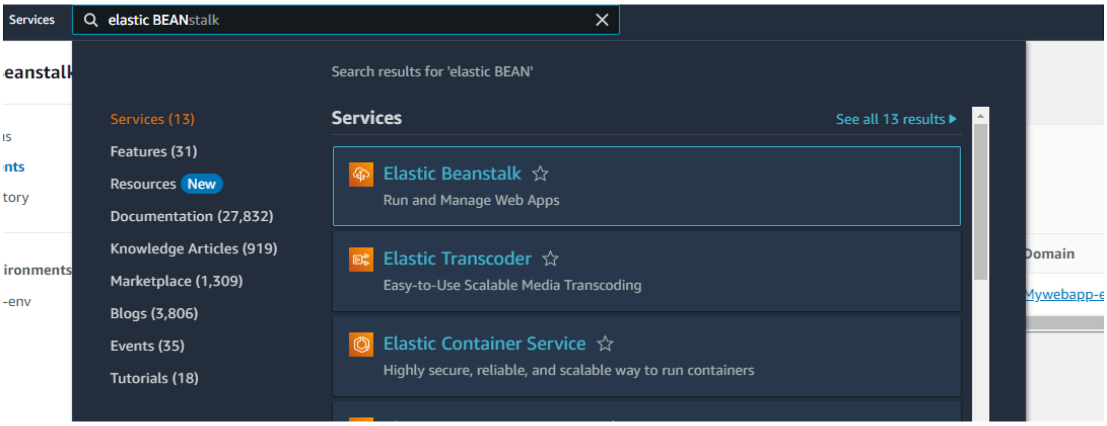
Practical 2: Platform as a service

We will implement PAAS using Elastic beanstalk and record the process step by step

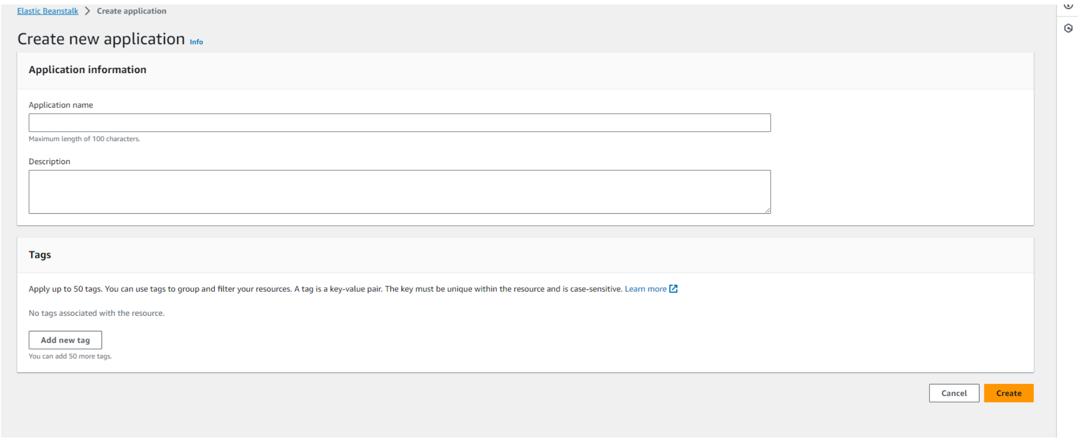
Step 1- Search and open elastic beanstalk service



elastic BEANstalk

Search results for 'elastic BEAN'

Step 2- Create an application



Elastic Beanstalk > Create application

Create new application Info

Application information

Application name

Maximum length of 100 characters.

Description

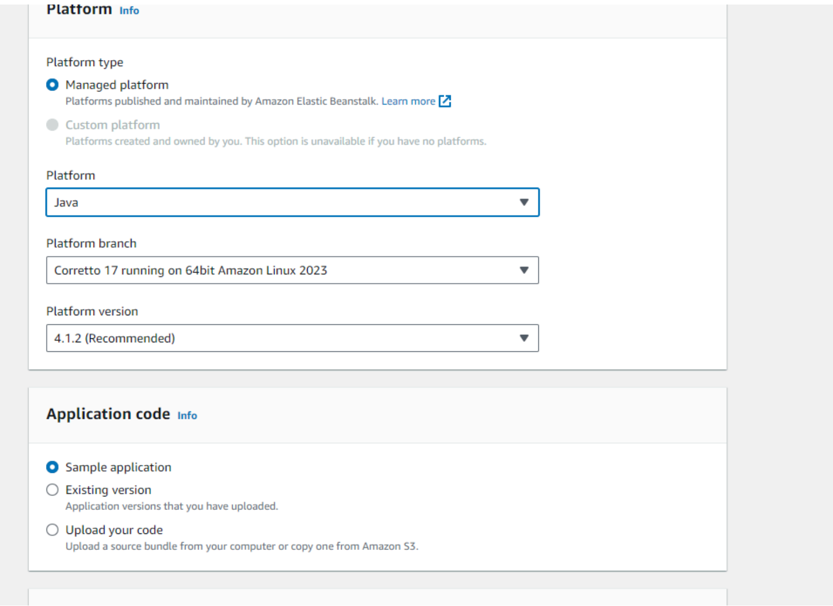
Tags

Apply up to 50 tags. You can use tags to group and filter your resources. A tag is a key-value pair. The key must be unique within the resource and is case-sensitive. Learn more

No tags associated with the resource.

You can add 50 more tags.

Step 3- Now we need to Setup Environment for the application we created



Platform Info

Platform type

● Managed 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
Java

Platform branch
Corretto 17 running on 64bit Amazon Linux 2023

Platform version
4.1.2 (Recommended)

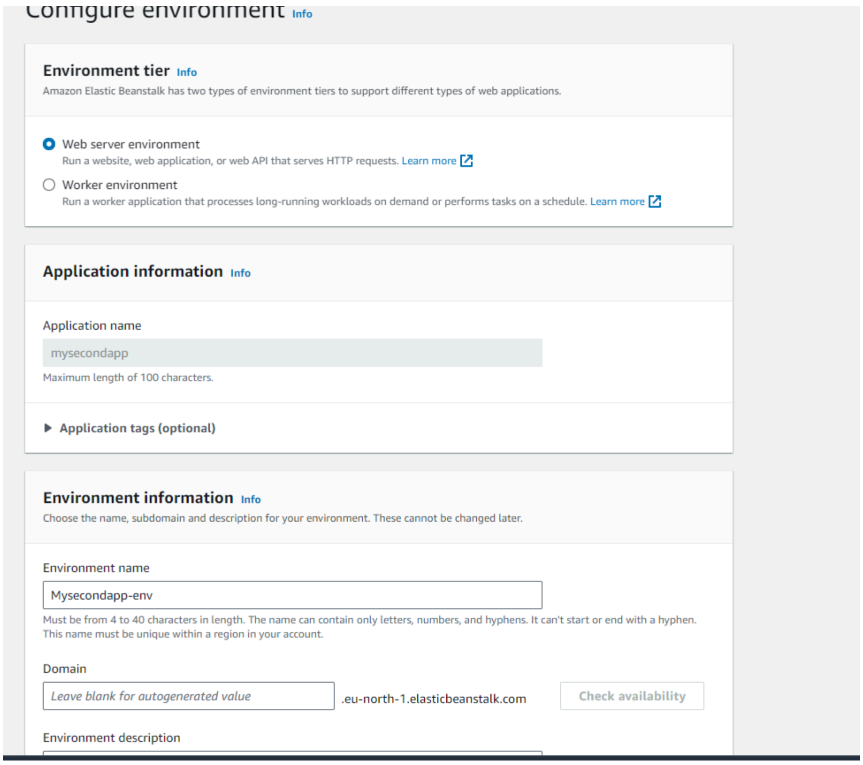
Application code Info

● 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.

