

**< RE-ARCHITECTING WEB APP ON AWS CLOUD
[CLOUD NATIVE] >
IMPLEMENTATION PLAN**

VERSION 1.0 | 23/05/2022 – 23/05/2022

Purpose

In this section, describe the purpose to re-architecting web app on AWS cloud [cloud native].

About the Project

- Multi-Tier web application Stack
- Re-Architect services for AWS Cloud.
- Architecture to boost agility or improve business continuity.

Problem Statement

- Operational Overhead
- Struggling with uptime & Scale Up/Down complexity.
- Upfront CapEx and regular OpEx
- Manual process, Difficult to automate & Time Consuming

Solution

- Cloud Setup
- Automation
- PAAS & SAAS
- PayAsUgo
- Ease of infra management using Cloud

AWS Services

- S3/EFS Storage – Shared Storage
- Route 53 – Private DNS Service
- Beanstalk – VM for TOMCAT, NGINX LB, Automation for VM Scaling
- RDS Instance – Databases
- Elastic Cache – Memcached
- Active MQ – Rabbit MQ
- Cloudfront – Content Delivery Network

Objective

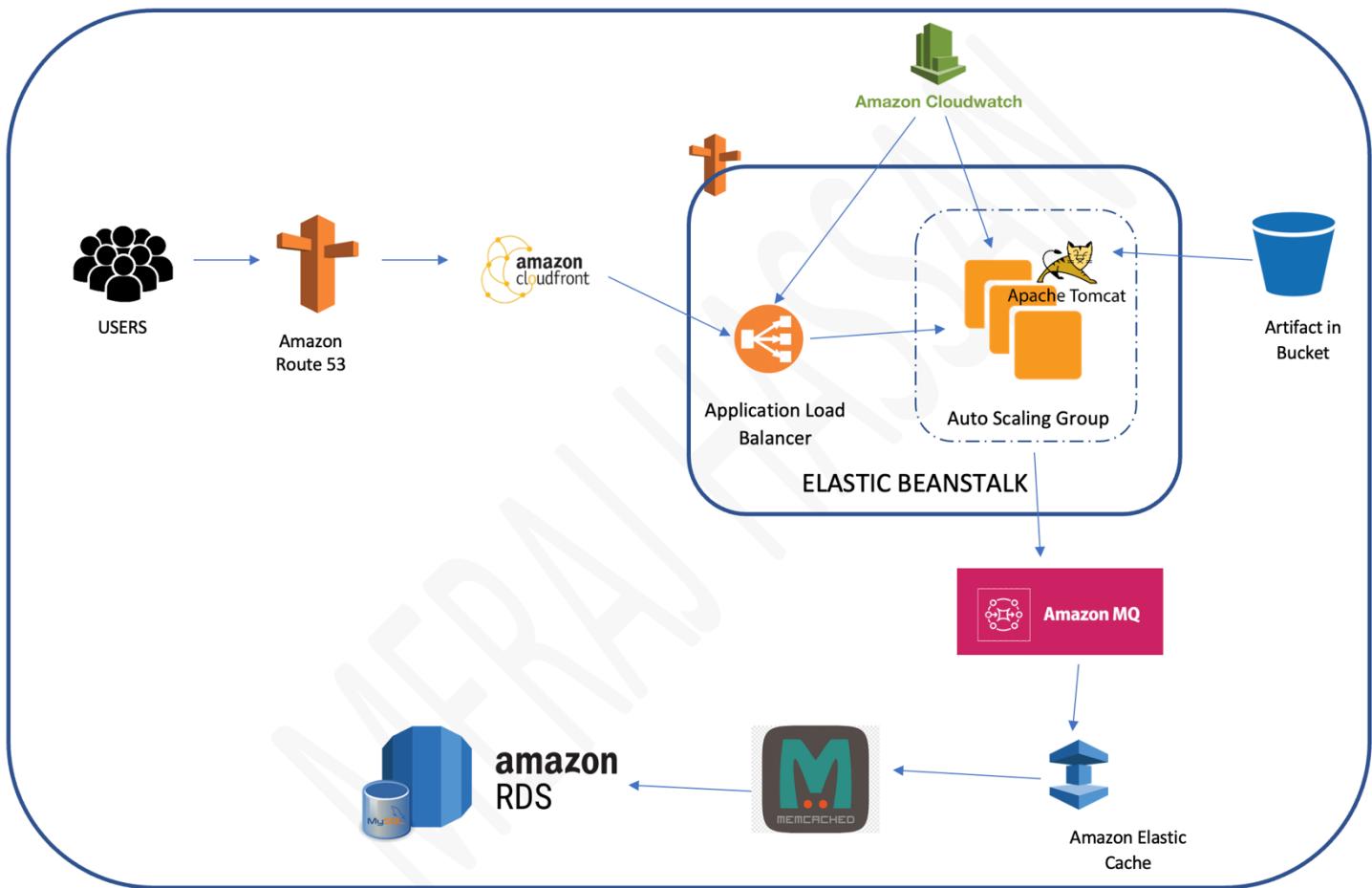
- Flexible Infra
- No Upfront Cost
- Modernize Effectively
- IAAC, PAAS & SAAS

