Technical Architecture

This documentation on the architecture of MeydIt, a web application built with ReactJS and Next.js on the front-end, and Node.js and AdonisJS on the back-end, the application uses PostgreSQL for its database. This is hosted on Elastic Beanstalk. To ensure an efficient development and deployment processes, AWS CodePipeline is used for continuous integration and delivery. Additionally, Amazon S3 is utilized for storing images, and Amazon SES serves as the email service.

This document provides a comprehensive guide for setting up the AWS environment using both the console and CloudFormation. The following sections will take you through a step-by-step process for each component of the architecture.

Components

Front-end: The user interface for the web application is built using Next.js, a framework built on top of ReactJS that provides features such as server-side rendering and automatic code splitting, to improve the performance.

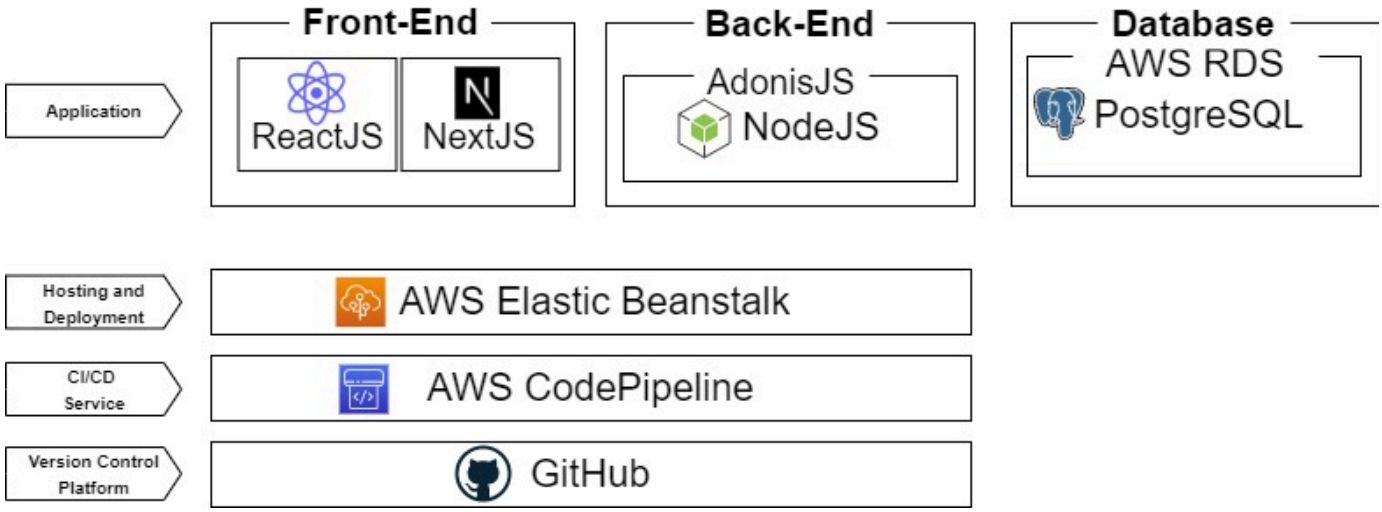
Back-end: Use NodeJS to create the server-side logic. NodeJS is a JavaScript runtime environment that is used to build server-side applications. The Node.js application is built with AdonisJS framework.

Database: Use Amazon RDS PostgreSQL to store and manage the data for the application. Amazon RDS is a managed relational database service that makes it easy to set up, operate, and scale a PostgreSQL database.

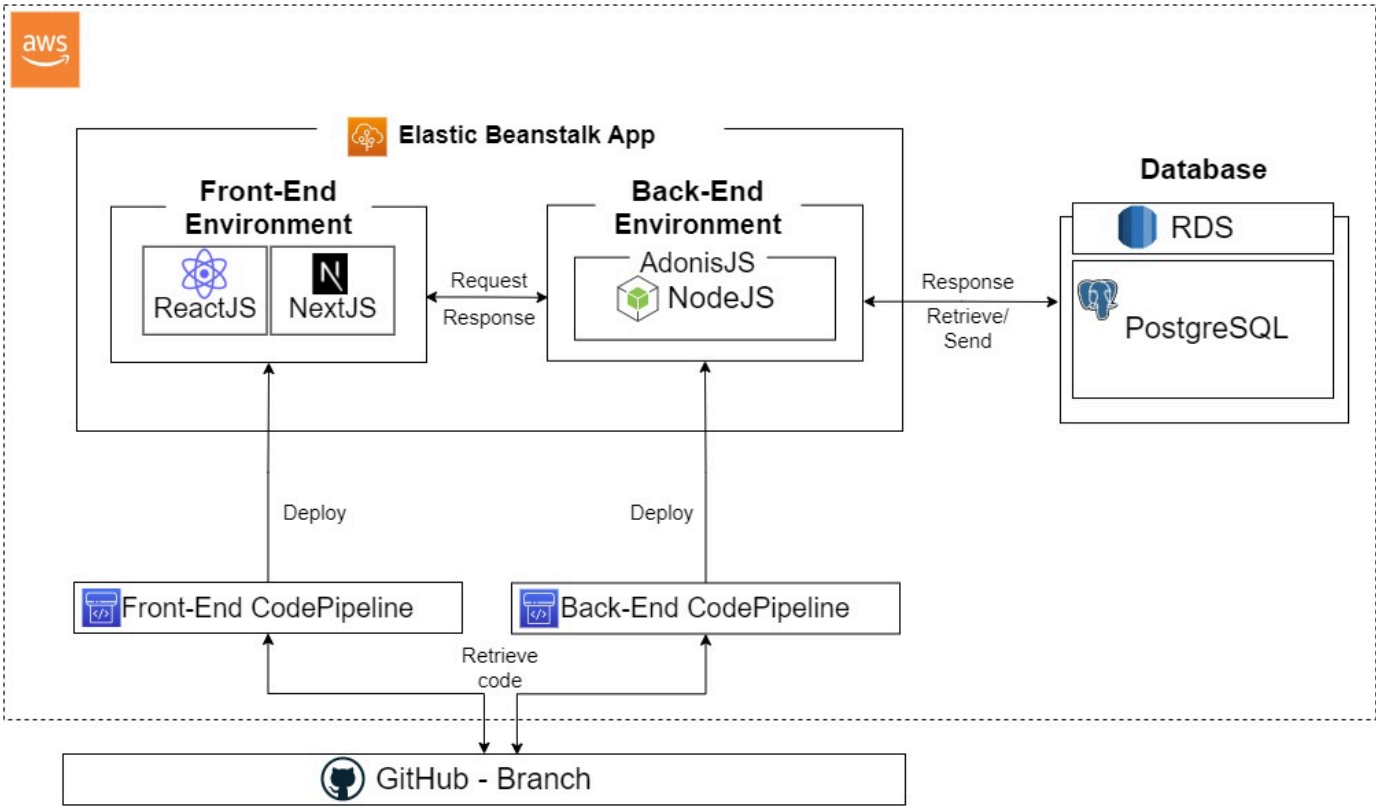
Deployment: Amazon Elastic Beanstalk to deploy and run the application. Elastic Beanstalk is a fully managed service that makes it easy to deploy, run, and scale web applications and services.

Continuous Integration and Deployment: Use AWS CodePipeline to automate the process of building, testing, and deploying the application. CodePipeline integrates with AWS Elastic Beanstalk and GitHub to allow for continuous integration and deployment.

Version control: Use GitHub to manage the source code for the application. GitHub is a web-based platform that provides version control and collaboration tools for software development.



Communication Flow of the Web Application



The communication between these components follows a request-response model, where the front-end (ReactJS and Next.js) makes a request to the back-end (Node.js and AdonisJS), which retrieves data from the database (RDS PostgreSQL) and returns it to the front-end. Next.js is responsible for server-side rendering and communicating with the server-side, while ReactJS handles client-side rendering and user interaction.

The back-end, built with Node.js and AdonisJS, follows an MVC (Model-View-Controller) architecture, where the model represents the data, the view handles the presentation, and the controller manages the flow between the model and view. AdonisJS provides a robust framework for building scalable and maintainable back-end applications, with built-in support for authentication, database integration, and more.

Elastic Beanstalk acts as the hosting platform for the application, providing load balancing and automatic scaling to ensure that the application can handle changes in demand.

CodePipeline integrates with these components to provide a streamlined and efficient release process, automating the deployment of code changes from GitHub to Elastic Beanstalk, and ensuring that the application is always up-to-date and ready for use.

Continuous Integration/Continuous Deployment (CI/CD)

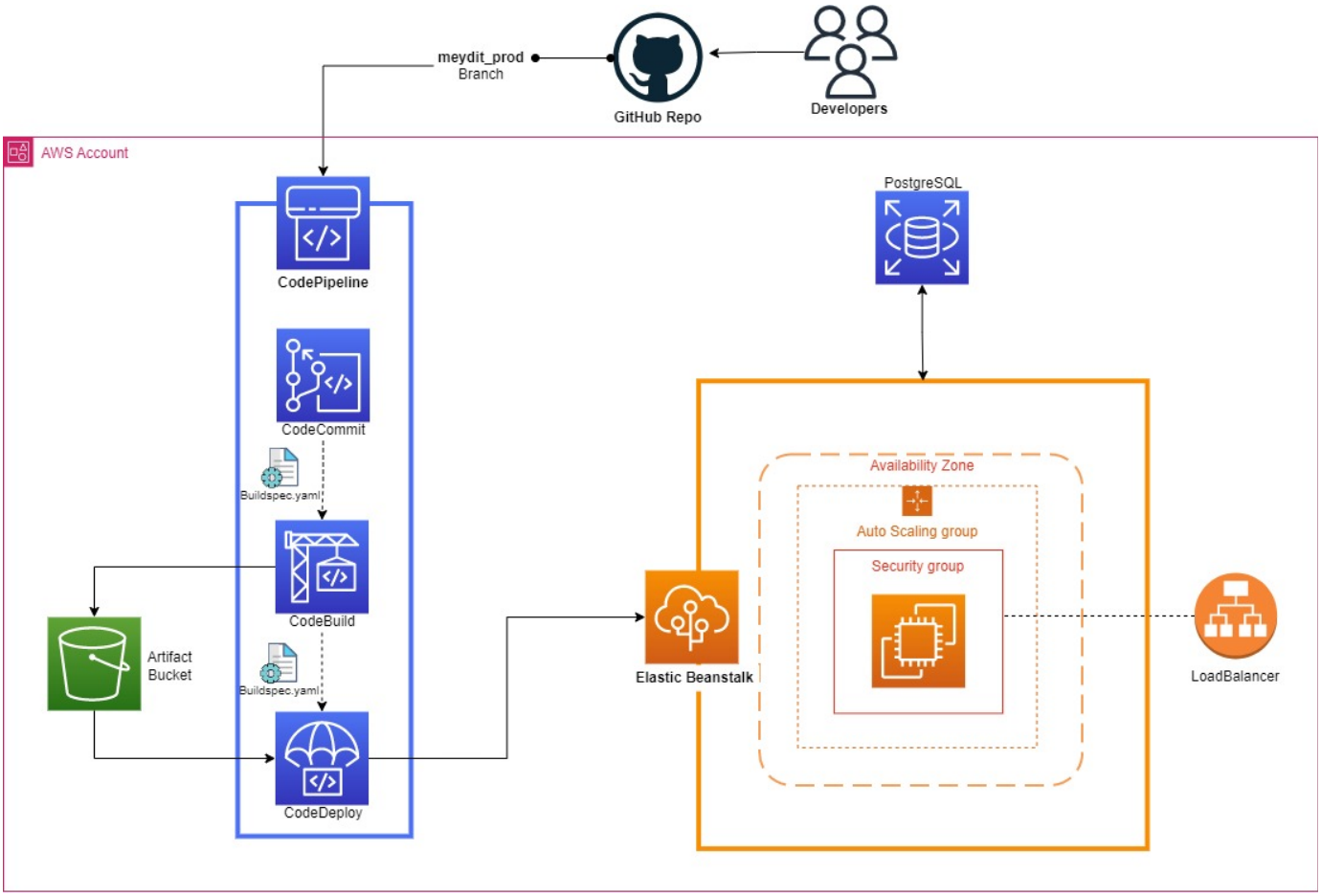
In this document will be described step-by-step guide on how to set up the Continuous Integration/Continuous Deployment (CI/CD) pipeline using AWS CodePipeline and Elastic Beanstalk for MeydIt project, the repository is hosted on GitHub. The CI/CD pipeline automates the process of building, and deploying the application to a production environment.