Here we choose Java as our selected service



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
mysecondapp
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
Mysecondapp-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.

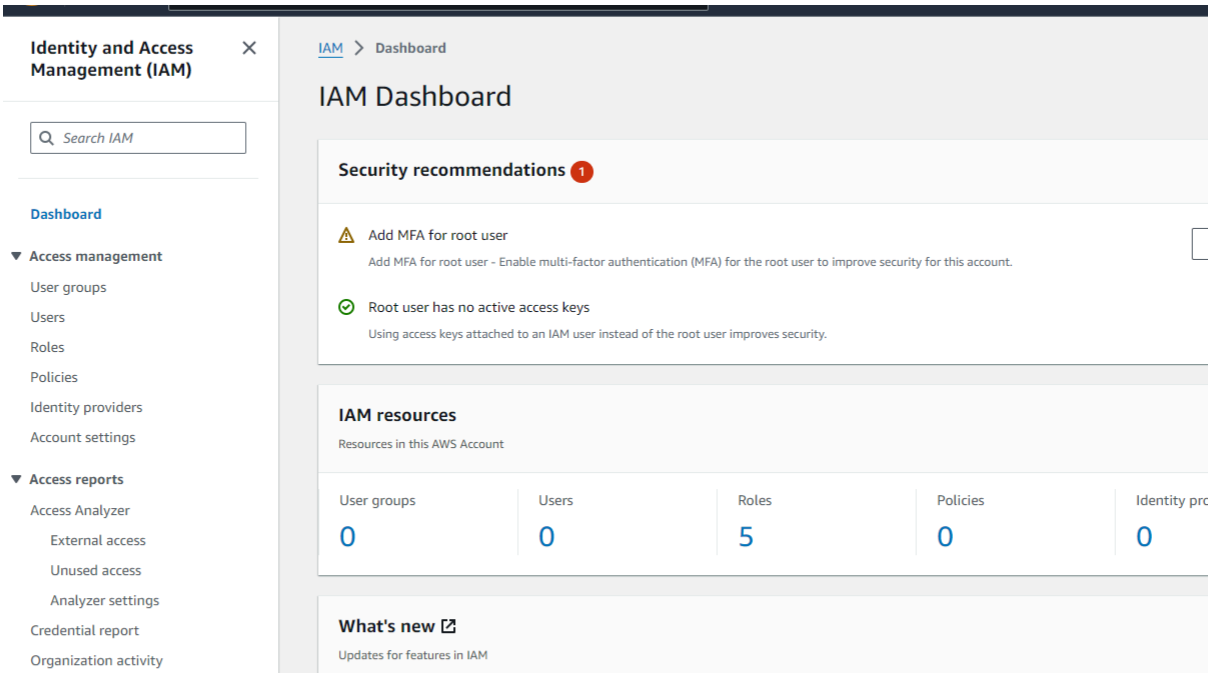
Domain
Leave blank for autogenerated value .eu-north-1.elasticbeanstalk.com

Environment description

Step 4- Configure service access

First, open another AWS tab, for EC2 instance profile, follow the steps

Open IAM services



Identity and Access Management (IAM)

Search IAM

Dashboard

▼ Access management

User groups

Users

Roles

Policies

Identity providers

Account settings

▼ Access reports

Access Analyzer

External access

Unused access

Analyzer settings

Credential report

Organization activity

IAM > Dashboard

IAM Dashboard

Security recommendations 1

⚠ Add MFA for root user

Add MFA for root user - Enable multi-factor authentication (MFA) for the root user to improve security for this account.

✓ Root user has no active access keys

Using access keys attached to an IAM user instead of the root user improves security.