Architecture of AWS Services

- EC2 Instances
- ELB
- Autoscaling
- EFS/S3 for Shared Storage
- RDS
- Elastic Cache
- Active MQ

- Amazon Certificate Manager
- Route 53

Project Services Overview



Flow of Execution

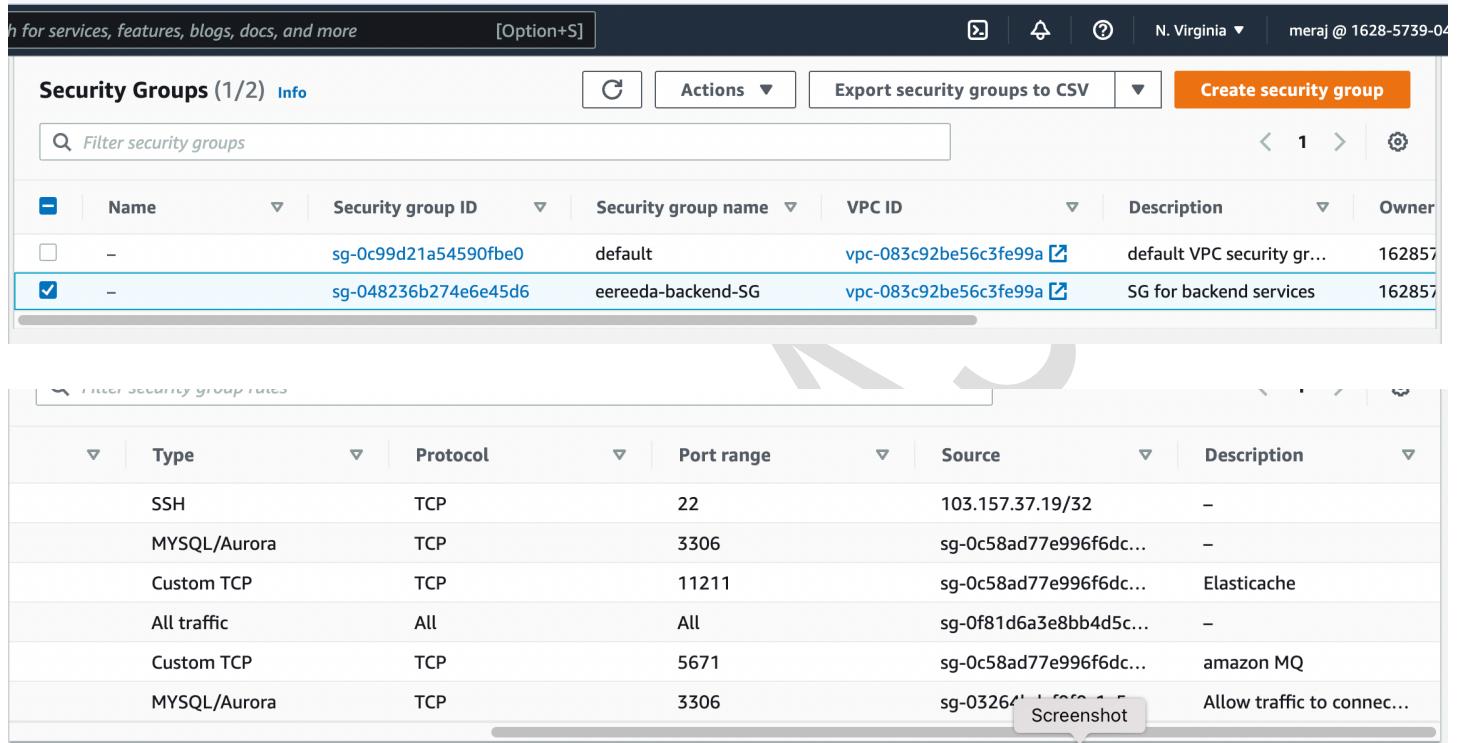
- Login to AWS Account
- Create Key Pairs for Beanstalk Instance login
- Create Security Group ElasticCache, RDS & ActiveMQ
- Create
 - RDS
 - Amazon Elastic Cache
 - Amazon Active MQ
- Create Elastic Beanstalk Environment
- Update Security Group of Backend to allow traffic from bean SG
- Update Security Group of Backend to allow internal traffic
- Launch EC2 instance for DB Initializing
- Login to the instance and initialize RDS DB
- Change healthcheck on beanstalk to login
- Add 443 http listener to ELB
- Build Artifact with backend Information

