

## **Practical-6 Platform as a service using AWS**

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**Roll no: A021**

**MSc SDS Batch 1**

1. We'll be using Elastic Beanstalk - Python



2. There will be the steps

3. Fill in the details

Step 1

**Configure environment**

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Step 2

Configure service access

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Step 3 - *optional*

Set up networking, database,  
and tags

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Step 4 - *optional*

Configure instance traffic and  
scaling

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Step 5 - *optional*

Configure updates, monitoring,  
and logging

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Step 6


Review


### 3. Fill in the details

## Configure environment [Info](#)

### Environment tier [Info](#)

Amazon Elastic Beanstalk has two types of environment tiers to support different types of web applications.

☒ **Web server environment**  
Run a website, web application, or web API that serves HTTP requests. [Learn more](#) 

☐ **Worker environment**  
Run a worker application that processes long-running workloads on demand or performs tasks on a schedule. [Learn more](#) 

### Application information [Info](#)

Application name

WebAPP

Maximum length of 100 characters.

► **Application tags (optional)**

### Environment information [Info](#)

Choose the name, subdomain and description for your environment. These cannot be changed later.

Environment name

WebAPP-env

Must be from 4 to 40 characters in length. The name can contain only letters, numbers, and hyphens. It can't start or end with a hyphen. This name must be unique within a region in your account.

Domain

Leave blank for autogenerated value

.eu-north-1.elasticbeanstalk.com

Check availability

Environment description

#### 4. Select the platform

Platforms published and maintained by Amazon Elastic Beanstalk. [Learn more](#)

☐ Custom platform  
Platforms created and owned by you. This option is unavailable if you have no platforms.

Platform  
Python ▼

Platform branch  
Python 3.11 running on 64bit Amazon Linux 2023 ▼

Platform version  
4.0.7 (Recommended) ▼

**Application code** [Info](#)

☒ Sample application  
☐ Existing version  
Application versions that you have uploaded.

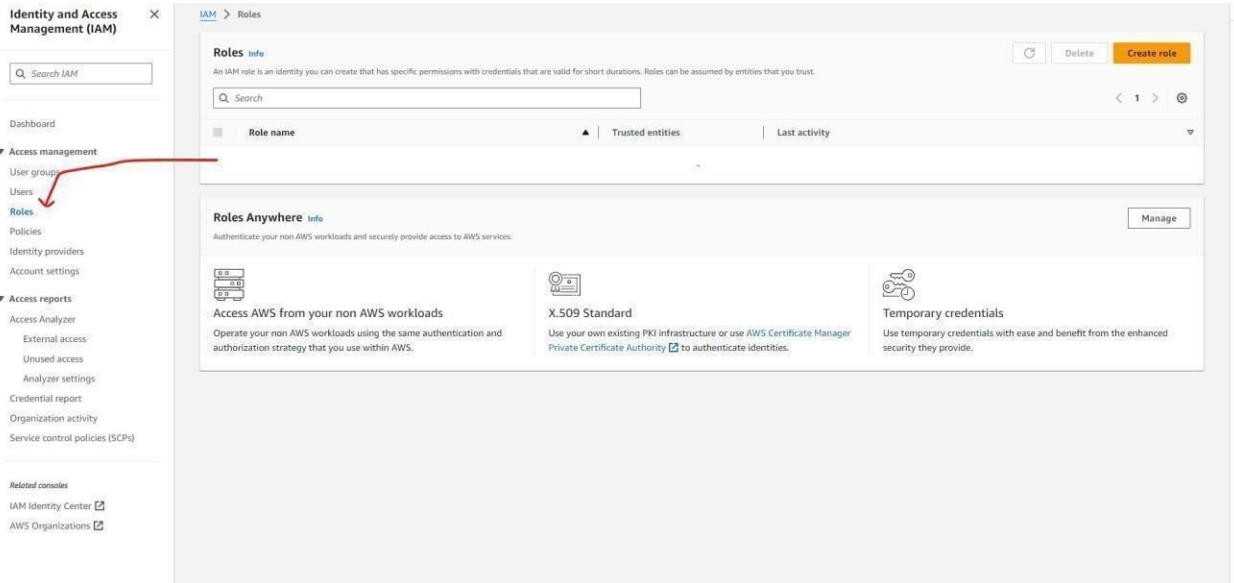
☐ Upload your code  
Upload a source bundle from your computer or copy one from Amazon S3.