IAM resources

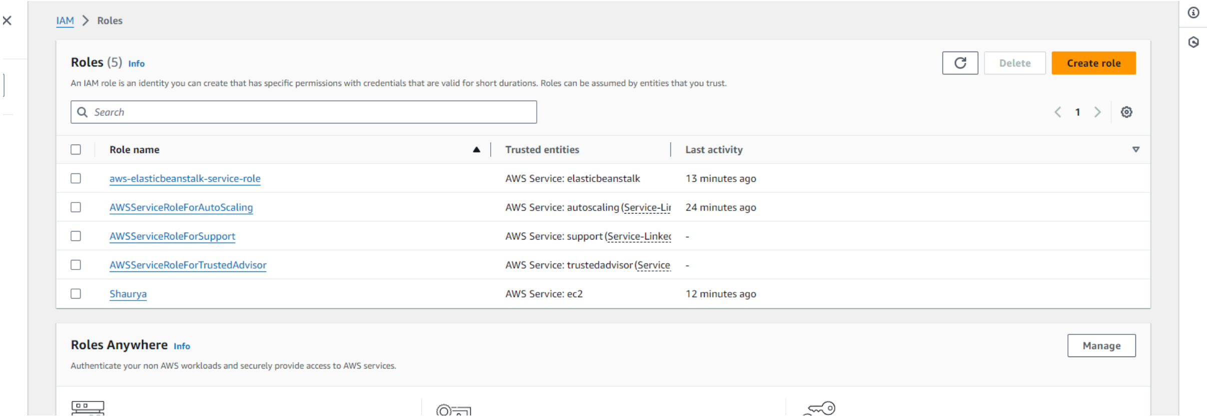
Resources in this AWS Account

User groups	Users	Roles	Policies	Identity prc
0	0	5	0	0

What's new

Updates for features in IAM

Then we go to Open Roles -> New Roles



IAM > Roles

Roles (5) Info

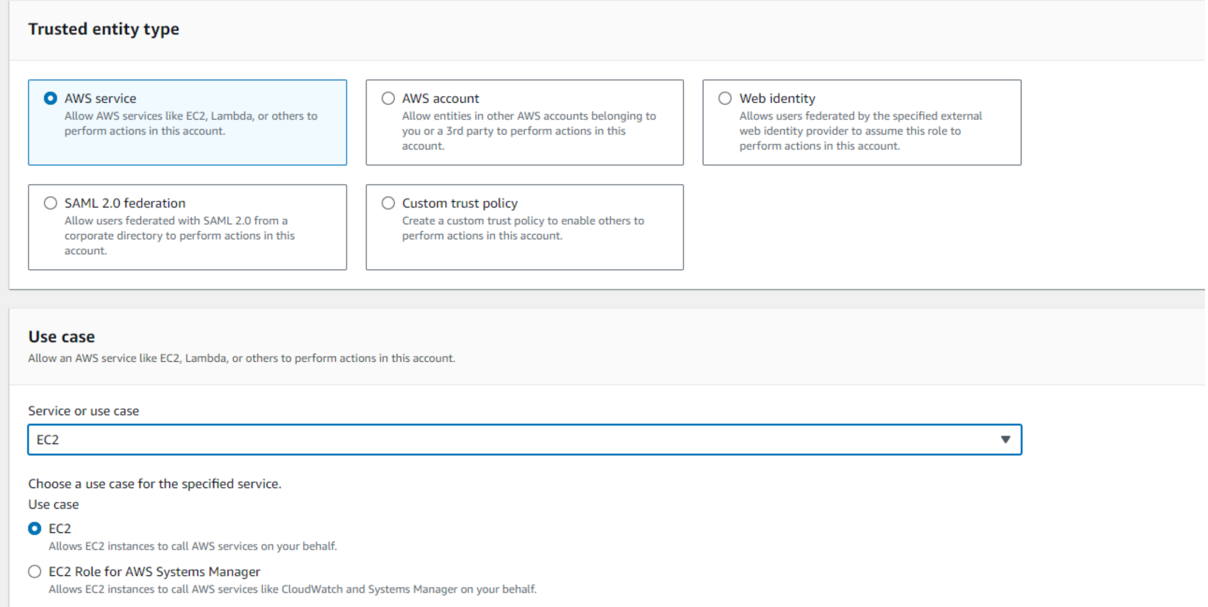
An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.

□	Role name	Trusted entities	Last activity
□	aws-elasticbeanstalk-service-role	AWS Service: elasticbeanstalk	13 minutes ago
□	AWSServiceRoleForAutoScaling	AWS Service: autoscaling (Service-Li	24 minutes ago
□	AWSServiceRoleForSupport	AWS Service: support (Service-Linke	-
□	AWSServiceRoleForTrustedAdvisor	AWS Service: trustedadvisor (Service	-
□	Shaurya	AWS Service: ec2	12 minutes ago

Roles Anywhere Info

Authenticate your non AWS workloads and securely provide access to AWS services.

Select EC2 as use case



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

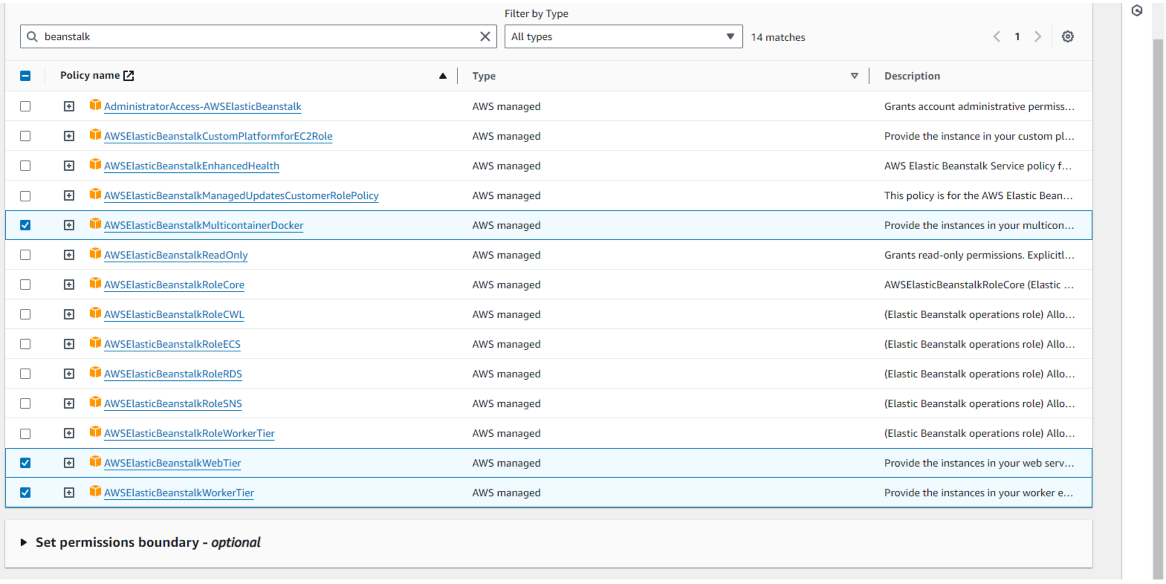
Choose a use case for the specified service.

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.