- Deploy Artifact to Beanstack
- Create CDN with SSL Certificate
- Update Entry in GoDaddy DNS Zones
- Test URL

Prerequisite

1. AWS Account
2. Website from Godaddy

Security Group and Key Pairs



The screenshot shows the AWS Management Console interface for managing security groups and rules.

Security Groups (1/2) [Info]

Actions ▾ Export security groups to CSV ▾ Create security group

Filter security groups

Name	Security group ID	Security group name	VPC ID	Description	Owner
-	sg-0c99d21a54590fbe0	default	vpc-083c92be56c3fe99a	default VPC security gr...	162857
<input checked="" type="checkbox"/>	sg-048236b274e6e45d6	eereeda-backend-SG	vpc-083c92be56c3fe99a	SG for backend services	162857

Filter security group rules

Type	Protocol	Port range	Source	Description
SSH	TCP	22	103.157.37.19/32	-
MYSQL/Aurora	TCP	3306	sg-0c58ad77e996f6dc...	-
Custom TCP	TCP	11211	sg-0c58ad77e996f6dc...	Elasticache
All traffic	All	All	sg-0f81d6a3e8bb4d5c...	-
Custom TCP	TCP	5671	sg-0c58ad77e996f6dc...	amazon MQ
MYSQL/Aurora	TCP	3306	sg-032641660015	Screenshot Allow traffic to connec...

RDS

1. Subnet Group

services, features, blogs, docs, and more [Option+S] N. Virginia meraj @ 1628-5739-0402

Successfully created eereeda-rds-sub-group. [View subnet group](#)

RDS > Subnet groups

Subnet groups (1)

<input type="checkbox"/>	Name	Description	Status	VPC
<input type="checkbox"/>	eereeda-rds-sub-group	eereeda-rds-sub-group	Complete	vpc-083c92be56c3fe99a

2. Parameter Group

services, features, blogs, docs, and more [Option+S] N. Virginia meraj @ 1628-5739-0402

RDS > Parameter groups

Parameter groups (1)

<input type="checkbox"/>	Name	Family	Type	Description
<input type="checkbox"/>	eereeda-rds-para-group	mysql5.7	Parameter groups	eereeda-rds-para-group

3. Create Databases

services, features, blogs, docs, and more [Option+S] N. Virginia meraj @ 1628-5739-0402

C Creating database [eereeda-rds-mysql](#) View credential details

Your database might take a few minutes to launch. We have generated your database master password during the database creation and it will be displayed in the credential details. This is the only time you will be able to view this password. However you can modify your database to create a new password at any time.