**Presets** [Info](#)  
Start from a preset that matches your use case or choose custom configuration to unset recommended values and use the service's default values.

Configuration presets

☒ Single instance (free tier eligible)  
☐ Single instance (using spot instance)  
☐ High availability  
☐ High availability (using spot and on-demand instances)  
☐ Custom configuration

#### 5. Go to the IAM services -> Create role



## Trusted entity type

### ☒ AWS service

Allow AWS services like EC2, Lambda, or others to perform actions in this account.

### ☐ AWS account

Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.

### ☐ Web identity

Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.

### ☐ SAML 2.0 federation

Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.

### ☐ Custom trust policy

Create a custom trust policy to enable others to perform actions in this account.

## Use case

Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

### Service or use case

EC2

Choose a use case for the specified service.

### Use case

#### ☒ EC2

Allows EC2 instances to call AWS services on your behalf.

#### ☐ EC2 Role for AWS Systems Manager

Allows EC2 instances to call AWS services like CloudWatch and Systems Manager on your behalf.

#### ☐ EC2 Spot Fleet Role

Allows EC2 Spot Fleet to request and terminate Spot Instances on your behalf.

#### ☐ EC2 - Spot Fleet Auto Scaling

Allows Auto Scaling to access and update EC2 spot fleets on your behalf.

Step 2

Add permissions

Step 3

Name, review, and create

Permissions policies (3/908) info

Choose one or more policies to attach to your new role.

Filter by Type

Q beans

X

All types

14 matches

<

1

>

⊞

<input type="checkbox"/>	Policy name	Type	Description
<input type="checkbox"/>	<a href="#">AdministratorAccess-AWSElasticBeanstalk</a>	AWS managed	Grants account administrative permis...
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkCustomPlatformforEC2Role</a>	AWS managed	Provide the instance in your custom pl...
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkEnhancedHealth</a>	AWS managed	AWS Elastic Beanstalk Service policy f...
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkManagedUpdatesCustomerRolePolicy</a>	AWS managed	This policy is for the AWS Elastic Bean...
<input checked="" type="checkbox"/>	<a href="#">AWSElasticBeanstalkMulticontainerDocker</a>	AWS managed	Provide the instances in your multicon...
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkReadOnly</a>	AWS managed	Grants read-only permissions. Explicitl...
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkRoleCore</a>	AWS managed	AWSElasticBeanstalkRoleCore (Elastic ...
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkRoleCWL</a>	AWS managed	(Elastic Beanstalk operations role) Allo...
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkRoleECS</a>	AWS managed	(Elastic Beanstalk operations role) Allo...
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkRoleRDS</a>	AWS managed	(Elastic Beanstalk operations role) Allo...
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkRoleSNS</a>	AWS managed	(Elastic Beanstalk operations role) Allo...
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkRoleWorkerTier</a>	AWS managed	(Elastic Beanstalk operations role) Allo...
<input checked="" type="checkbox"/>	<a href="#">AWSElasticBeanstalkWebTier</a>	AWS managed	Provide the instances in your web serv...
<input checked="" type="checkbox"/>	<a href="#">AWSElasticBeanstalkWorkerTier</a>	AWS managed	Provide the instances in your worker e...

Role FirstTime\_Role created.

IAM > Roles

Roles (3) info

An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.


Q Search

<input type="checkbox"/>	Role name	Trusted entities	Last activity
<input type="checkbox"/>	<a href="#">AWSServiceRoleForSupport</a>	AWS Service: support (Service-Linker	-
<input type="checkbox"/>	<a href="#">AWSServiceRoleForTrustedAdvisor</a>	AWS Service: trustedadvisor (Service	-
<input type="checkbox"/>	<a href="#">FirstTime_Role</a>	AWS Service: ec2	-

6. Create new service role, and select the EC instance profile

## Configure service access [Info](#)

### Service access

IAM roles, assumed by Elastic Beanstalk as a service role, and EC2 instance profiles allow Elastic Beanstalk to create and manage your environment. Both the IAM role and instance profile must be attached to IAM managed policies that contain the required permissions. [Learn more](#) 

#### Service role

☒ Create and use new service role

☐ Use an existing service role

#### Service role name

Enter the name for an IAM role that Elastic Beanstalk will create to assume as a service role. Beanstalk will attach the required managed policies to it.