Add the following permissions



beanstalk

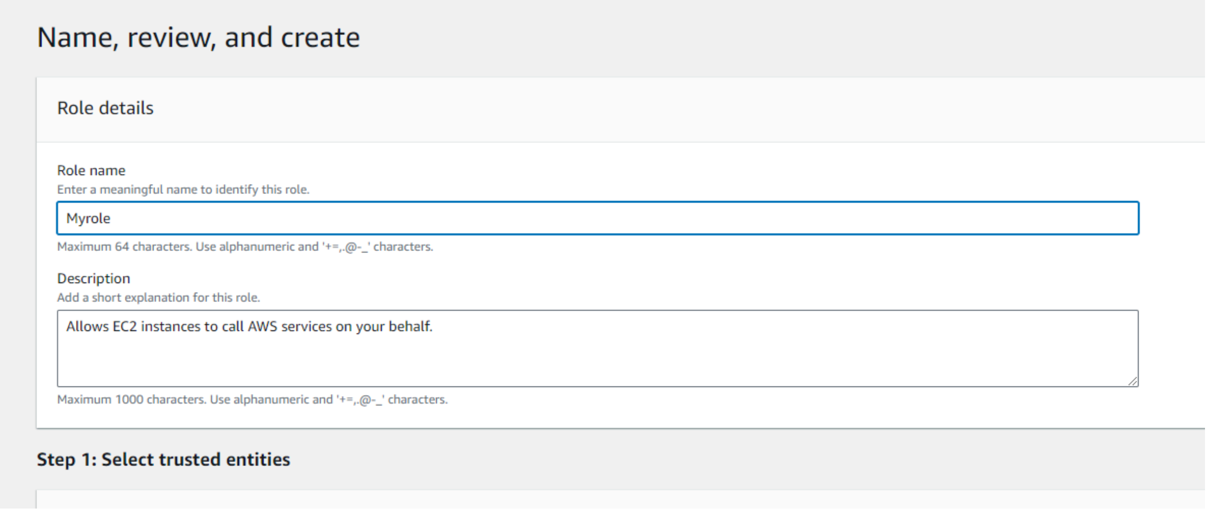
Filter by Type: All types

14 matches

	Policy name	Type	Description
☐	AdministratorAccess-AWSElasticBeanstalk	AWS managed	Grants account administrative permiss…
☐	AWSElasticBeanstalkCustomPlatformforEC2Role	AWS managed	Provide the instance in your custom pl…
☐	AWSElasticBeanstalkEnhancedHealth	AWS managed	AWS Elastic Beanstalk Service policy f…
☐	AWSElasticBeanstalkManagedUpdatesCustomerRolePolicy	AWS managed	This policy is for the AWS Elastic Bean…
☑	AWSElasticBeanstalkMulticontainerDocker	AWS managed	Provide the instances in your multicon…
☐	AWSElasticBeanstalkReadOnly	AWS managed	Grants read-only permissions. Explicitl…
☐	AWSElasticBeanstalkRoleCore	AWS managed	AWSElasticBeanstalkRoleCore (Elastic …
☐	AWSElasticBeanstalkRoleCWL	AWS managed	(Elastic Beanstalk operations role) Allo…
☐	AWSElasticBeanstalkRoleECS	AWS managed	(Elastic Beanstalk operations role) Allo…
☐	AWSElasticBeanstalkRoleRDS	AWS managed	(Elastic Beanstalk operations role) Allo…
☐	AWSElasticBeanstalkRoleSNS	AWS managed	(Elastic Beanstalk operations role) Allo…
☐	AWSElasticBeanstalkRoleWorkerTier	AWS managed	(Elastic Beanstalk operations role) Allo…
☑	AWSElasticBeanstalkWebTier	AWS managed	Provide the instances in your web serv…
☑	AWSElasticBeanstalkWorkerTier	AWS managed	Provide the instances in your worker e…

▸ Set permissions boundary - *optional*

Name the role



Name, review, and create

Role details

Role name

Enter a meaningful name to identify this role.

Myrole

Maximum 64 characters. Use alphanumeric and '+=,.@-_' characters.

Description

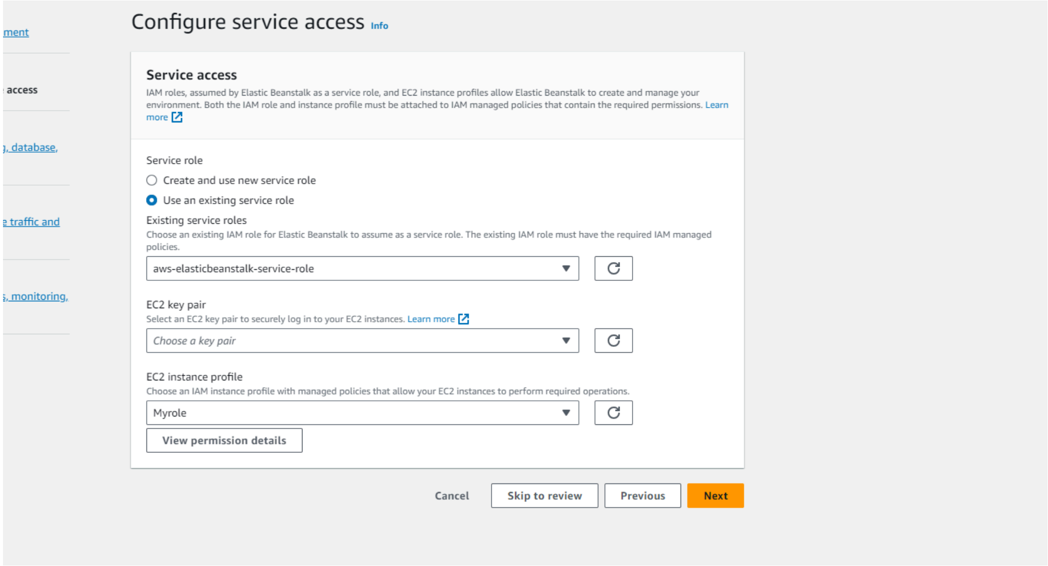
Add a short explanation for this role.

Allows EC2 instances to call AWS services on your behalf.

Maximum 1000 characters. Use alphanumeric and '+=,.@-_' characters.

Step 1: Select trusted entities

This process have completed the role, now we go back to configure our service access and ad



Configure service access

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

Existing service roles

Choose an existing IAM role for Elastic Beanstalk to assume as a service role. The existing IAM role must have the required IAM managed policies.

aws-elasticbeanstalk-service-role

EC2 key pair

Select an EC2 key pair to securely log in to your EC2 instances. Learn more

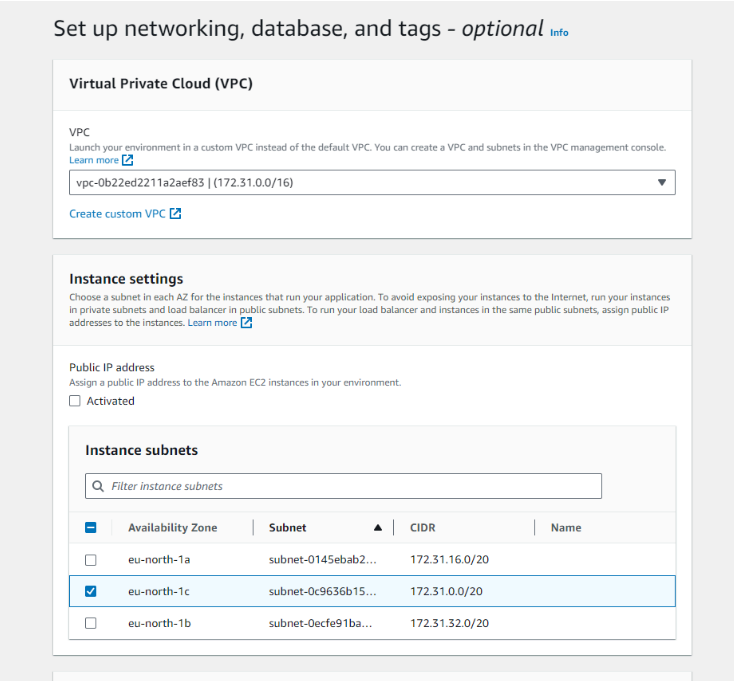
Choose a key pair

EC2 instance profile

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

Myrole

Step 5 Setup networking and database



Set up networking, database, and tags - *optional* Info

Virtual Private Cloud (VPC)

VPC

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-0b22ed2211a2aef83 | (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.