The following information can be found it in this document:

Overview

The CI/CD process of MeydIt project begins with the developer committing their code changes to the designated GitHub repository and branch (meydit_prod), which triggers the AWS CodePipeline. CodePipeline then pulls the code changes, builds the application, and deploys it to the Elastic Beanstalk environment.

The Elastic Beanstalk environment provides a scalable and reliable platform to host the application, which can be accessed by end-users. The entire process is automated, reducing the manual effort required for building and deploying the application, ensuring a faster and more efficient release process.



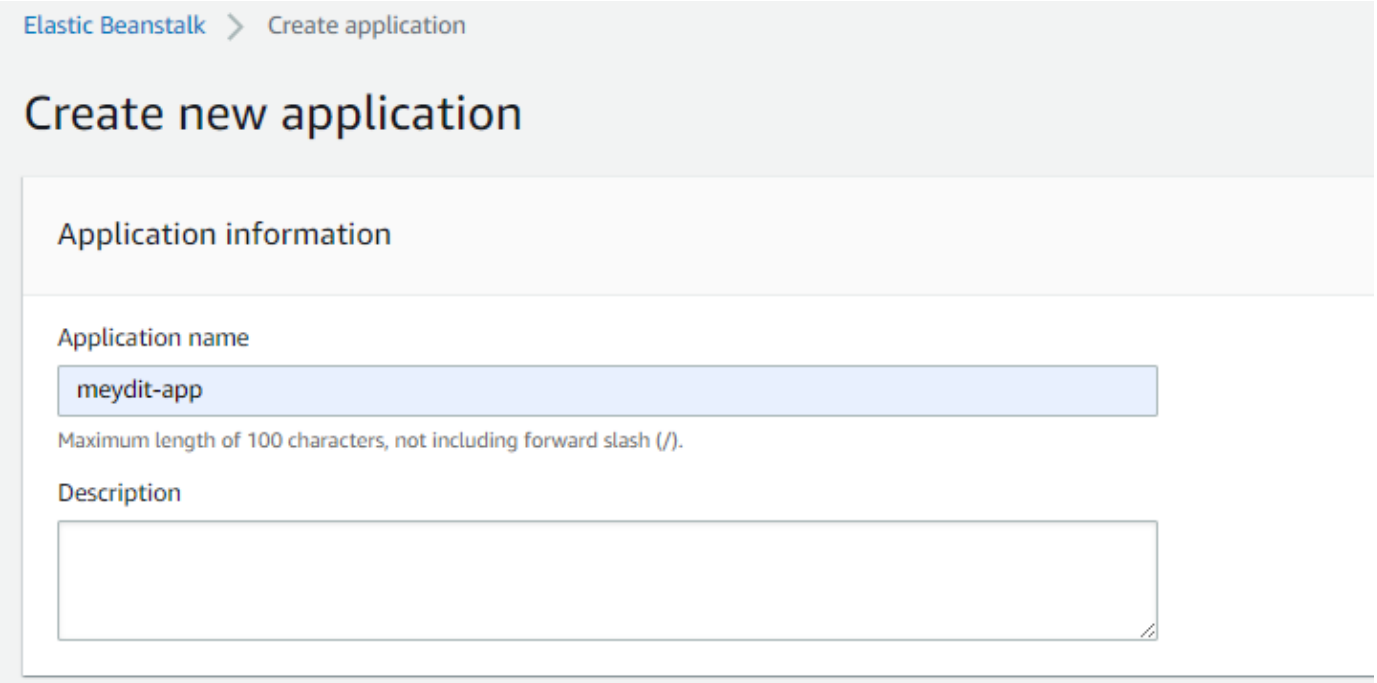
Elastic Beanstalk

To deploy the project is necessary to create an Elastic Beanstalk application and environment first. This provides a platform for hosting the application and allows easily manage and scale resources as needed.

Elastic Beanstalk uses EC2 instances to run the application code, load balancers to distribute incoming traffic, auto scaling groups to manage the number of EC2 instances based on demand, and availability zones to increase the availability and fault tolerance of the application.

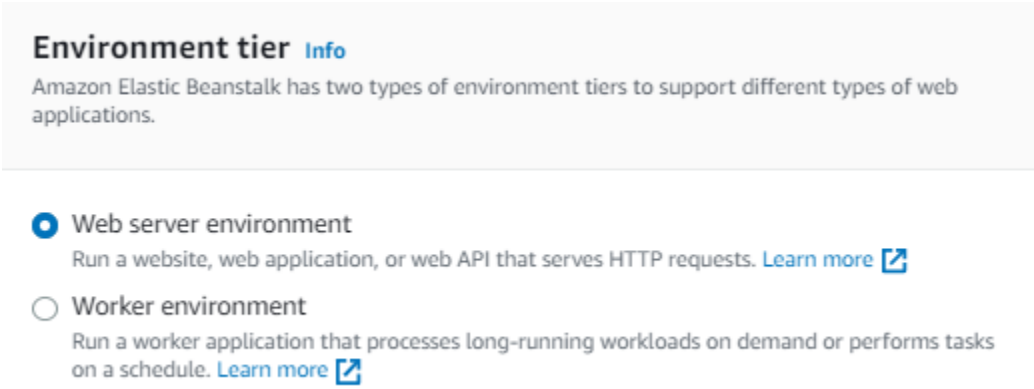
- **Elastic Beanstalk App**

  1. Open the Elastic Beanstalk service, and click in Application in the left panel.
  2. Click in Create a `New Application`
  3. Type the Application Name and then the button `Create`

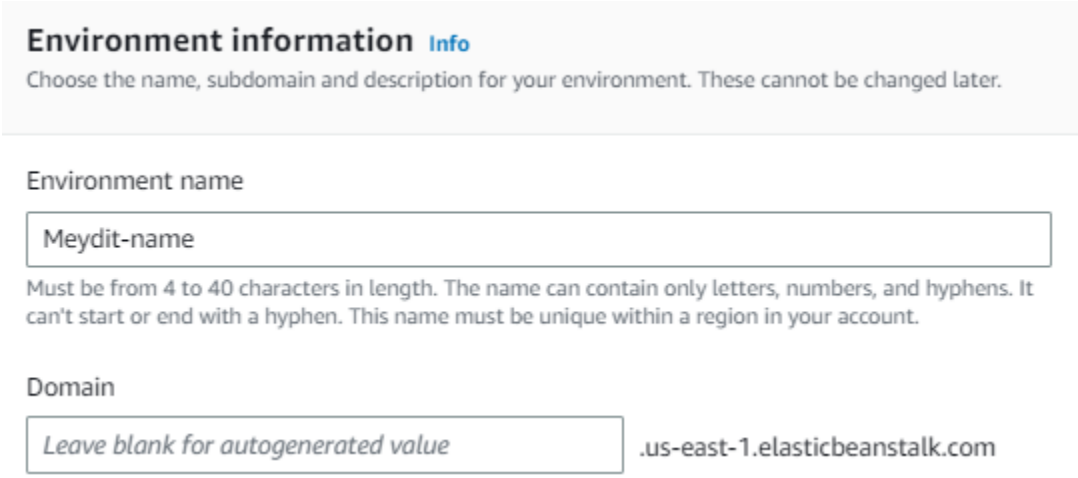


- **Elastic Beanstalk Environment**

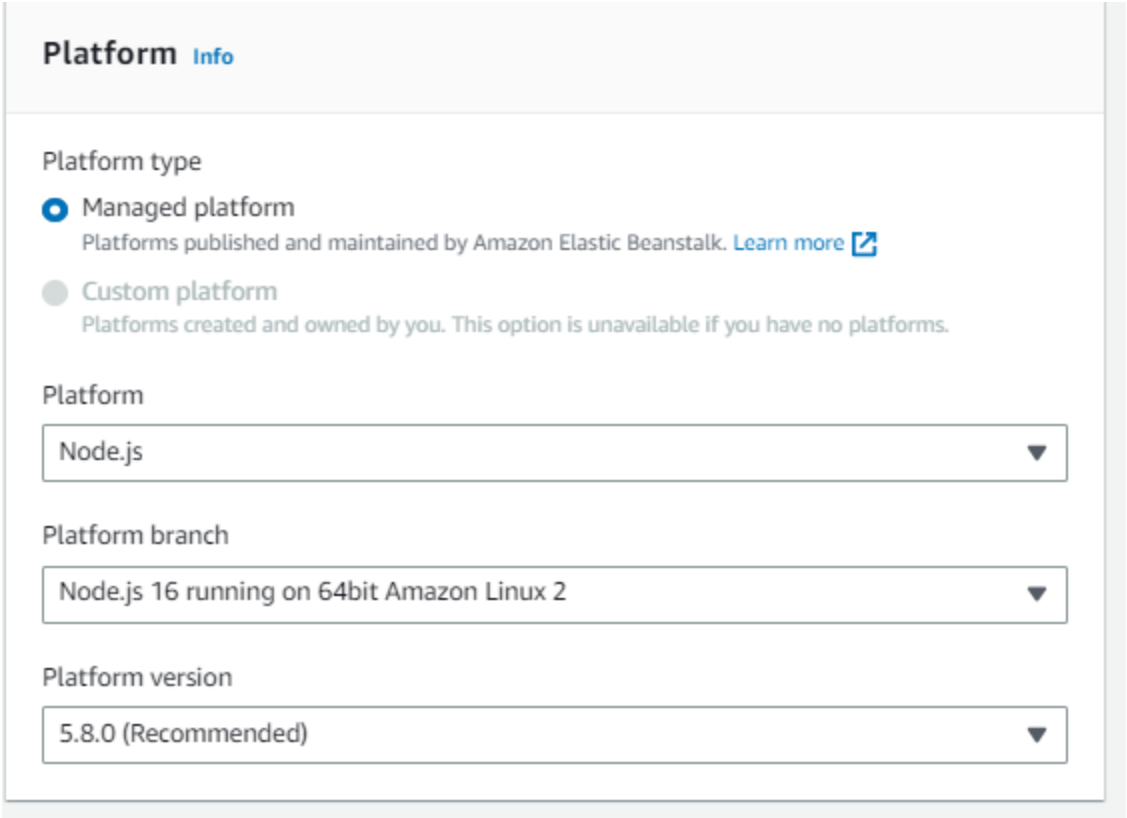
1. Navigate to Elastic Beanstalk service and click on `Create Environment` button.
2. Because the project is a web application, choose `Web server environment` and then `Select` button:



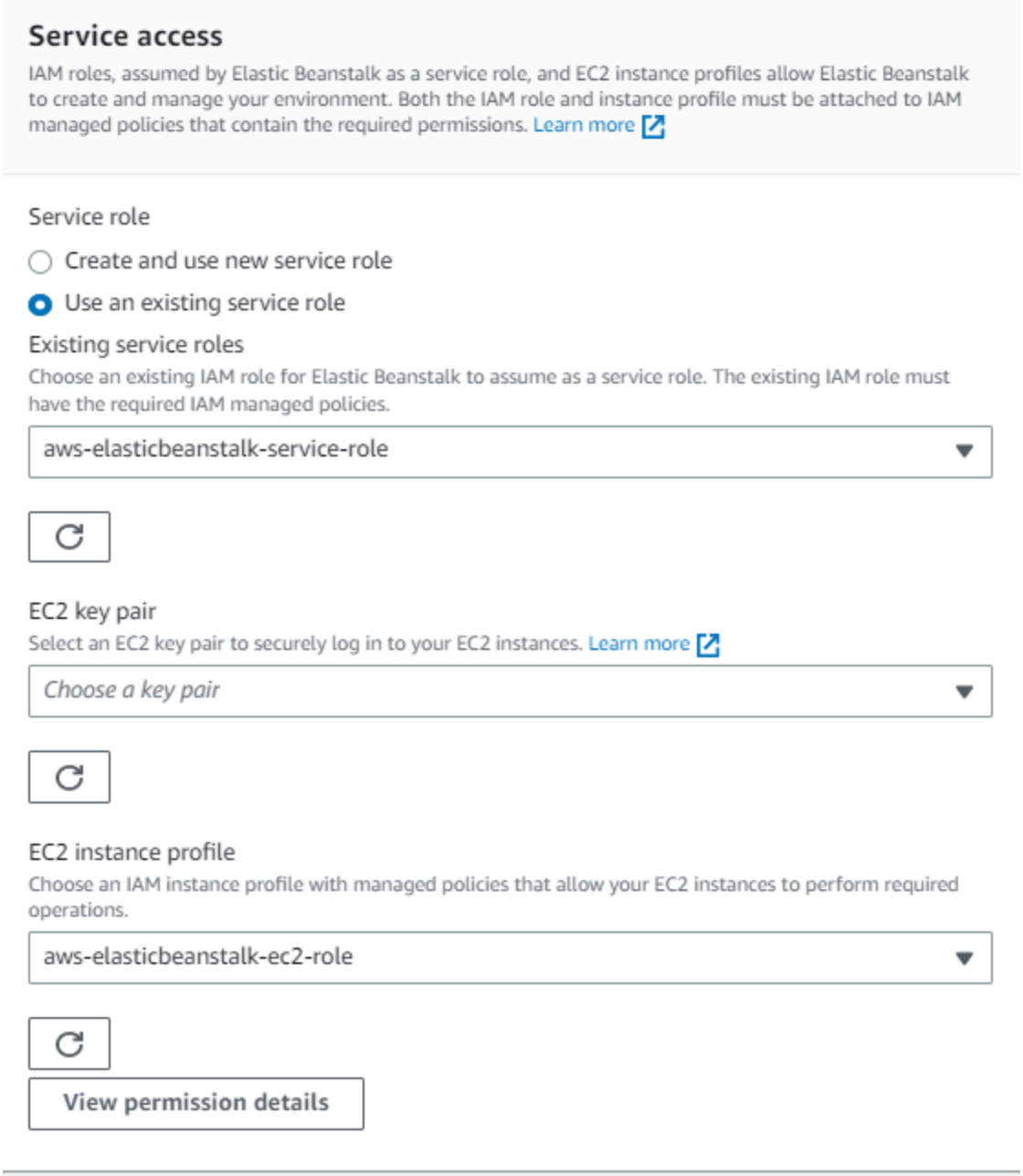
3. Type a `Environment Name` and `Domain`:



4. In platform info, select `Node.js` platform from the list, in branch `Node.js 16 running on 64bit Amazon Linux 2` (this is used for back-end and front-end:



5. In the "Application code" section, choose the option `Sample application` because the project will be deployed by the Codepipeline.
6. In Presets, currently the environment is set up with `Single instance (using spot instance)`. There are more options:
   - Single instance (free tier eligible): This preset creates a single EC2 instance that is eligible for the AWS free tier. This is a good option for low-traffic websites or applications that don't require high availability or scaling.
   - Single instance (using spot instance): This preset creates a single EC2 instance that is deployed using Spot instances. Spot instances are unused EC2 instances that are available at a lower cost. This is a cost-effective option for non-critical applications that can tolerate interruptions.
   - High availability: This preset creates multiple EC2 instances in multiple availability zones for high availability and fault tolerance. Elastic Load Balancing is used to distribute traffic across the instances. This is a good option for applications that require high availability and can handle the increased cost.
   - High availability (using spot and on-demand instances): This preset creates multiple EC2 instances using a combination of Spot and On-Demand instances to balance cost and availability. Elastic Load Balancing is used to distribute traffic across the instances. This is a good option for cost-sensitive applications that require high availability.
   - Custom configuration: This preset allows to configure the environment based on specific requirements. You can choose the number of instances, instance types, load balancers, and other resources to optimize the environment for the application.
7. In Service Access, the role to manage the environment are attached. Currently, the roles are already created, check the section IAM Roles for Elastic Beanstalk:



8. This step in just for **back-end**. Configure the database instance. Select `Enable database`, Engine `postgres`, Engine version `14.6`, Instance class `db.t3.medium`, Storage `10 GB` , Username and Password:

Database Info

Integrate an RDS SQL database with your environment. Learn more

Enable database

Restore a snapshot - *optional*

Restore an existing snapshot from a previously used database.

Snapshot

None

Database settings

Choose an engine and instance type for your environment's database.

Engine

postgres

Engine version

14.6

Instance class

db.t3.medium

Storage

Choose a number between 5 GB and 1024 GB.

10 GB

Username

meyditadmin

Password

••••••••

Availability

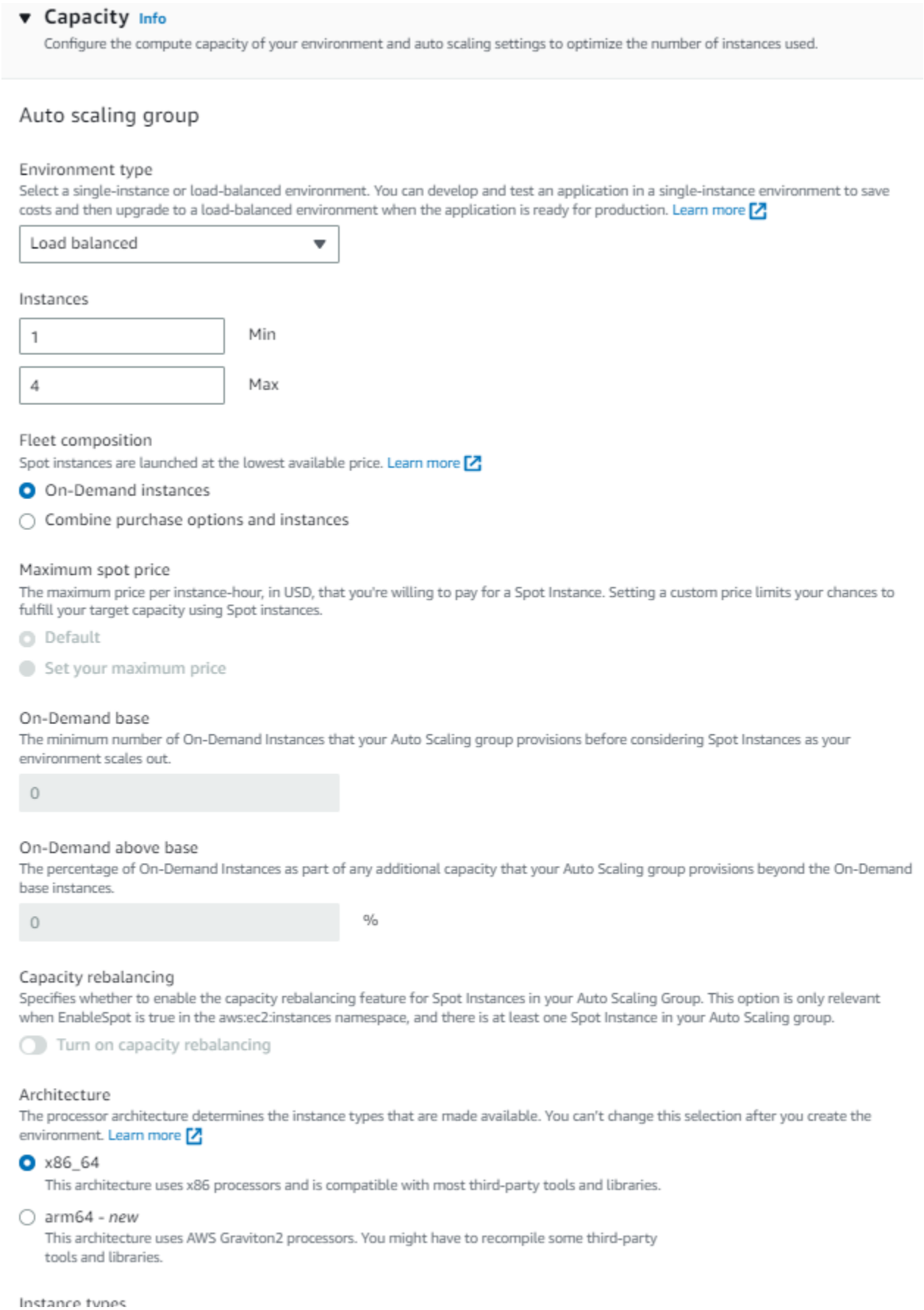
Low (one AZ)

Database deletion policy

This policy applies when you decouple a database or terminate the environment coupled to it.

- Create snapshot
  Elastic Beanstalk saves a snapshot of the database and then deletes it. You can restore a database from a snapshot when you add a DB to an Elastic Beanstalk environment or when you create a standalone database. You might incur charges for storing database snapshots.
- Retain
  The decoupled database will remain available and operational external to Elastic Beanstalk.
- Delete
  Elastic Beanstalk terminates the database. The database will no longer be available.

9. In the Capacity section, configure Environment type `Load Balanced`, Instances Max `4`, Fleet composition `On-Demand instances`, Architecture `x86_64` ,Instance types `t3.micro t3.small` (**for back-end**), `t3.medium t3.small` (**for front-end**), and then click `Next` button:



Add instance types for your fleet. Change the order that the instances are in to set the preferred launch order. This only affects On-Demand instances. We recommend you include at least two instance types. Learn more

Choose x86 instance types

t3.micro ✕ t3.small ✕

10. In the Rolling updates and deployments, choose as Deployment Policy `Rolling` and Batch Size `Percentage 30%`. This deployment policy helps to minimize downtime and reduce the risk of errors or failures during the deployment process by updating the application version gradually and monitoring the health of the updated instances before proceeding to the next batch.

Application deployments

Choose how Amazon Elastic Beanstalk propogates source code changes and software configuration updates. Learn more

Deployment policy

Rolling

Batch Size

- (●) Percentage
- ( ) Fixed

30 % instances at a time

11. In Platform Software, subsection Environment properties Add the `Environment Variables` necessaries to run the Application. For **back-end** those are some of the environment variables already set up:

ACCESS_KEY_ID

APP_KEY

APP_URL

BUCKET_LOCATION

CACHE_VIEWS

DB_CONNECTION

DB_DEBUG

DB_HEALTH_CHECK

DB_NAME

DOMAIN

GOOGLE_APPLICATION_CREDENTIALS_FILE

HOST

LOG_LEVEL

NODE_ENV

PG_DB_NAME

PG_HOST

PG_PASSWORD

PG_PORT

PG_USER

PORT

REGION

SECRET_ACCESS_KEY

For **front-end** just tree variables are needed:

GA_MEASUREMENT_ID

PORT

STRIPE_PUBLIC_KEY

12. Review your settings and click on `Submit` button to launch the environment.
13. Once the environment is created, Elastic Beanstalk will automatically provision the necessary resources and deploy the application to the environment. You can monitor the deployment process and check the status of the environment from the Elastic Beanstalk dashboard.