[View permission details](#)

#### EC2 key pair

Select an EC2 key pair to securely log in to your EC2 instances. [Learn more](#) 



#### EC2 instance profile

Choose an IAM instance profile with managed policies that allow your EC2 instances to perform required operations.

[View permission details](#)[Cancel](#)[Skip to review](#)[Previous](#)[Next](#)

## 7. Set up network and database



Launch your environment in a custom VPC instead of the default VPC. You can create a VPC and subnets in the VPC management console. [Learn more](#)

vpc-0a88c42ba8195a843 | (172.31.0.0/16)

[Create custom VPC](#)

### Instance settings

Choose a subnet in each AZ for the instances that run your application. To avoid exposing your instances to the Internet, run your instances in private subnets and load balancer in public subnets. To run your load balancer and instances in the same public subnets, assign public IP addresses to the instances. [Learn more](#)

#### Public IP address

Assign a public IP address to the Amazon EC2 instances in your environment.

☐ Activated

#### Instance subnets

<input type="checkbox"/>	Availability Zone	Subnet	CIDR	Name
<input type="checkbox"/>	ap-south-1c	subnet-04ee19ce2...	172.31.16.0/20	
<input type="checkbox"/>	ap-south-1a	subnet-053798557...	172.31.32.0/20	
<input checked="" type="checkbox"/>	ap-south-1b	subnet-059670b7...	172.31.0.0/20	

### Database [Info](#)

Integrate an RDS SQL database with your environment. [Learn more](#)

#### Database subnets

If your Elastic Beanstalk environment is attached to an Amazon RDS, choose subnets for your database instances. [Learn more](#)

8. Keep the settings default

## Configure instance traffic and scaling - *optional* [Info](#)

### ▼ Instances [Info](#)

Configure the Amazon EC2 instances that run your application.

#### Root volume (boot device)

Root volume type

(Container default) ▼

Size

The number of gigabytes of the root volume attached to each instance.

8 GB

IOPS

Input/output operations per second for a provisioned IOPS (SSD) volume.

100 IOPS

Throughput

The desired throughput to provision for the Amazon EBS root volume attached to your environment's EC2 instance.

125 MiB/s

#### Amazon CloudWatch monitoring

The time interval between when metrics are reported from the EC2 instances.

Monitoring interval

5 minute ▼

#### Instance metadata service (IMDS)

Your environment's platform supports both IMDSv1 and IMDSv2. To enforce IMDSv2, deactivate IMDSv1. [Learn more](#) [↗](#)

### 9. Keep the settings default

## Configure updates, monitoring, and logging - *optional* [Info](#)

### ▼ Monitoring [Info](#)

#### Health reporting

Enhanced health reporting provides free real-time application and operating system monitoring of the instances and other resources in your environment. The **EnvironmentHealth** custom metric is provided free with enhanced health reporting. Additional charges apply for each custom metric. For more information, see [Amazon CloudWatch Pricing](#) [↗](#)

##### System

- ☐ Basic
- ☒ Enhanced

##### CloudWatch Custom Metrics - Instance

Choose metrics

##### CloudWatch Custom Metrics - Environment

Choose metrics

#### Health event streaming to CloudWatch Logs

Configure Elastic Beanstalk to stream environment health events to CloudWatch Logs. You can set the retention up to a maximum of ten years and configure Elastic Beanstalk to delete the logs when you terminate your environment.

##### Log streaming

- ☐ Activated (standard CloudWatch charges apply.)

##### Retention

7

##### Lifecycle

Keep logs after terminating environment

10. Review and submit!

11. The environment will start launching

Elastic Beanstalk is launching your environment. This will take a few minutes.

Elastic Beanstalk > Environments > Trap-env

### Trap-env Info

Environment overview

Health

Unknown

Domain

-

Environment ID

e-d8xdksuqke

Application name

Trap

Platform

Python 3.11 running on 64bit Amazon Linux 2023/4.0.7

Running version

-

Platform state

Supported

Events (2) Info

Filter events by text, property or value

< 1 > ⚙

Time	Type	Details
January 23, 2024 08:36:39 (UTC+5:30)	INFO	Using elasticbeanstalk-ap-south-1-730335184583 as Amazon S3 storage bucket for environment data.
January 23, 2024 08:36:38 (UTC+5:30)	INFO	createEnvironment is starting.