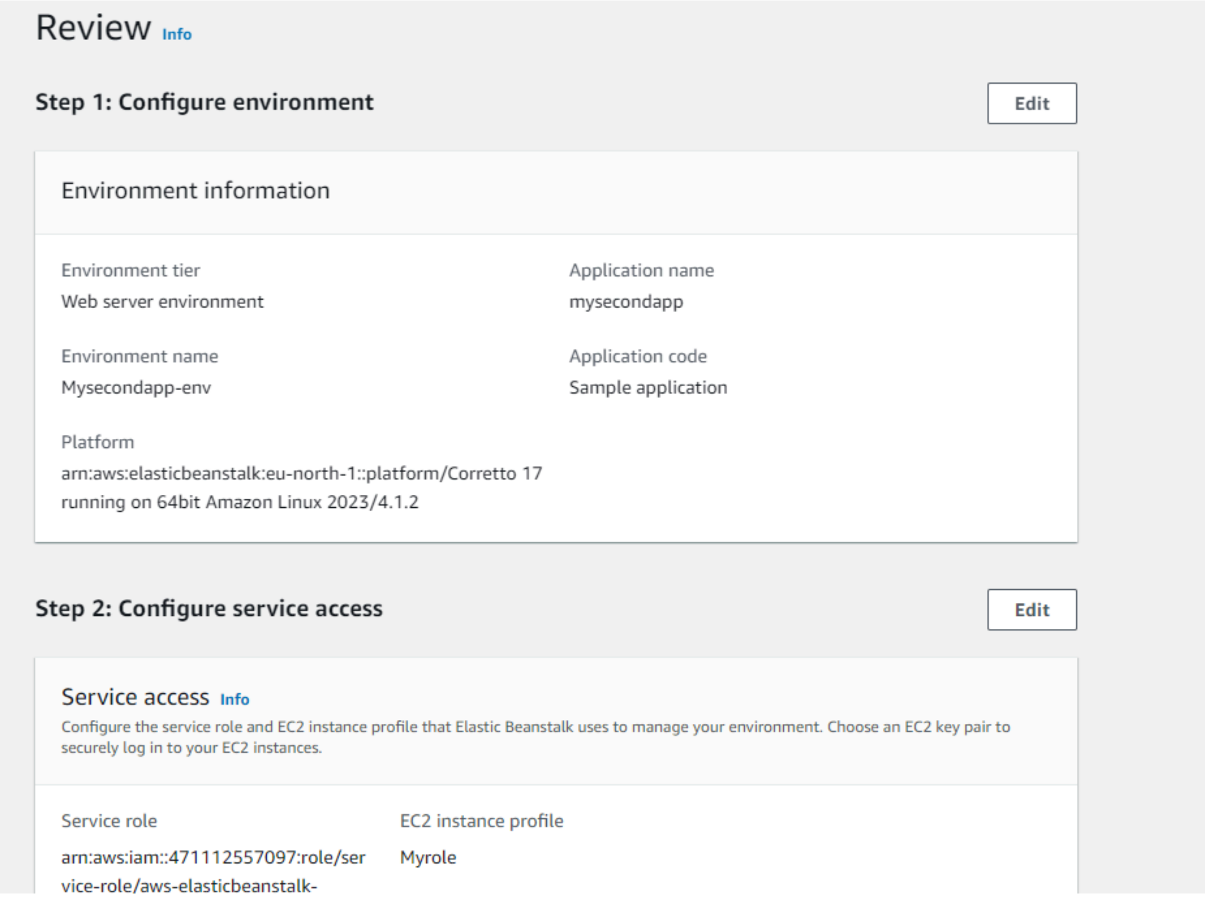
□ Activated

Instance subnets

Filter instance subnets

▣	Availability Zone	Subnet ▲	CIDR	Name
□	eu-north-1a	subnet-0145ebab2...	172.31.16.0/20	
☑	eu-north-1c	subnet-0c9636b15...	172.31.0.0/20	
□	eu-north-1b	subnet-0ecfe91ba...	172.31.32.0/20	

Step 6 Review the process



Review Info

Step 1: Configure environment Edit

Environment information

Environment tier Web server environment	Application name mysecondapp
Environment name Mysecondapp-env	Application code Sample application

Platform

arn:aws:elasticbeanstalk:eu-north-1::platform/Corretto 17 running on 64bit Amazon Linux 2023/4.1.2

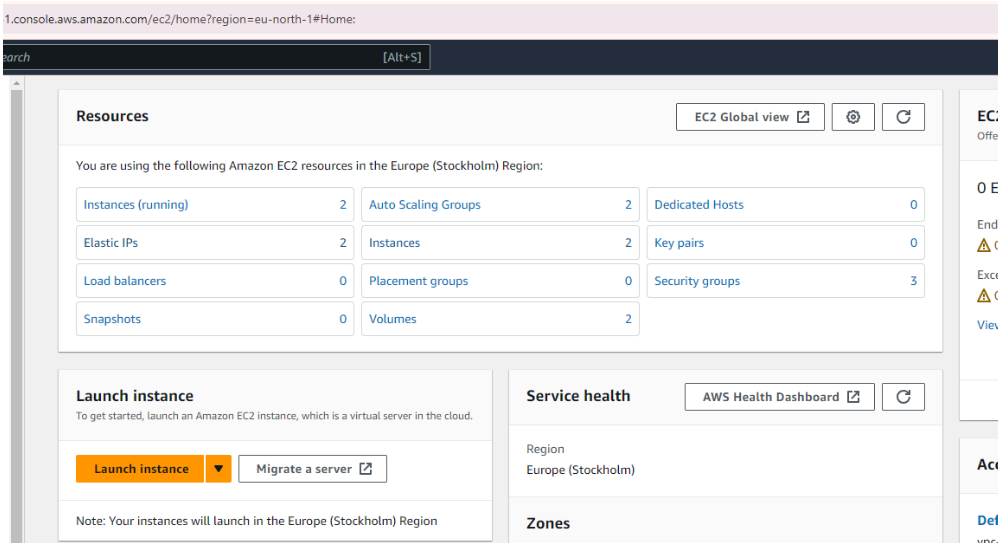
Step 2: Configure service access Edit

Service access Info

Configure the service role and EC2 instance profile that Elastic Beanstalk uses to manage your environment. Choose an EC2 key pair to securely log in to your EC2 instances.