RDS > Databases

Databases

<input checked="" type="checkbox"/> Group resources	<input type="checkbox"/>	Modify	Actions	Restore from S3	Create database
<input type="checkbox"/> Filter by databases					
	DB identifier	Role	Engine	Region & AZ	Size
<input type="checkbox"/>	eereeda-rds-mysql	Instance	MySQL Community	us-east-1d	db.t3.micro

ElastiCache

1. Parameter Group

The parameter group "eereeda-memcache-pra-group" was created successfully.

Introducing the new AWS ElastiCache console experience
We've redesigned the AWS ElastiCache console to make it easier to use. [Let us know what you think.](#) Or you can use the old console.

ElastiCache > Parameter groups

Parameter groups (14) [Info](#)

Name	Family	Global	Description	ARN
eereeda-memcache-pra-group	memcached1.4	No	eereeda-memcache-pra-group	arn:aws:elasticache:us-east-1:...

2. Subnet Group

The subnet group was created successfully.

Introducing the new AWS ElastiCache console experience
We've redesigned the AWS ElastiCache console to make it easier to use. [Let us know what you think.](#) Or you can use the old console.

ElastiCache > Subnet groups

Subnet groups (1) [Info](#)

Name	Description	VPC ID	ARN
eereeda-memcache-sub-group	eereeda-memcache-sub-group	vpc-083c92be56c3fe99a	arn:aws:elasticache:us-east-1:1628573...

3. Create Memcache

The cluster was created successfully.

Introducing the new AWS ElastiCache console experience
We've redesigned the AWS ElastiCache console to make it easier to use. [Let us know what you think.](#) Or you can use the old console.

ElastiCache > Memcached clusters

Memcached clusters (1) [Info](#)

Cluster name	Zone	Node type	Engine version	Nodes	Created date	Status
eereeda-elasticache-svc	-	cache.t2.micro	1.4.5	0	-	Creating

Amazon ActiveMQ

services, features, blogs, docs, and more [Option+S]