Environment overview

Health

Pending

Domain

[Trap-env.eba-pxx2hqv2.ap-south-1.elasticbeanstalk.com](https://trap-env.eba-pxx2hqv2.ap-south-1.elasticbeanstalk.com)

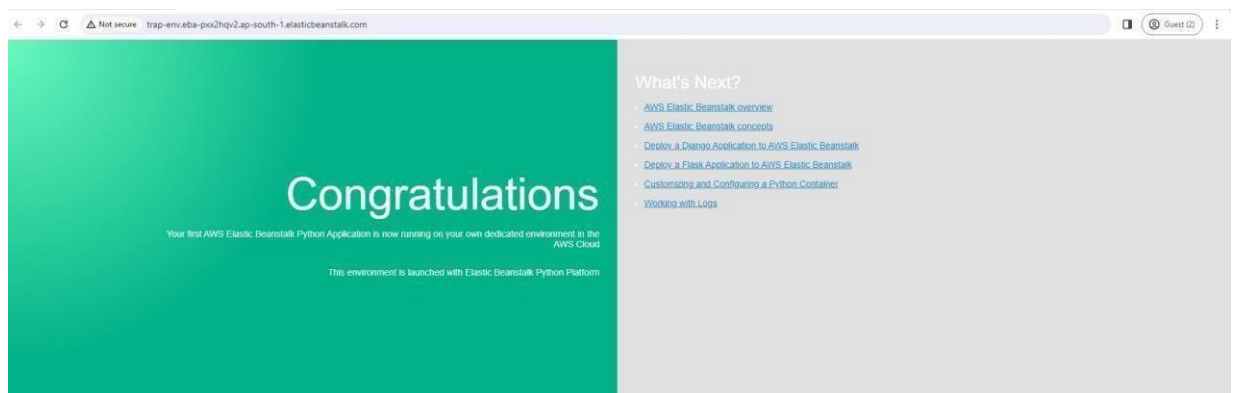
Environment ID

e-d8xdksuqke

Application name

Trap

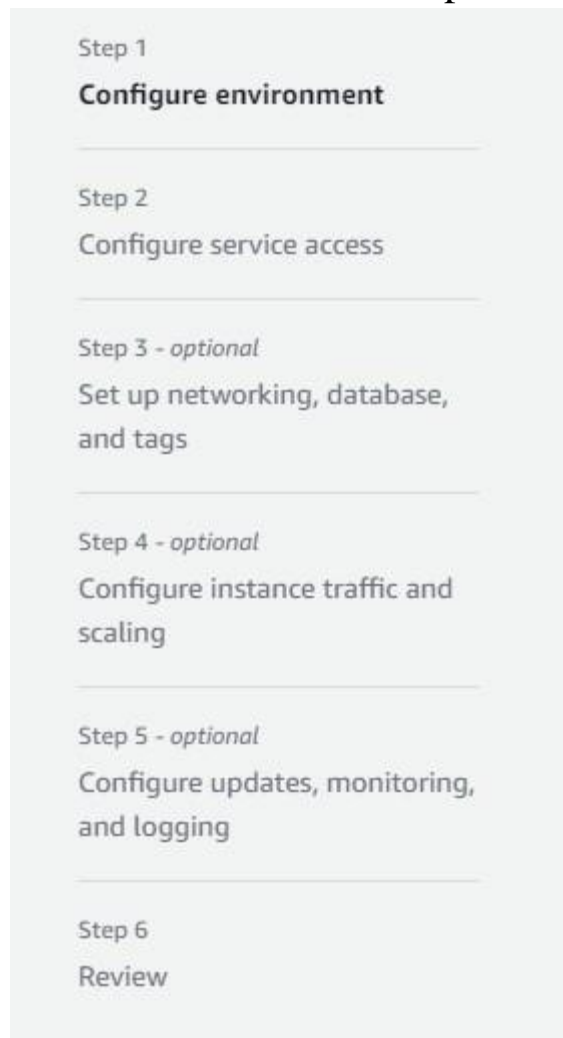
The webapp is launched!