Service role arn:aws:iam::471112557097:role/service-role/aws-elasticbeanstalk-	EC2 instance profile Myrole

Step 7 Go to EC2 service, open instance



1.console.aws.amazon.com/ec2/home?region=eu-north-1#Home:

earch [Alt+S]

Resources

You are using the following Amazon EC2 resources in the Europe (Stockholm) Region:

Instances (running)	2	Auto Scaling Groups	2	Dedicated Hosts	0
Elastic IPs	2	Instances	2	Key pairs	0
Load balancers	0	Placement groups	0	Security groups	3
Snapshots	0	Volumes	2		

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Note: Your instances will launch in the Europe (Stockholm) Region

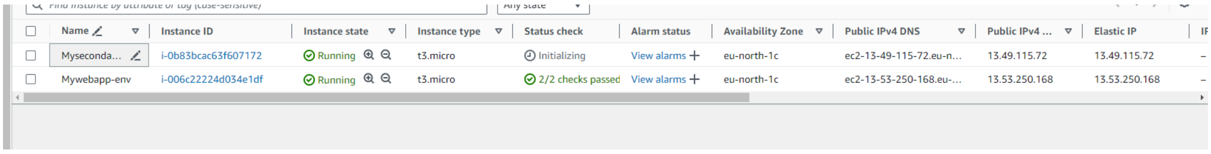
Service health

Region
Europe (Stockholm)

Zones

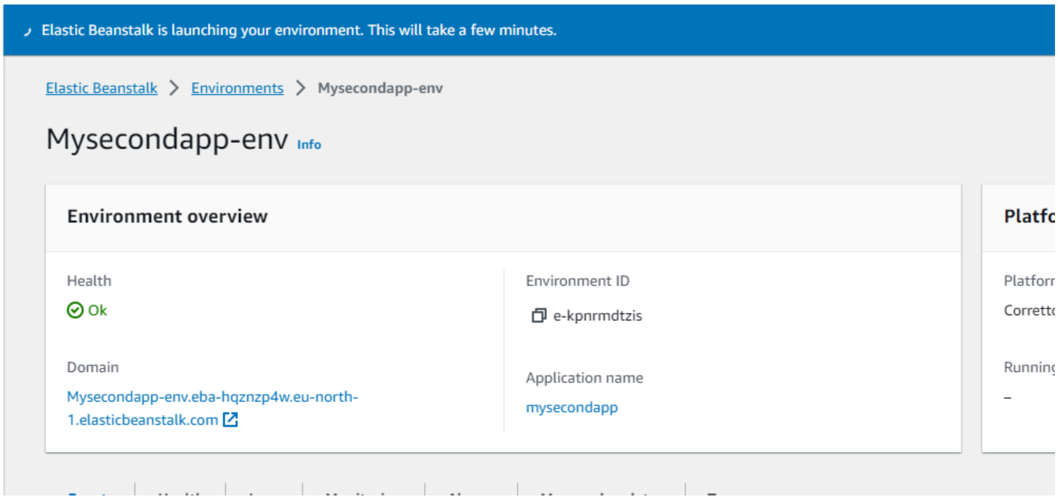
Step 8- You will find your instance running

As you can see, we have created another instance previously with python as our service



□	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP	IF
□	Myseconda...	i-0b83bcac63f607172	Running	t3.micro	Initializing	View alarms +	eu-north-1c	ec2-13-49-115-72.eu-n...	13.49.115.72	13.49.115.72	–
□	Mywebapp-env	i-006c22224d034e1df	Running	t3.micro	2/2 checks passed	View alarms +	eu-north-1c	ec2-13-53-250-168.eu-...	13.53.250.168	13.53.250.168	–

Step 9 – Wait till the health shows okay



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

Elastic Beanstalk > Environments > Mysecondapp-env

Mysecondapp-env Info

Environment overview

Health
✓ Ok

Environment ID
e-kpnrmdtzis

Domain
Mysecondapp-env.eba-hqznzp4w.eu-north-1.elasticbeanstalk.com

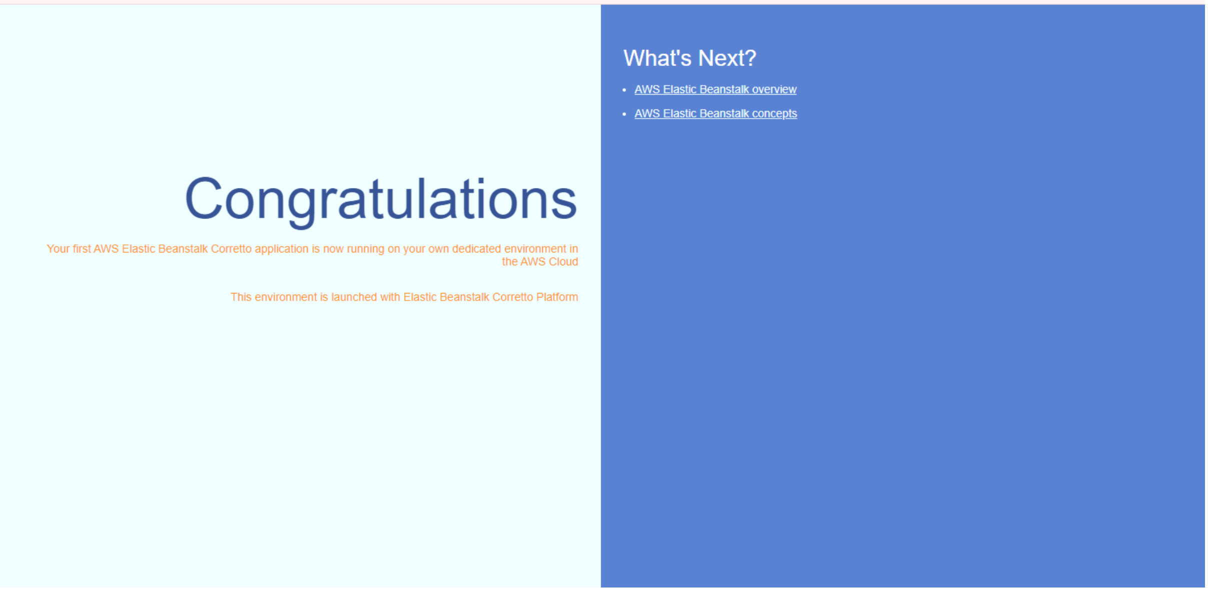
Application name
mysecondapp

Platfc

Platforr
Corrett

Running
–

Step 10 Click on domain to launch



Congratulations

Your first AWS Elastic Beanstalk Corretto application is now running on your own dedicated environment in the AWS Cloud