IAM Roles for Elastic Beanstalk

To be able to create an environment is a must to configure the service role and EC2 instance profile that Elastic Beanstalk uses to manage the environment. Currently the next roles are created in the environment:

- **aws-elasticbeanstalk-ec2-role**, the following policies are attached:

Policy name
AWSElasticBeanstalkWebTier
AWSElasticBeanstalkMulticontainerDocker
AWSElasticBeanstalkWorkerTier

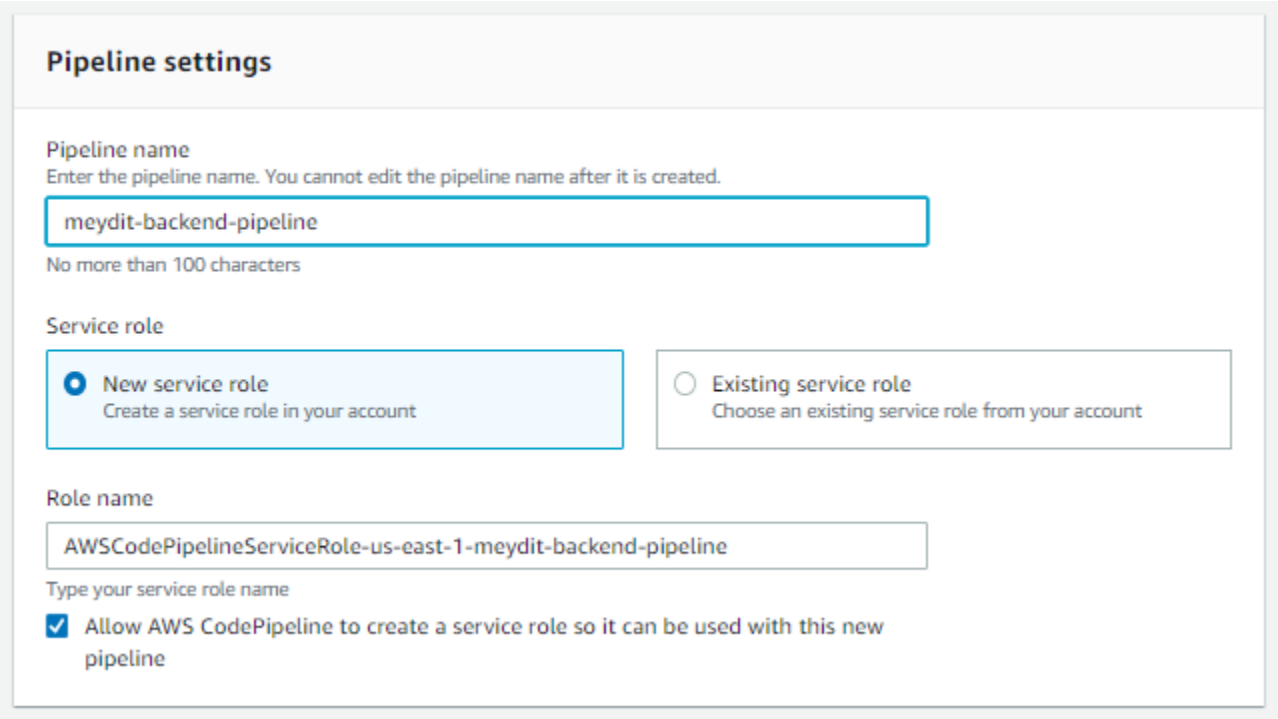
- **aws-elasticbeanstalk-service-role,** the following policies are attached:

Policy name
AWSElasticBeanstalkEnhancedHealth

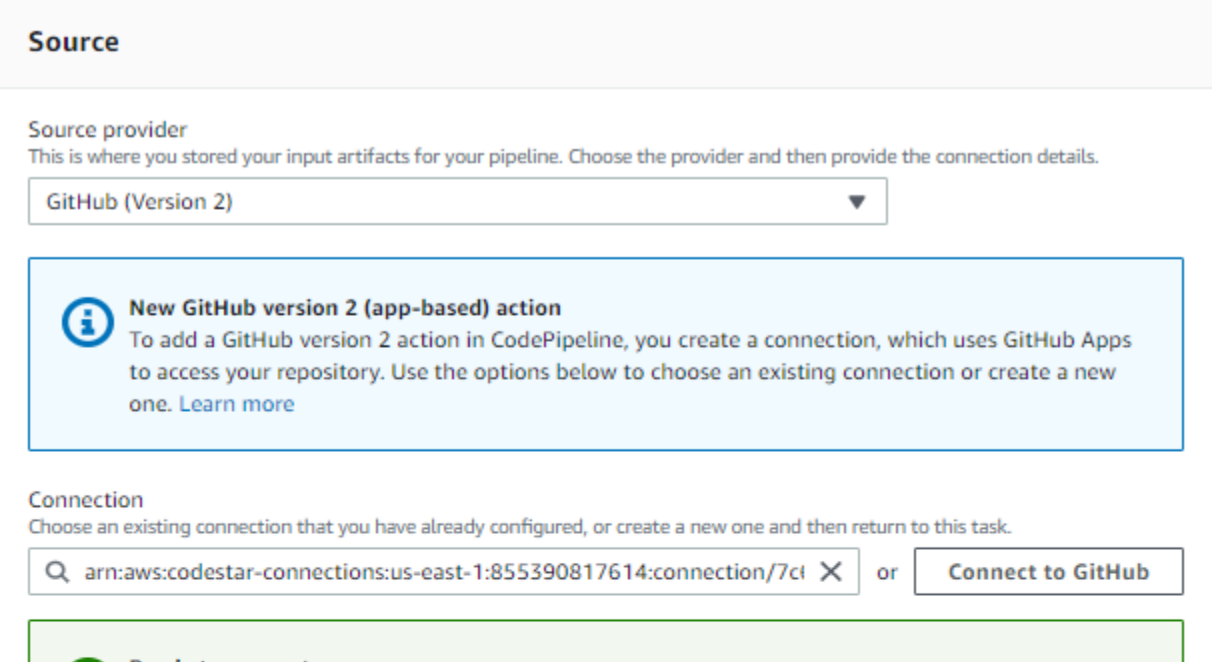
CodePipeline

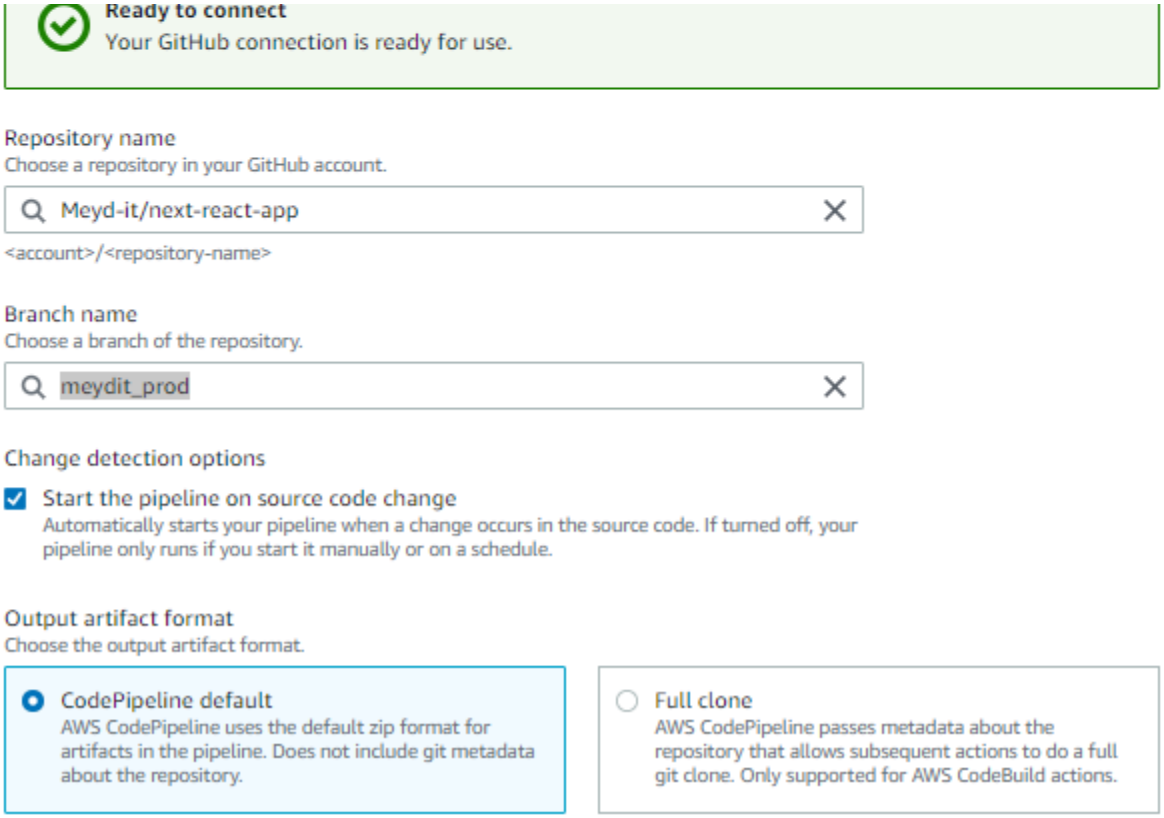
Continuous Integration/Continuous Deployment (CI/CD) is a crucial part of modern software development that enables frequent, reliable, and automated deployments. In MeydIt project, Amazon Web Services (AWS) CodePipeline are used to implement the CI/CD pipeline, which consists of three stages: source, build, and deploy. Find below a step by step guide to create the CodePipeline for back-end and front-end:

1. Log in to your AWS Management Console and navigate to the CodePipeline service.
2. Click on the `Create pipeline` button.
3. Give the pipeline a name and choose `New service role` . Then click on `Next` button:

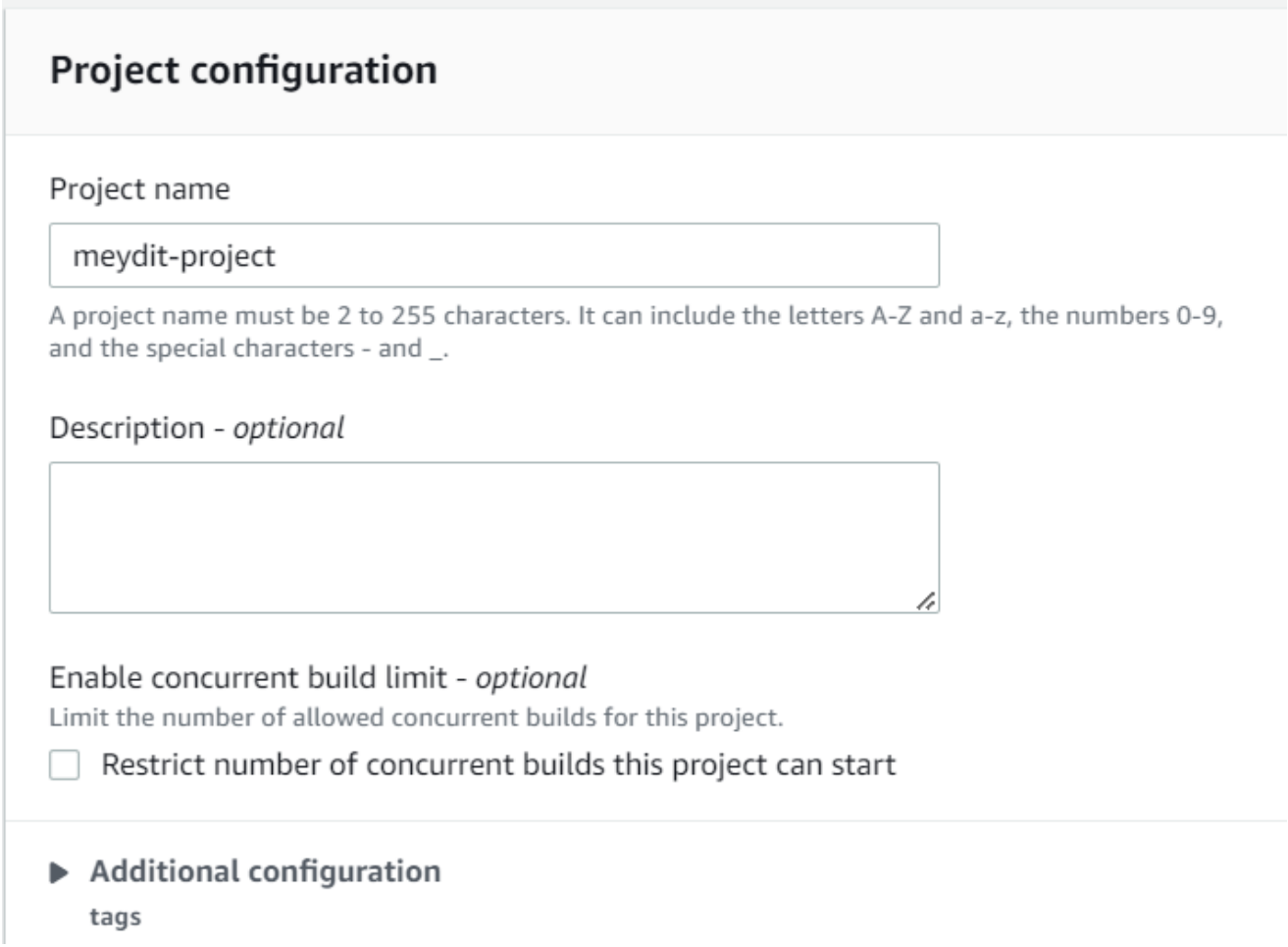


4. In the Source section, select `GitHub version2` as the source provider. To choose the connection is necessary to have permission as Owner in GitHub (to know who can provide that permission check this Getting Access). Select Repository name `Meyd-it/adonis-server`(for **back-end**) and `Meyd-it/next-react-app`(for **front-end**). Then provide the Branch name `meydit_prod`. Click `Next` button.