1. We'll be using Elastic Beanstalk - Java



2. There will be the steps



## Configure environment [Info](#)

### Environment tier [Info](#)

Amazon Elastic Beanstalk has two types of environment tiers to support different types of web applications.

☒ Web server environment

Run a website, web application, or web API that serves HTTP requests. [Learn more](#) 

☐ Worker environment

Run a worker application that processes long-running workloads on demand or performs tasks on a schedule. [Learn more](#) 

### Application information [Info](#)

#### Application name

AWS-Java

Maximum length of 100 characters.

#### ► Application tags (optional)

Activate Wi

## 12. Select the platform

platforms published and maintained by Amazon Elastic Beanstalk. [Learn more](#)

☐ Custom platform  
Platforms created and owned by you. This option is unavailable if you have no platforms.

Platform  
Python ▼

Platform branch  
Python 3.11 running on 64bit Amazon Linux 2023 ▼

Platform version  
4.0.7 (Recommended) ▼

**Application code** [Info](#)

☒ Sample application

☐ Existing version  
Application versions that you have uploaded.

☐ Upload your code  
Upload a source bundle from your computer or copy one from Amazon S3.

**Presets** [Info](#)

Start from a preset that matches your use case or choose custom configuration to unset recommended values and use the service's default values.

Configuration presets

☒ Single instance (free tier eligible)

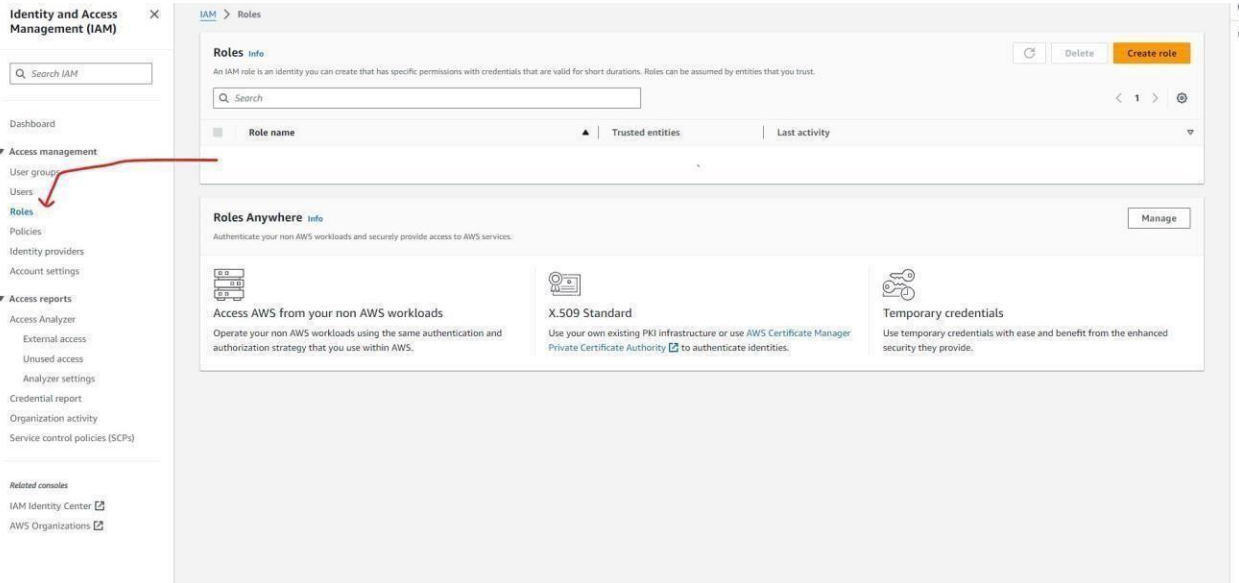
☐ Single instance (using spot instance)

☐ High availability

☐ High availability (using spot and on-demand instances)

☐ Custom configuration

13. Go to the IAM services -> Create role



## Trusted entity type

☒ **AWS service**  
Allow AWS services like EC2, Lambda, or others to perform actions in this account.

☐ **AWS account**  
Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.

☐ **Web identity**  
Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.

☐ **SAML 2.0 federation**  
Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.

☐ **Custom trust policy**  
Create a custom trust policy to enable others to perform actions in this account.