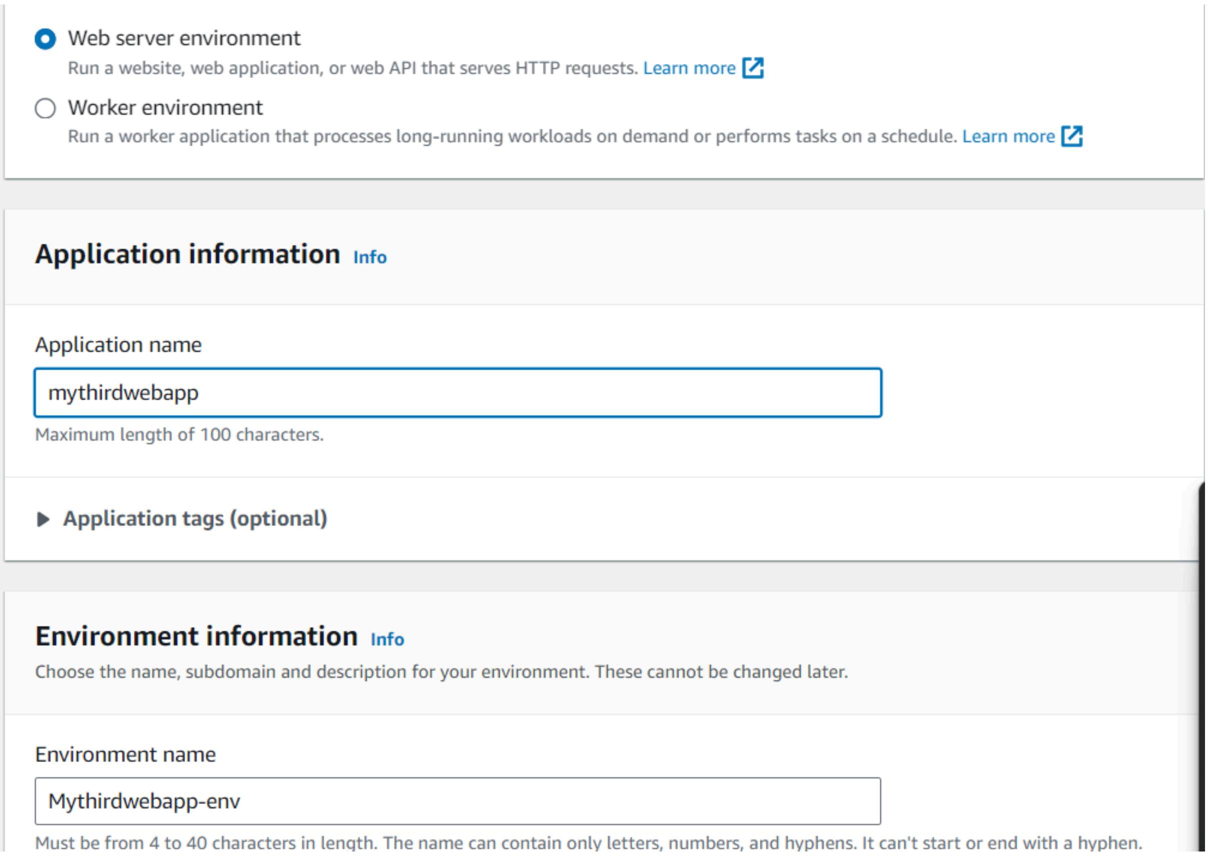
This environment is launched with Elastic Beanstalk Corretto Platform

What's Next?

- AWS Elastic Beanstalk overview
- AWS Elastic Beanstalk concepts

Node.js

Now we repeat the same process for our third instance with node.js



● 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

mythirdwebapp

Maximum length of 100 characters.

▶ Application tags (optional)

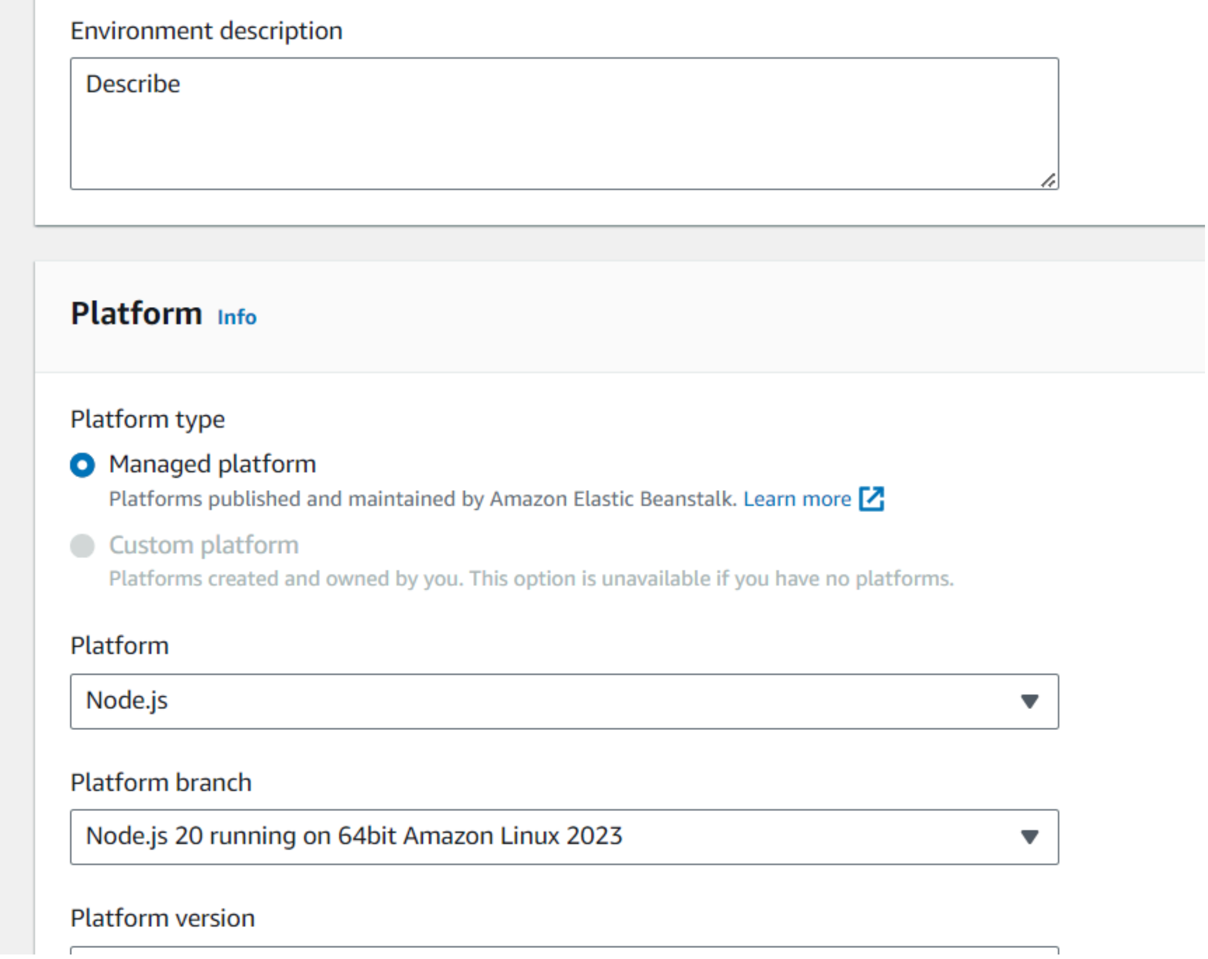
Environment information Info

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

Environment name

Mythirdwebapp-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.