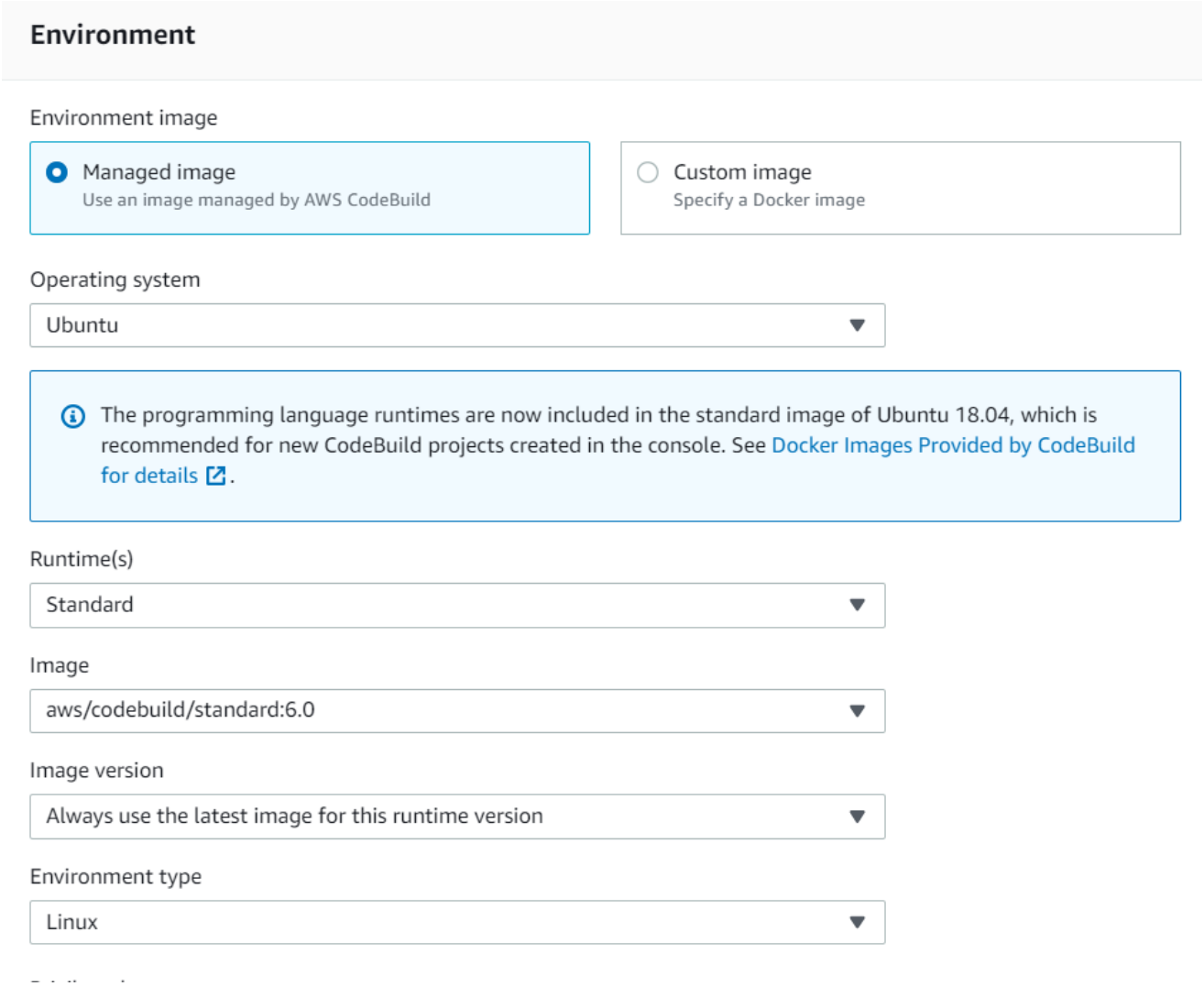




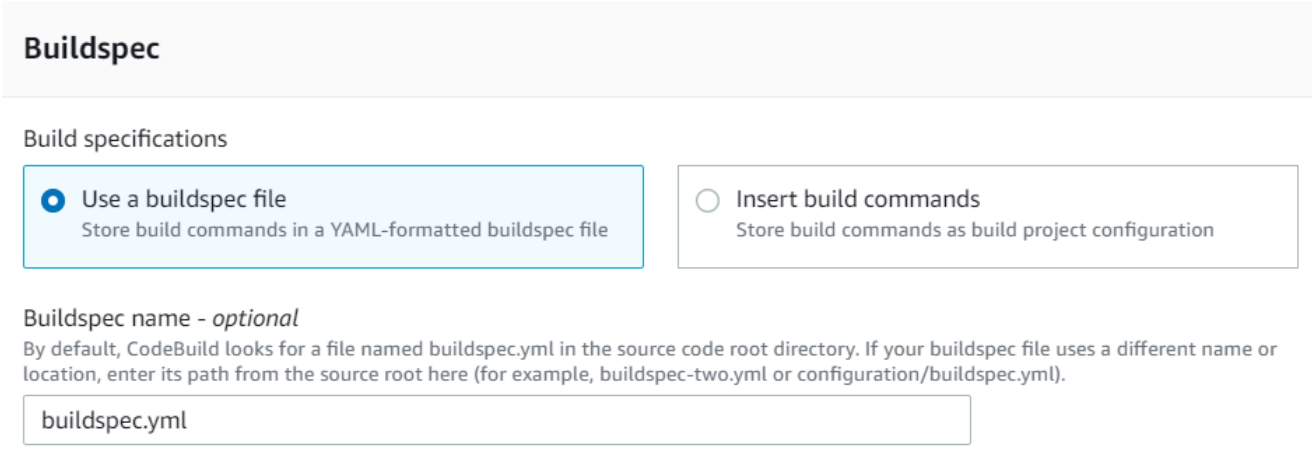
5. In the Build stage, select `AWS CodeBuild` as the build provider and create a new CodeBuild project by clicking `Create Project` button. A new window to create the project is opened, give a name to the project.



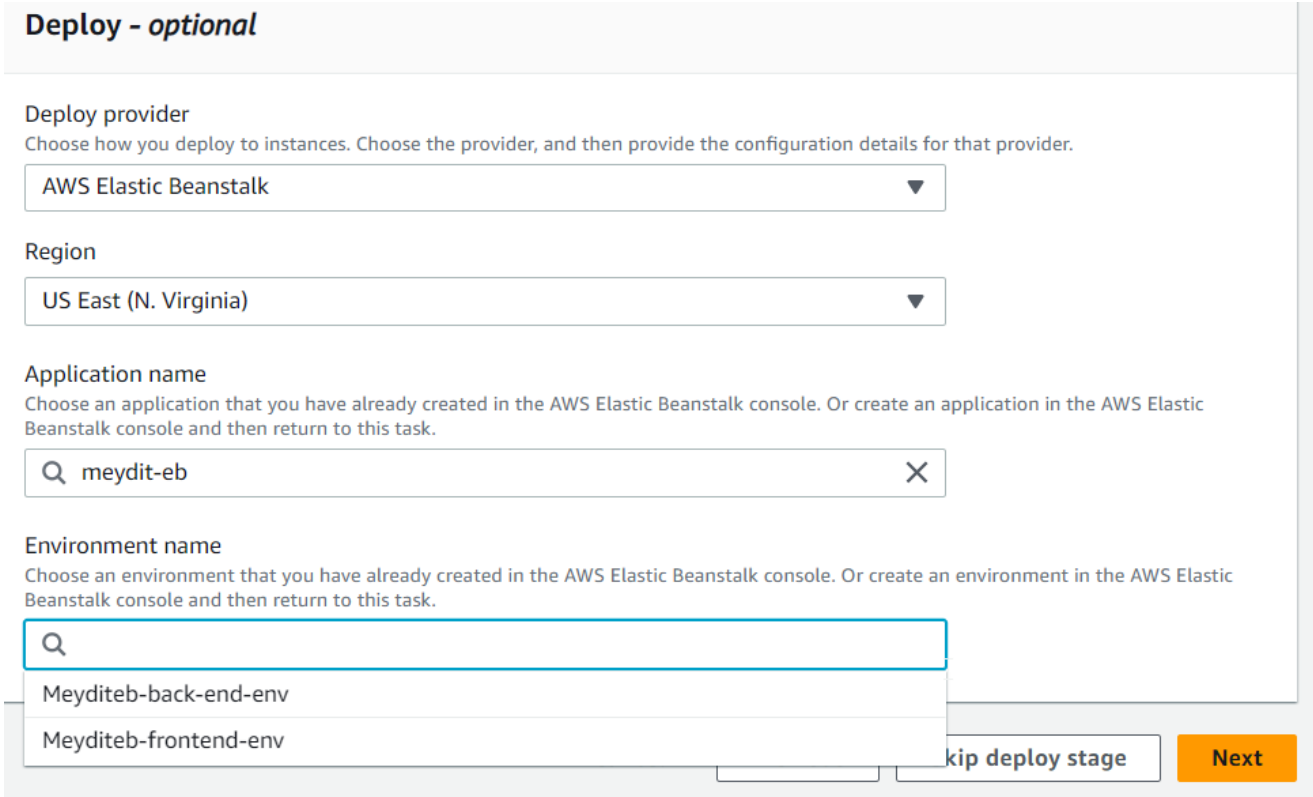
In Environment section, choose Operating system `Ubuntu`, Runtime `Standard`, Image `aws/codebuild/standard:6.0` and Environment type `Linux`.



In Buildspec section, give the name of the buildspec file that is in the root of the project. This file is different for back-end and front-end, check this section to know more Buildspec.yml files. Click `Continue to CodePipeline` button.



6. After create the project, in the build stage stage, click the `Next` button.
7. In the deploy stage section, choose the Deploy provider `Elastic Beanstalk`, Application Name and the Environment name already created in the Elastic Beanstalk. Click `Next` button.



8. Review your pipeline settings and click on `Create pipeline`.
9. Once the pipeline is created, CodePipeline will automatically trigger a build and deploy process based on the settings that were setting up. You can monitor the progress of each stage in the pipeline and view the logs and artifacts generated by each action.

