intel";
// Create connection
$conn = new mysqli($servername, $username, $password, $db);

// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
if(isset($_POST['firstname']) && isset($_POST['email'])) {
    $sql = "INSERT INTO data (firstname,email)
VALUES ('".$_firstname."', '".$_email."')";

    if ($conn->query($sql) === TRUE) {
        echo "New record created successfully";
    } else {
        echo "Error: " . $sql . "<br>" . $conn->error;
    }
}




```

Check RDS SG is allowed the source to Everyone or not



← → ↻ ⚠ Not secure project1-alb-1133489280.us-east-1.elb.amazonaws.com ☆ ⚙ ⌵ ⌵ ⌵ ⌵

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




Name:

Email:

← → ↻ ⚠ Not secure project1-alb-1133489280.us-east-1.elb.amazonaws.com ☆ ⚙ ⌵ ⌵ ⌵ ⌵

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Name:

Email:

ERROR: INSERT INTO data (firstName,email) VALUES ('salman farsi','shaiksalmnfarsi80@gmail.com')
table 'intel.data' doesn't exist

```
ubuntu@ip-10-0-0-134:/var/www/html$ mysql -h project1-rds.clmieg60sxqx.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 64
Server version: 8.0.35 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| intel |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0.01 sec)

mysql>
```

```
mysql> use intel;  
Database changed  
mysql> create table data (firstname varchar(20), email varchar(30));  
Query OK, 0 rows affected (0.03 sec)  
  
mysql>
```

Not secure project1-alb-1133489280.us-east-1.elb.amazonaws.com

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IntelliPaat

Name:

Email:

New record created successfully

```
mysql> select * from data;  
+-----+-----+  
| firstname | email |  
+-----+-----+  
| salman farsi | shahsalmanfarsi80@gmail.com |  
| Sultan Sa | shaiksultanaktarsha@gmail.com |  
+-----+-----+  
2 rows in set (0.00 sec)  
  
mysql>
```