Environment description

Describe

Platform

Platform type

● Managed platform

Platforms published and maintained by Amazon Elastic Beanstalk. Learn more

○ Custom platform

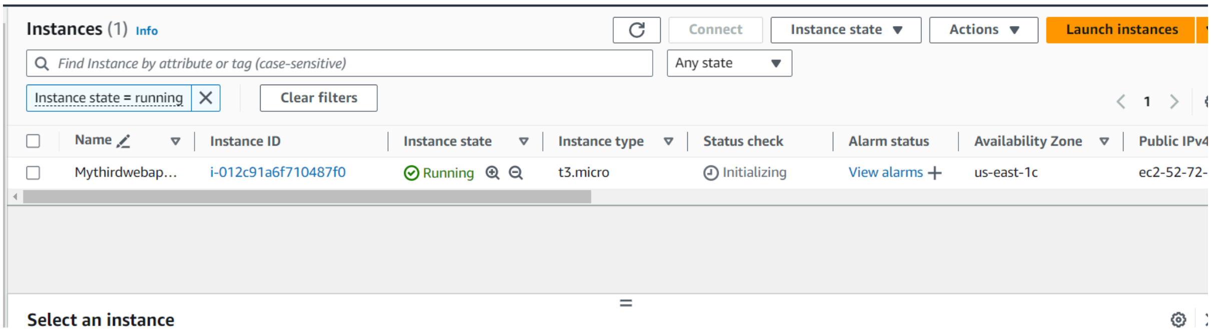
Platforms created and owned by you. This option is unavailable if you have no platforms.

Platform: Node.js

Platform branch: Node.js 20 running on 64bit Amazon Linux 2023

Platform version

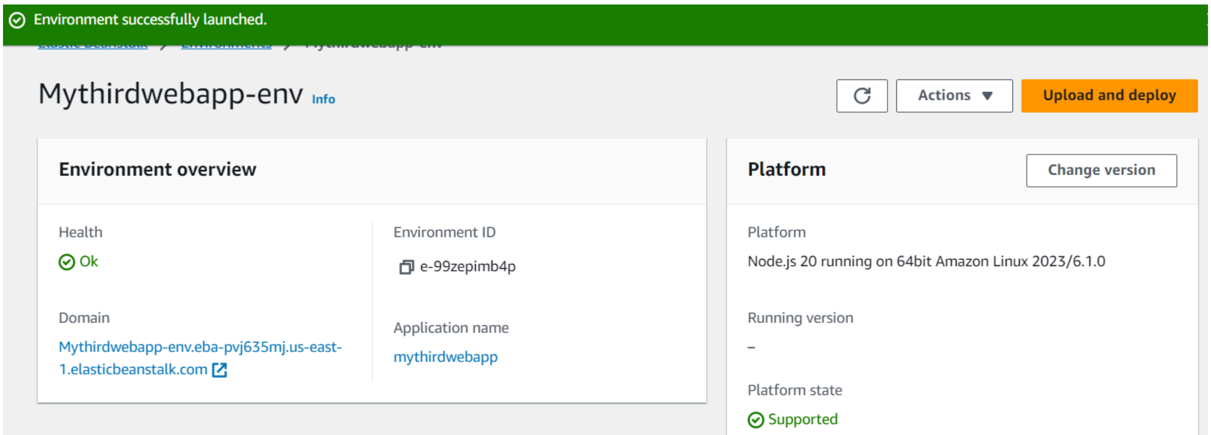
This is our final third service (node.js) instance running



Instances (1)

□	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
□	Mythirdwebap...	i-012c91a6f710487f0	Running	t3.micro	Initializing	View alarms +	us-east-1c	ec2-52-72-

Select an instance



Environment successfully launched.

Elastic Beanstalk > Environments > Mythirdwebapp-env

Mythirdwebapp-env Info

Environment overview

Health
✓ Ok

Domain
Mythirdwebapp-env.eba-pvj635mj.us-east-1.elasticbeanstalk.com

Environment ID
e-99zepimb4p

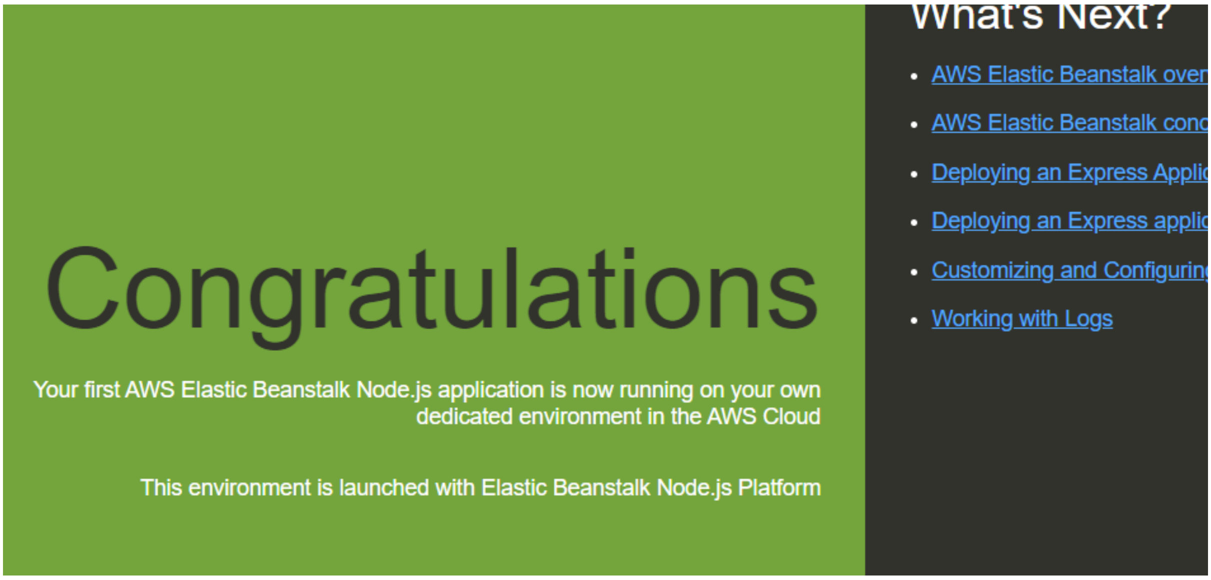
Application name
mythirdwebapp

Platform

Platform
Node.js 20 running on 64bit Amazon Linux 2023/6.1.0

Running version
–

Platform state
✓ Supported



Congratulations

Your first AWS Elastic Beanstalk Node.js application is now running on your own dedicated environment in the AWS Cloud

This environment is launched with Elastic Beanstalk Node.js Platform

What's Next?

- AWS Elastic Beanstalk over
- AWS Elastic Beanstalk conc
- Deploying an Express Applic
- Deploying an Express applic
- Customizing and Configurin
- Working with Logs