Buildspec.yml

- Back-End: Following is a description of the buildspec yaml file for the back-end:
  - The version: 0.2 indicates the version of the build specification syntax to use.
  - The phases section specifies the different phases of the build process. In this case, there are two phases: install and build. The *install* phase specifies that the Node.js runtime version 16 should be used, and that npm install should be run to install the dependencies for the project. The *build* phase specifies that the command npm run build should be run to build the project.
  - The artifacts section specifies the output artifacts of the build process. In this case, it specifies that all files should be included in the output artifact.

```
version: 0.2

phases:
  install:
    runtime-versions:
      nodejs: 16
    commands:
      - npm install

  build:
    commands:
      - npm run build

artifacts:
  files:
    - '**/*'
```

- Front-End: Following is a description of the buildspec yaml file for the front-end:
  - The version 0.2 at the top specifies the version of the build specification language.
  - The phases section defines the different stages of the build process. In this case, the *install* phase installs the Node.js runtime version 16 and runs the npm install command to install the project's dependencies. The *pre_build* phase runs a command to print a message saying it's installing NPM dependencies. The *build* phase runs the npm install command to install the @svgr/webpack@5.5.0 package and the npm run build command to build the Next.js application. The *post_build* phase prints a message saying the build is completed on the current date.
  - The artifacts section specifies the type of artifact and the files that should be included in it. In this case, the artifact is a zip file, and the files include the Next.js build output files in the .next directory, the package.json file, and the next.config.js file.
  - The cache section specifies the paths to be cached, which in this case is the node_modules directory to speed up future builds by reusing previously installed dependencies.

```
version: 0.2

phases:
  install:
    runtime-versions:
      nodejs: 16
    commands:
      - npm install
  pre_build:
    commands:
      - echo Installing source NPM dependencies...
  build:
    commands:
      - echo Build started on `date`
      - npm install @svgr/webpack@5.5.0
      - npm run build
  post_build:
    commands:
      - echo Build completed on `date`
artifacts:
  type: zip
  files:
    - '.next/**/*'
    - 'package.json'
    - 'next.config.js'
cache:
  paths:
    - node_modules
```

Cloud Formation

CloudFormation is used to create and manage a collection of related AWS resources, provision them in an orderly and predictable fashion, and update and delete them as a single unit. With CloudFormation, you can easily reproduce and manage the infrastructure in a consistent manner, while also maintaining version control of your infrastructure as code.

To use CloudFormation, a CloudFormation template in JSON or YAML format is required, it describes the desired resources and their configurations. There are two ways to create a template, first one is writing the CloudFormation template from scratch or use one of the pre-built templates provided by AWS or other third-party vendors. Once the CloudFormation template is created, it is possible to use the AWS Management Console, AWS CLI, or SDKs to create, update, or delete a stack that contains the resources specified in the template.

Using CloudFormation provides several benefits, including:

- Automation: CloudFormation automates the provisioning and deployment of AWS resources, so you don't have to perform each task manually.

- Consistency: You can ensure that your infrastructure is consistent across different environments and applications.
- Reusability: You can reuse templates across different applications and environments.
- Scalability: You can easily scale up or down your infrastructure based on the changing demands of your application.
- Cost-Effective: You only pay for the AWS resources that you use, and you can easily track and manage your expenses using AWS Cost Explorer.

Elastic Beanstalk

Application Using CDK

```
    const application = new beanstalk.CfnApplication(this,
'UnoElasticBeanstalkCdk', {
      applicationName: 'unoelasticbeanstalkcdk'
    });

    // Create an IAM role for environment
    const elasticbeanstalkRole = new iam.Role(this,
'ElasticBeanstalkRoleCdk', {
        assumedBy: new iam.ServicePrincipal('ec2.amazonaws.com'),
     });

    const instanceProfile = new iam.CfnInstanceProfile(this,
'ProfileEBRoleCdk', {
      instanceProfileName: 'profileebrolecdk',
      roles: [
        elasticbeanstalkRole.roleName
      ]
  });
```

Environment Using CDK

```
const environment = new beanstalk.CfnEnvironment(this,
'UnoEnvironmentCdk', {
      environmentName: 'unoenvironmentcdk',
      applicationName: application.applicationName ||
'unoelasticbeanstalkcdk',
      solutionStackName: '64bit Amazon Linux 2 v5.7.0 running Node.js
16',
      optionSettings: [
        {
          namespace: 'aws:autoscaling:launchconfiguration',
          optionName: 'InstanceType',
          value: 't2.medium'
        },
        {
          namespace: 'aws:autoscaling:launchconfiguration',
          optionName: 'IamInstanceProfile',
          value: instanceProfile.instanceProfileName,
      }
```

```
        ],
    });
```

CodePipeline

Cloud Formation Template

An example of deployment using ECS and Docker

The process to deploy the project using Elastic Container Service and CodePipeline works as following:

- Developers push the code changes to the source repository, which triggers the CodePipeline.
- The CodePipeline retrieves the source code from the source repository and starts the build process. The build process creates a Docker image that includes the application and its dependencies.
- After the build process completes, the Docker image is pushed to the container repository.
- The CodePipeline triggers an update to the ECS task definition, which specifies the container image to use and any other relevant configuration settings.
- The ECS service takes the new task definition and creates a new task with the updated container image. The new task is launched in the same cluster as the existing tasks.
- The ECS service automatically drains connections from the existing tasks and redirects them to the new task.
- Once all connections have been drained from the old tasks, they are stopped and removed.
- The deployment is complete, and the application runs on the updated container image.

The following information can be found it in this document:

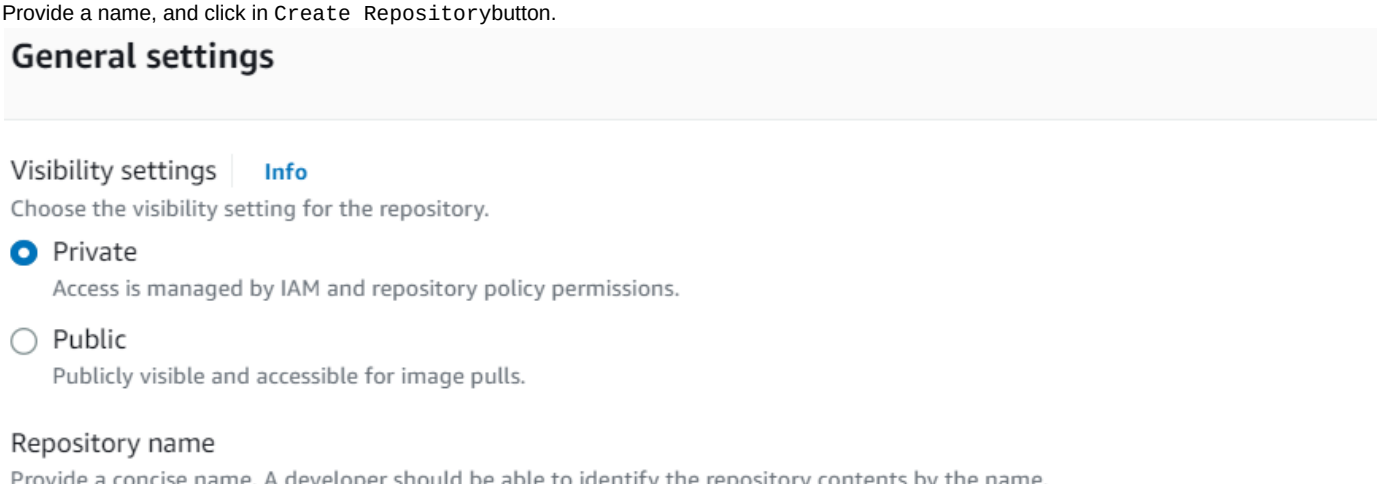
- Create container repository
- Create an ECS service
- Create a Task Definition
- Create a Cluster's Service
- Set up the CodePipeline
- Files in the project root

Create container repository

The container repository is used to store the Docker image. Follow the next steps to create it:

1. Navigate to Elastic Container Registry (ECR)
2. Click in `Create Repository`button.

Provide a name, and click in `Create Repository`button.



855390817614.dkr.ecr.us-east-1.amazonaws.com/ meydit-repository

Create an ECS service

1. Navigate to Elastic Container Service.
2. Click in `Create Cluster` button.
3. In Cluster template, choose EC2 Linux + Networking. Then click in `Next Step` button.

Select cluster template

The following cluster templates are available to simplify cluster creation. Additional configuration and integrations can be added later.

Networking only

Resources to be created:

Cluster

VPC (optional)

Subnets (optional)

For use with either AWS Fargate (Windows/Linux) or with External instance capacity.

EC2 Linux + Networking

Resources to be created:

Cluster

VPC

Subnets

Auto Scaling group with Linux AMI

EC2 Windows + Networking

Resources to be created:

Cluster

VPC

Subnets

Auto Scaling group with Windows AMI

4. Give a name to the cluster:

Configure cluster

Cluster name* meydit-cluster

Create an empty cluster

5. In instance configuration section, choose the instance type `t3.medium` and number of instances `1`:

Instance configuration

Provisioning Model On-Demand Instance

With On-Demand Instances, you pay for compute capacity by the hour, with no long-term commitments or upfront payments.

Spot

Amazon EC2 Spot Instances let you take advantage of unused EC2 capacity in the AWS cloud. Spot Instances are available at up to a 90% discount compared to On-Demand prices. Learn more

EC2 instance type* t3.medium

Manually enter desired instance type

Number of instances* 1

EC2 AMI ID* Amazon Linux 2 AMI [ami-0533…

Root EBS Volume Size (GiB) 30

Key pair None - unable to SSH

You will not be able to SSH into your EC2 instances without a key pair. You can create a new key pair in the EC2 console.

6. In networking section, choose VPC the one by default, Subnets select just one, Auto assign public IP `enabled` and security group the one by default. Then click `Create` button.

Networking

Configure the VPC for your container instances to use. A VPC is an isolated portion of the AWS cloud populated by AWS objects, such as Amazon EC2 instances. You can choose an existing VPC, or create a new one with this wizard.