## Use case

Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

Service or use case

Choose a use case for the specified service.

Use case

- ☒ **EC2**  
Allows EC2 instances to call AWS services on your behalf.
- ☐ **EC2 Role for AWS Systems Manager**  
Allows EC2 instances to call AWS services like CloudWatch and Systems Manager on your behalf.
- ☐ **EC2 Spot Fleet Role**  
Allows EC2 Spot Fleet to request and terminate Spot Instances on your behalf.
- ☐ **EC2 - Spot Fleet Auto Scaling**  
Allows Auto Scaling to access and update EC2 spot fleets on your behalf.



Step 2

Add permissions

Step 3

Name, review, and create

Permissions policies (3/908) info

Choose one or more policies to attach to your new role.

Filter by Type

Q beans

All types

14 matches

Policy name	Type	Description
<input type="checkbox"/> <a href="#">AdministratorAccess-AWSElasticBeanstalk</a>	AWS managed	Grants account administrative permis...
<input type="checkbox"/> <a href="#">AWSElasticBeanstalkCustomPlatformforEC2Role</a>	AWS managed	Provide the instance in your custom pl...
<input type="checkbox"/> <a href="#">AWSElasticBeanstalkEnhancedHealth</a>	AWS managed	AWS Elastic Beanstalk Service policy f...
<input type="checkbox"/> <a href="#">AWSElasticBeanstalkManagedUpdatesCustomerRolePolicy</a>	AWS managed	This policy is for the AWS Elastic Bean...
<input checked="" type="checkbox"/> <a href="#">AWSElasticBeanstalkMulticontainerDocker</a>	AWS managed	Provide the instances in your multicon...
<input type="checkbox"/> <a href="#">AWSElasticBeanstalkReadOnly</a>	AWS managed	Grants read-only permissions. Explicitl...
<input type="checkbox"/> <a href="#">AWSElasticBeanstalkRoleCore</a>	AWS managed	AWSElasticBeanstalkRoleCore (Elastic ...
<input type="checkbox"/> <a href="#">AWSElasticBeanstalkRoleCWL</a>	AWS managed	(Elastic Beanstalk operations role) Allo...
<input type="checkbox"/> <a href="#">AWSElasticBeanstalkRoleECS</a>	AWS managed	(Elastic Beanstalk operations role) Allo...
<input type="checkbox"/> <a href="#">AWSElasticBeanstalkRoleRDS</a>	AWS managed	(Elastic Beanstalk operations role) Allo...
<input type="checkbox"/> <a href="#">AWSElasticBeanstalkRoleSNS</a>	AWS managed	(Elastic Beanstalk operations role) Allo...
<input type="checkbox"/> <a href="#">AWSElasticBeanstalkRoleWorkerTier</a>	AWS managed	(Elastic Beanstalk operations role) Allo...
<input checked="" type="checkbox"/> <a href="#">AWSElasticBeanstalkWebTier</a>	AWS managed	Provide the instances in your web serv...
<input checked="" type="checkbox"/> <a href="#">AWSElasticBeanstalkWorkerTier</a>	AWS managed	Provide the instances in your worker e...

Role FirstTime\_Role created.

IAM > Roles

Roles (3) Info

An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.

Q Search

<input type="checkbox"/>	Role name	Trusted entities	Last activity
<input type="checkbox"/>	<a href="#">AWSServiceRoleForSupport</a>	AWS Service: support (Service-Linker	-
<input type="checkbox"/>	<a href="#">AWSServiceRoleForTrustedAdvisor</a>	AWS Service: trustedadvisor (Service	-
<input type="checkbox"/>	<a href="#">FirstTime_Role</a>	AWS Service: ec2	-

14. Create new service role, and select the EC instance profile

#### Service role

☒ Create and use new service role

☐ Use an existing service role

#### Service role name

Enter the name for an IAM role that Elastic Beanstalk will create to assume as a service role. Beanstalk will attach the required managed policies to it.

aws-elasticbeanstalk-service-role

[View permission details](#)

#### EC2 key pair

Select an EC2 key pair to securely log in to your EC2 instances. [Learn more](#) 

Choose a key pair



#### EC2 instance profile

Choose an IAM instance profile with managed policies that allow your EC2 instances to perform required operations.