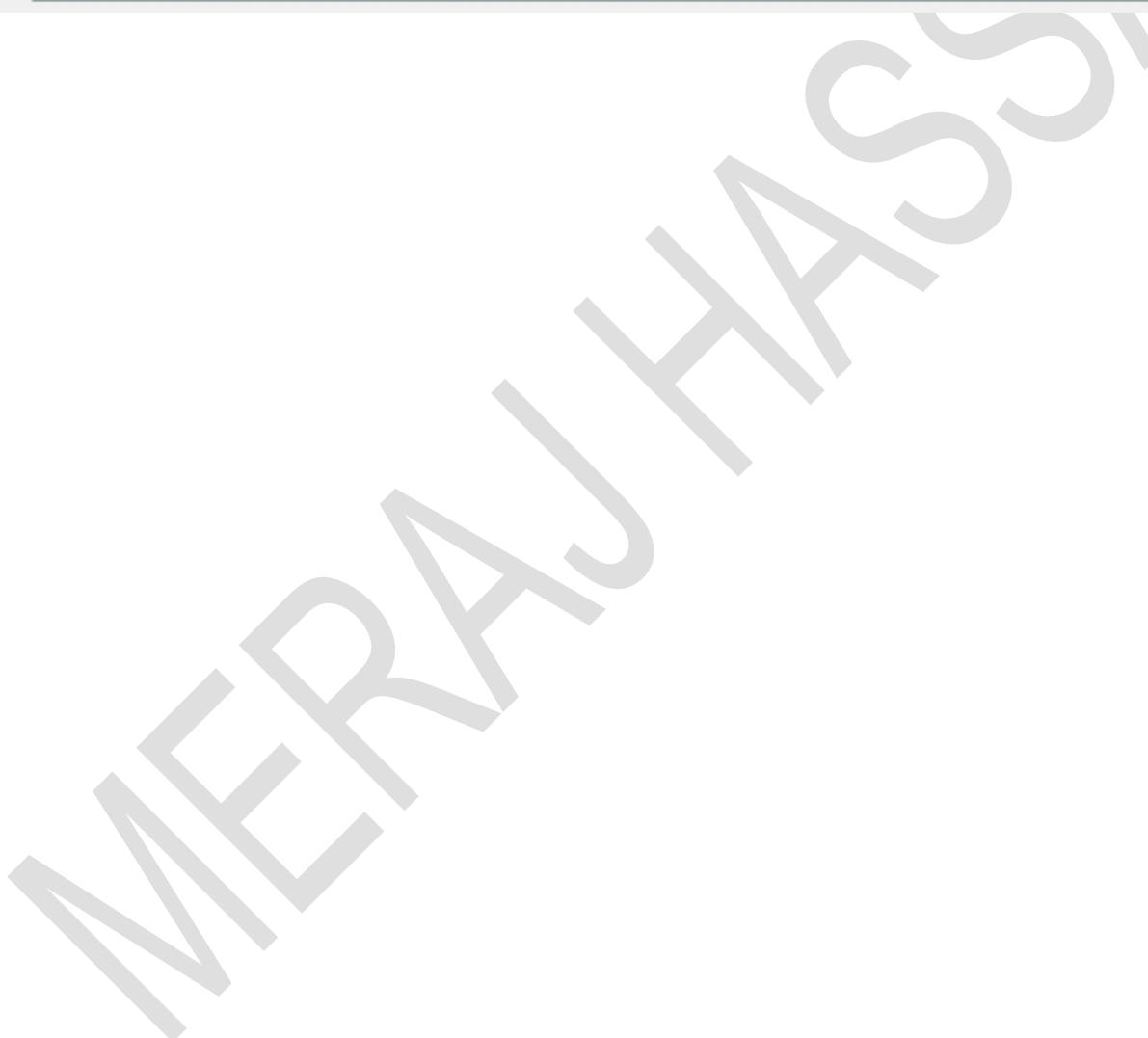
Broker eereeda-rmq is being created.
Broker creation takes about 20 minutes. Your broker's configuration can be found on the Configurations page.

Amazon MQ > Brokers

Brokers (1) Info

Name	Creation time (Local)	Status	Broker engine	Deployment mode	Instance typ
eereeda-rmq	May 23, 2022, 11:51 (UTC+5:30)	Creation in progress	Apache ActiveMQ	Single-instance broker	mq.t2.micro

Create brokers



Initialize RDS Database:

RDS Endpoint: eereeda-rds-mysql.ciknugjrngfa.us-east-1.rds.amazonaws.com

```
$ chmod 400 eereeda-bean-key.pem  
$ ssh -i "eereeda-bean-key.pem" ubuntu@ec2-18-212-239-42.compute-1.amazonaws.com  
$ sudo apt update -y  
$ sudo apt install mysql-client -y  
$ mysql -h eereeda-rds-mysql.ciknugjrngfa.us-east-1.rds.amazonaws.com -u admin -  
pKOygLZFqF0qLD2oDTJ6N
```

```
mysql> show databases;  
+-----+  
| Database |  
+-----+  
| information_schema |  
| accounts |  
| innodb |  
| mysql |  
| performance_schema |  
| sys |  
+-----+  
6 rows in set (0.00 sec)
```

```
$ git clone https://github.com/merajafnan/DevOps_Projects.git  
$ cd DevOps_Projects/  
$ git checkout aws-rearchitect  
$ cd src/main/resources/  
$ ls  
application.properties logback.xml  
db_backup.sql validation.properties  
$ mysql -h eereeda-rds-mysql.ciknugjrngfa.us-east-1.rds.amazonaws.com -u admin -  
pKOygLZFqF0qLD2oDTJ6N accounts < db_backup.sql  
$ mysql -h eereeda-rds-mysql.ciknugjrngfa.us-east-1.rds.amazonaws.com -u admin -  
pKOygLZFqF0qLD2oDTJ6N
```

```
mysql> use accounts  
mysql> show tables;  
+-----+  
| Tables_in_accounts |  
+-----+  
| role |  
| user |  
| user_role |  
+-----+  
3 rows in set (0.00 sec)
```