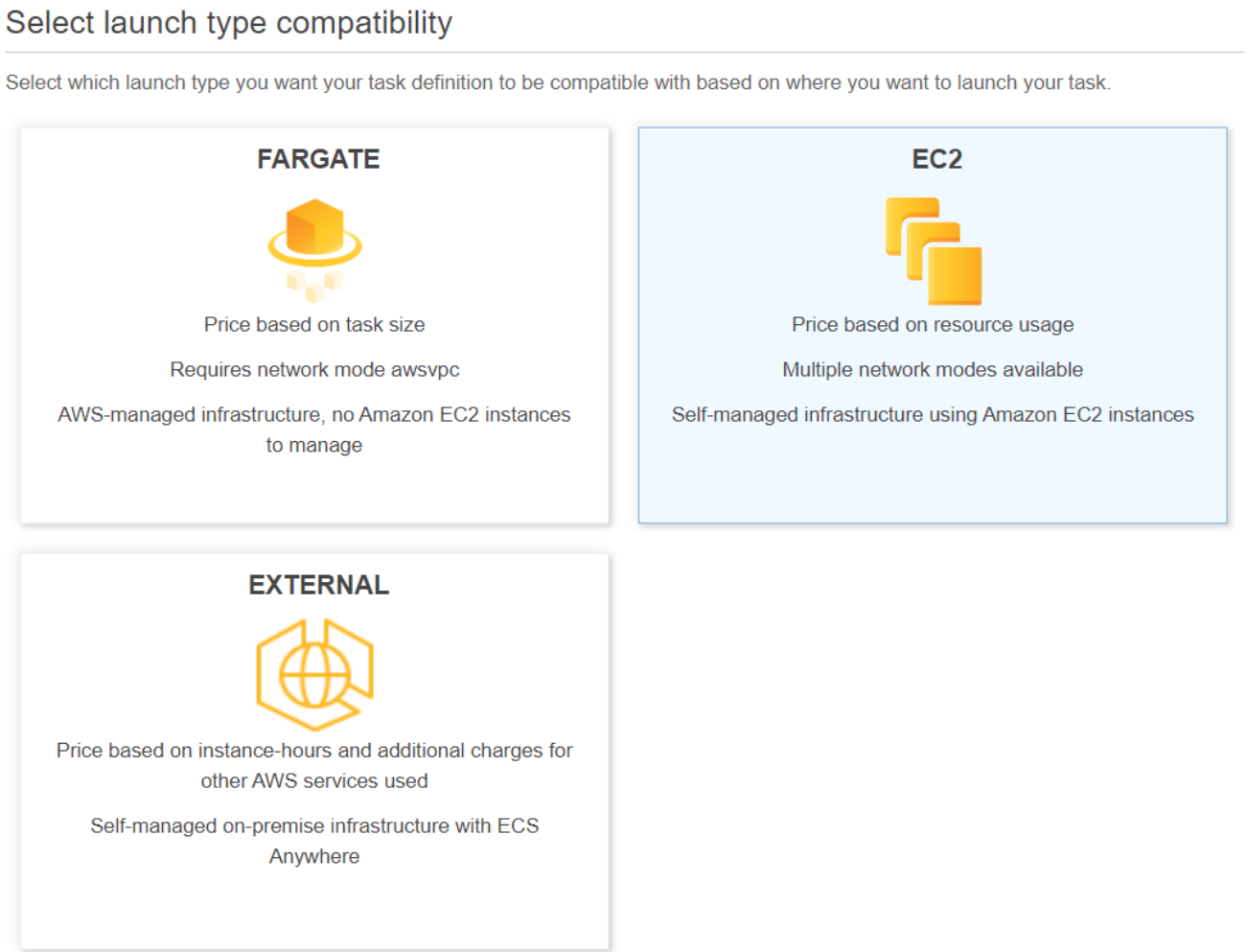
VPC vpc-7fbf2002 (172.31.0.…

Check the structure for vpc-7fbf2002 in the Amazon EC2 console.

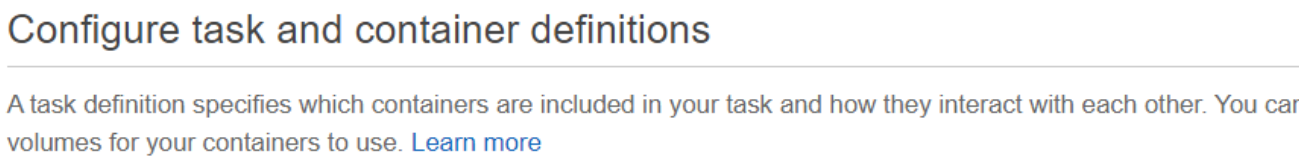
Subnets subnet-306b2211 (172.31.80.0/20) - us-east-1c

Create a Task Definition

1. Navigate to Elastic Container Service.
2. Click in Task Definition in the left menu.
3. Click in `Create new Task Definition` button.
4. Click in `EC2` as launch type compatibility. Then, click in `Next` button.



5. Give a name to the task definition:



Task definition name* meydit-task

Requires compatibilities* EC2

Task role *Select a role...*

Optional IAM role that tasks can use to make API requests to authorized AWS services. Create an Amazon Elastic Container Service Task Role in the IAM Console

Network mode <default>

If you choose <default>, ECS will start your container using Docker's default networking mode, which is Bridge on Linux and NAT on Windows. Windows tasks support the <default> and awsvpc network modes.

6. In task memory enter `128`:

Task size

The task size allows you to specify a fixed size for your task. Task size is required for tasks using the Fargate launch type and is optional for the EC2 or External launch type. Container level memory settings are optional when task size is set. Task size is not supported for Windows containers.

Task memory (MiB) 128

The amount of memory (in MiB) used by the task. It can be expressed as an integer using MiB, for example 1024, or as a string using GB, for example '1GB' or '1 gb'.

Task CPU (unit)

The number of CPU units used by the task. It can be expressed as an integer using CPU units, for example 1024, or as a string using vCPUs, for example '1 vCPU' or '1 vcpu'.

Task memory maximum allocation for container memory reservation

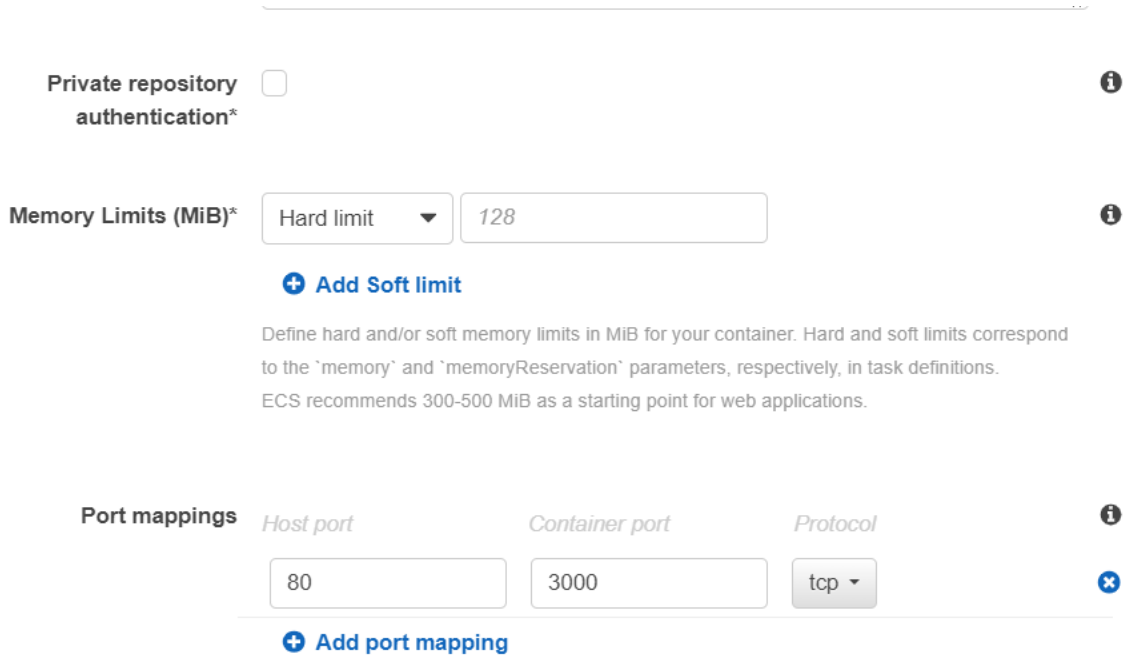
0 128 shared of 128 MiB

7. Click in `Add Container` button. Give a name to the container, add an image URI and set the port mappings to `80:3000`. Then, click in `Add` button.

Standard

Container name* meydit-container

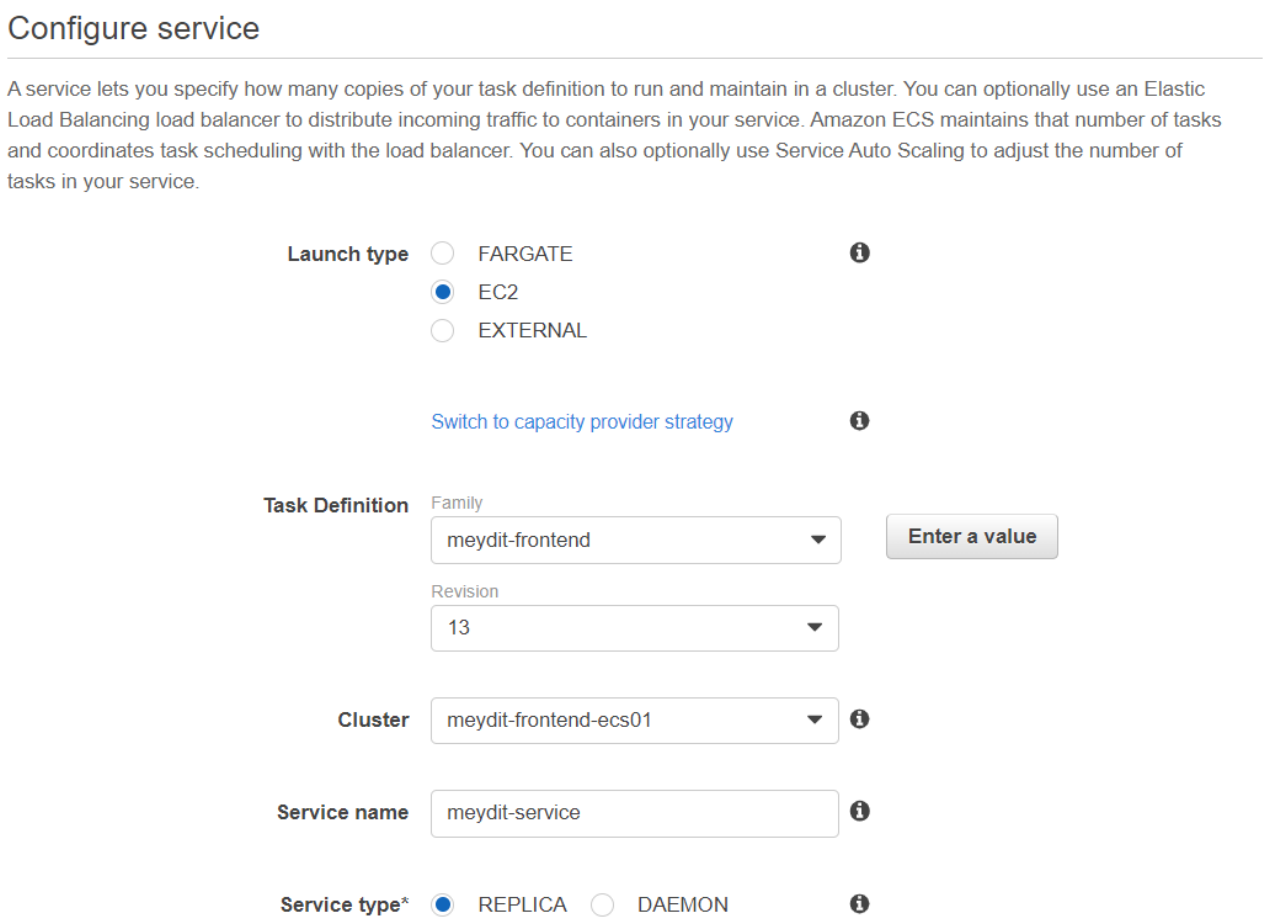
Image* image-uri

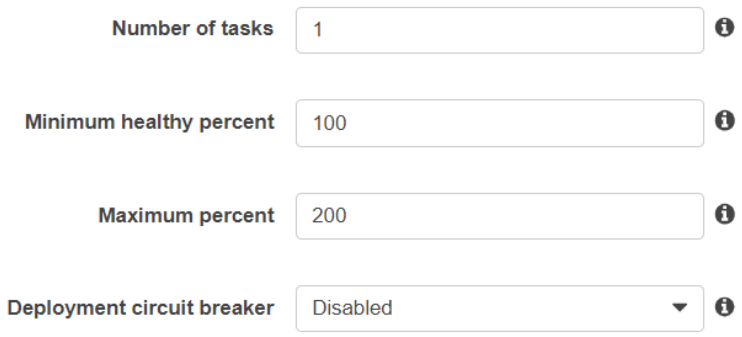


8. Click in `Create` button.

Create a Cluster's Service

1. Navigate to Elastic Container Service.
2. Click in the name of the Cluster that was created.
3. In the tag Services, click in `Create` button.
4. Launch type choose `EC2`, select the task definition that was created, give a name for the service, number of tasks type `1` :