Java-Server



## 15. Set up network and database

Launch your environment in a custom VPC instead of the default VPC. You can create a VPC and subnets in the VPC management console. [Learn more](#)

vpc-0a88c42ba8195a843 | (172.31.0.0/16)

[Create custom VPC](#)

### Instance settings

Choose a subnet in each AZ for the instances that run your application. To avoid exposing your instances to the Internet, run your instances in private subnets and load balancer in public subnets. To run your load balancer and instances in the same public subnets, assign public IP addresses to the instances. [Learn more](#)

#### Public IP address

Assign a public IP address to the Amazon EC2 instances in your environment.

☐ Activated

#### Instance subnets

<input type="checkbox"/>	Availability Zone	Subnet	CIDR	Name
<input type="checkbox"/>	ap-south-1c	subnet-04ee19ce2...	172.31.16.0/20	
<input type="checkbox"/>	ap-south-1a	subnet-053798557...	172.31.32.0/20	
<input checked="" type="checkbox"/>	ap-south-1b	subnet-059670b7...	172.31.0.0/20	

### Database [Info](#)

Integrate an RDS SQL database with your environment. [Learn more](#)

#### Database subnets

If your Elastic Beanstalk environment is attached to an Amazon RDS, choose subnets for your database instances. [Learn more](#)

16. Keep the settings default

## Configure instance traffic and scaling - *optional* [Info](#)

### ▼ Instances [Info](#)

Configure the Amazon EC2 instances that run your application.

#### Root volume (boot device)

Root volume type

(Container default) ▼

Size

The number of gigabytes of the root volume attached to each instance.

8 GB

IOPS

Input/output operations per second for a provisioned IOPS (SSD) volume.

100 IOPS

Throughput

The desired throughput to provision for the Amazon EBS root volume attached to your environment's EC2 instance.

125 MiB/s

#### Amazon CloudWatch monitoring

The time interval between when metrics are reported from the EC2 instances.

Monitoring interval

5 minute ▼

#### Instance metadata service (IMDS)

Your environment's platform supports both IMDSv1 and IMDSv2. To enforce IMDSv2, deactivate IMDSv1. [Learn more](#) [↗](#)

17. Keep the settings default

## Configure updates, monitoring, and logging - *optional* [Info](#)

### ▼ Monitoring [Info](#)

#### Health reporting

Enhanced health reporting provides free real-time application and operating system monitoring of the instances and other resources in your environment. The **EnvironmentHealth** custom metric is provided free with enhanced health reporting. Additional charges apply for each custom metric. For more information, see [Amazon CloudWatch Pricing](#) [↗](#)

##### System

- ☐ Basic
- ☒ Enhanced

##### CloudWatch Custom Metrics - Instance

Choose metrics

##### CloudWatch Custom Metrics - Environment

Choose metrics

#### Health event streaming to CloudWatch Logs

Configure Elastic Beanstalk to stream environment health events to CloudWatch Logs. You can set the retention up to a maximum of ten years and configure Elastic Beanstalk to delete the logs when you terminate your environment.

##### Log streaming

- ☐ Activated (standard CloudWatch charges apply.)

##### Retention

7

##### Lifecycle

Keep logs after terminating environment

18. Review and submit!

19. The environment will start launching

Elastic Beanstalk is launching your environment. This will take a few minutes.

Elastic Beanstalk > Environments > AWS-Java-env

AWS-Java-env

Info

⌂

Actions

Upload and deploy

Environment overview

Health

Unknown

Domain

-

Environment ID

e-dmjt62hpnb

Application name

AWS-Java

Platform

Change version

Platform

Corretto 21 running on 64bit Amazon Linux 2023/4.2.0

Running version

-

Platform state

Supported

Environment successfully launched.

Elastic Beanstalk > Environments > AWS-Java-env

AWS-Java-env

Info

⌂

Actions

Upload and deploy

Environment overview

Health

Ok

Domain

AWS-Java-env.eba-3fup2hrb.ap-south-1.elasticbeanstalk.com

Environment ID

e-dmjt62hpnb

Application name

AWS-Java

Platform

Change version

Platform

Corretto 21 running on 64bit Amazon Linux 2023/4.2.0

Running version

-

Platform state

Supported

The webapp is launched!