Endpoints:

RDS Endpoint: eereeda-rds-mysql.ciknugjrngfa.us-east-1.rds.amazonaws.com

Elastic Cache Endpoint : eereeda-elasticache-svc.sohseo.cfg.use1.cache.amazonaws.com:11211

ActiveMQ: b-0e07786b-e742-45a4-87b9-70676888ce93-1.mq.us-east-1.amazonaws.com:5671

Delete EC2 Instance as we have initialized our Database.

Elastic Beanstalk

The screenshot shows the AWS Elastic Beanstalk console. At the top, there's a navigation bar with links for services, features, blogs, docs, and more, and a search bar with the placeholder [Option+S]. On the right of the bar are icons for refresh, help, and account information (N. Virginia, meraj @ 1628-5739-04).

The main content area displays the application details for 'eereeda-env'. It includes the application URL (eereeda-env.eba-tsvgnf3u.us-east-1.elasticbeanstalk.com) and the deployment ID (e-yeengxtfpv). The application name is listed as 'eereeda'.

Under the 'Health' section, there is a large orange circle with a white exclamation mark, indicating a warning. Below it, the word 'Warning' is displayed, and there is a 'Causes' button.

In the 'Running version' section, it says 'Sample Application' and has a 'Upload and deploy' button.

Under the 'Platform' section, there is a cartoon cat icon, the text 'Tomcat 8.5 with Corretto 11 running on 64bit Amazon Linux 2/4.2.14', and a 'Change' button.

At the bottom of the main content area, there are navigation links: Elastic Beanstalk > Applications > eereeda > Application versions.

The screenshot shows the 'Application versions' page for the 'eereeda' application. The title is 'Application versions' with an 'Actions' button on the right.

The table lists three application versions:

	Version label	Description	Date created
<input type="checkbox"/>	eereeda-V2.5		2022-05-23T14:09:16+05:30
<input type="checkbox"/>	Sample Application		2022-05-23T13:31:48+05:30

EC2 Management | Eereeda-env - | LOGIN | Amazon MQ | ElastiCache Ma | RDS Manageme | merajafnan/Dev | Enabling Elastic | + | Not Secure | eereeda-env.eba-tsvgnf3u.us-east-1.elasticbeanstalk.com/login

Apps Gmail YouTube LinkedIn DevOps CR Learning TALENT Ration GITHUB YT DWN aaDhar devopshyclub/vp... https://login.micro...

TECHNOLOGIES ABOUT BLOG LOGIN SIGN UP

LOGIN



admin123

Password

LOGIN

[Create an account](#)

EC2 Management | Eereeda-env - | SIGNUP | Amazon MQ | ElastiCache Ma | RDS Manageme | merajafnan/Dev | Enabling Elastic | + | Not Secure | eereeda-env.eba-tsvgnf3u.us-east-1.elasticbeanstalk.com/registration

Apps Gmail YouTube LinkedIn DevOps CR Learning TALENT Ration GITHUB YT DWN aaDhar devopshyclub/vp... https://login.micro...

TECHNOLOGIES ABOUT BLOG LOGIN SIGN UP

SIGN UP



admin123

admin123@eereeda.in

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SIGN UP

11. References

The following table summarizes the documents referenced in this plan.

DOCUMENT NAME	INSTRUCTOR	LOCATION
DevOps Beginners to Advanced	Imran Teli	https://www.udemy.com/course/decodingdevops/learn/lecture/28273912?start=0#overview