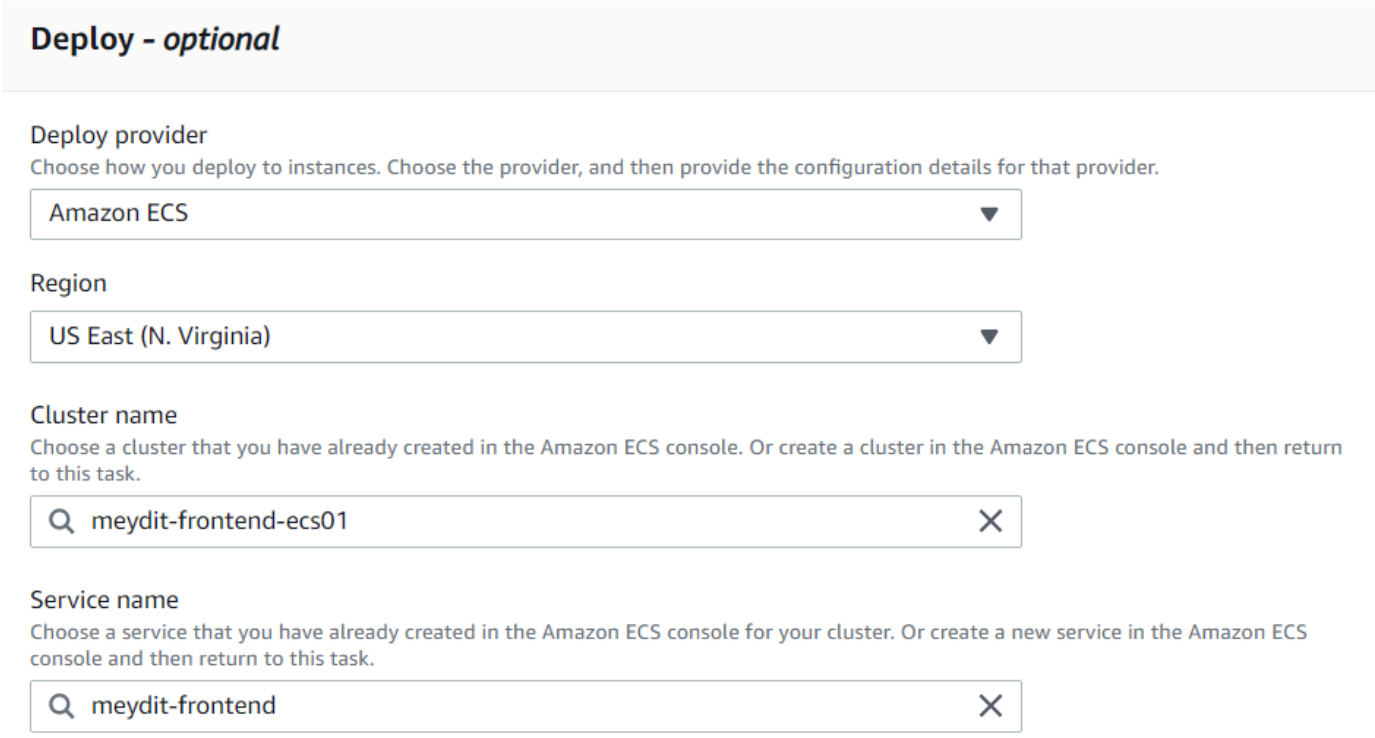




5. Click in `Create Service` button.

Set up the CodePipeline

Check the section CodePipeline, the configuration is the same, except for the Deploy section. In Deploy stage instead Beanstalk, choose Deploy provider `Amazon ECS`, the Cluster Name and Service Name that were created:



The Buildspec.yml file is different, it will be explained in the next section.

Files in the project root

- **Docker file**

This code defines a Dockerfile that is used to build a Node.js application. The Dockerfile is divided into two stages: the build stage and the production stage.

- The build stage uses the official Node.js 16-alpine Docker image as a base image. The ARG directive is used to declare a build-time argument ENV_VARIABLE, which is used to set an environment variable NEXT_PUBLIC_GA_MEASUREMENT_ID, in this section more variable can be added. The WORKDIR directive sets the working directory for the subsequent instructions. The COPY directive copies the contents of the current directory (the root directory of the application) to the working directory of the Docker image. The RUN directive executes the npm install and npm run build commands to install dependencies and build the application. The last two RUN directives remove the development dependencies and install only the production dependencies.
- The production stage uses the official Node.js 16-alpine Docker image as a base image as well. It also uses the same ARG directive to set the same environment variable NEXT_PUBLIC_GA_MEASUREMENT_ID. The ENV directive sets the NODE_ENV environment variable to

production. The RUN directives create a new user and group, and create a working directory for the application. The COPY directive copies the necessary files from the build stage to the production stage, and sets the ownership of the files to the new user and group. The EXPOSE directive exposes port 8080 for the container, and the CMD directive specifies the command to start the application.

```
FROM node:16-alpine AS BUILD_IMAGE
ARG ENV_VARIABLE
ENV NEXT_PUBLIC_GA_MEASUREMENT_ID ${ENV_VARIABLE}
RUN mkdir -p /usr/app/
WORKDIR /usr/app

COPY ./ ./

RUN npm install
RUN npm run build
RUN rm -rf node_modules
RUN npm install --production

FROM node:16-alpine
ARG ENV_VARIABLE
ENV NEXT_PUBLIC_GA_MEASUREMENT_ID ${ENV_VARIABLE}
ENV NODE_ENV production
RUN addgroup -g 1001 -S user_group
RUN adduser -S application -u 1001
RUN mkdir -p /usr/app/
WORKDIR /usr/app
COPY --from=BUILD_IMAGE --chown=application:user_group /usr/app
/node_modules ./node_modules
COPY --from=BUILD_IMAGE --chown=application:user_group /usr/app/package.
json ./
COPY --from=BUILD_IMAGE --chown=application:user_group /usr/app/package-
lock.json ./
COPY --from=BUILD_IMAGE --chown=application:user_group /usr/app/public .
/public
COPY --from=BUILD_IMAGE --chown=application:user_group /usr/app/.next .
/.next


EXPOSE 8080
CMD ["npm","start"]
```

- Buildspec.yml

This is the CodeBuild buildspec file for building a Docker image, tagging it, pushing it to a repository, and deploying the updated image to an ECS service.

- `env` section defines environment variables for the build process.
- `pre_build` phase performs actions before the build process starts, such as logging in to Amazon ECR and Docker Hub, and setting variables.
- `build` phase executes the main build process which includes building a Docker image, tagging it with a version tag derived from the commit hash or a default value, and pushing it to the ECR repository.
- `post_build` phase runs after the build and deployment is completed, which includes writing the image definition file, updating the ECS service with the latest image and forcing a new deployment.

- `artifacts` section specifies the output files to include in the build artifacts, which in this case is the `imagedefinitions.json` file that contains the image URI for the updated image.

```
version: 0.2

env:
  variables:
    DOCKERHUB_USERNAME: "your-username"
    DOCKERHUB_PASSWORD: "your-password"

phases:
  pre_build:
    commands:
      - echo Logging in to Amazon ECR...
      - aws --version
      - aws ecr get-login-password --region us-east-1 | docker login --
username AWS --password-stdin 855390817614.dkr.ecr.us-east-1.amazonaws.
com
      - REPOSITORY_URI=855390817614.dkr.ecr.us-east-1.amazonaws.com
/meydit-frontend
      - COMMIT_HASH=$(echo $CODEBUILD_RESOLVED_SOURCE_VERSION | cut -c
1-7)
      - IMAGE_TAG=${COMMIT_HASH:=prod}
      - echo Logging in to Docker Hub...
      - echo "$DOCKERHUB_PASSWORD" | docker login --username
"$DOCKERHUB_USERNAME" --password-stdin
  build:
    commands:
      - echo Build started on `date`
      - echo Building the Docker image...
      - docker build --build-arg ENV_VARIABLE=357846786 -t
$REPOSITORY_URI:prod .
      - docker tag $REPOSITORY_URI:prod $REPOSITORY_URI:$IMAGE_TAG
  post_build:
    commands:
      - echo Build completed on `date`
      - echo Pushing the Docker images...
      - docker push $REPOSITORY_URI:prod
      - docker push $REPOSITORY_URI:$IMAGE_TAG
      - echo Writing image definitions file...
      - printf '[{"name":"meydit-frontend","imageUri":"%s"}]'
$REPOSITORY_URI:$IMAGE_TAG > imagedefinitions.json
      - aws ecs update-service --cluster meydit-frontend-ecs01 --
service meydit-frontend --force-new-deployment --region us-east-1 --
deployment-configuration "maximumPercent=200,minimumHealthyPercent=0"
artifacts:
    files: imagedefinitions.json
```

Getting Access

Below are the platforms/tools that require credentials and the responsible for managing them:

Platform/Tool	Description	Responsible
Slack	This is the main communication channel for team messaging and collaboration	@ Susan Hansen
Confluence	We use Confluence to create and store all of the project documentation.	@ Susan Hansen
Jira/Trello	These tools help to manage development tasks, such as creating tickets for new features and tracking bugs.	@ Susan Hansen
GitHub	We use GitHub for version control and as a repository for our front-end and back-end code.	@ Mayjo Antony Parth @ Susan Hansen
GoDaddy	The project's DNS is managed by GoDaddy, which is the company responsible for its domain name registration and DNS configuration	@ Susan Hansen
AWS	The deployment and CD/CI processes are managed using AWS services.	@ Mayjo Antony @ Susan Hansen @ Evelyn Caviedes Arciniegas

Installation and Configuration Guide for Developers

This guide is intended to help developers set up the Meyd.It project to work with Front-End, Back-End, Database, and Test Back-End Routes. By following each step, you will be able to work with all the components of the project.

This is the Guide Content:

Nodejs Installation

The back-end is designed to work with Node.js version 16.19.0. For this reason, it is recommended to use a Node Version Manager (nvm). Follow the steps below to install it:

Install nvm

For Windows PowerShell, download and run the installation script using the following command:

```
iwr -useb https://raw.githubusercontent.com/nvm-sh/nvm/v0.39.1/install.
sh | iex
```

For Git Bash, use the following command:

```
curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.39.1/install.
sh | bash
```

If after do the installation the next message is displayed:

```
=> Profile not found. Tried ~/.bashrc, ~/.bash_profile, ~/.zshrc, and
~/.profile.
```

Then, run the next command:

```
export NVM_DIR="$HOME/.nvm"
[ -s "$NVM_DIR/nvm.sh" ] && \. "$NVM_DIR/nvm.sh"  # This loads nvm
```

Install Node.js

Install the needed version for back-end with the next command

```
nvm install 16.19.0
```

Install the version for front-end with the next command

```
nvm install 18.15.0
```

Switch between Node.js versions, run the next command, replace version for the version number that will be used

```
nvm use <version>
```

Back-End

Setting up

Use the following command to clone the `adonis-server` repository

```
git clone https://github.com/Meyd-it/adonis-server.git
```

Change your current directory to the cloned project directory:

```
cd adonis-server
```

Switch to the `minh_dev` branch:

```
git checkout minh_dev
```

Create a new branch based on the branch-naming conventions described below Branch Naming Conventions :

```
git checkout -b new_branch_name
```

Run the following command to install AdonisJS:

```
npm install -g @adonisjs/cli
```

Install the required dependencies for the project using the following command:

```
npm install
```

Create a new file called `.env` and copy the following values. The `APP_KEY` value will be generated in the next step.

```
#App
HOST=127.0.0.1
PORT=3333
NODE_ENV=development
APP_URL=http://${HOST}:${PORT}
APP_KEY=
LOG_LEVEL=debug

#DB
DB_CONNECTION=pg
DB_HEALTH_CHECK=true
DB_DEBUG=true

#PG
PG_HOST=127.0.0.1
PG_PORT=5432
PG_USER=postgres
PG_PASSWORD=yourpassword
PG_DB_NAME=yourdbname

#GOOGLE
STRIPE_SECRET_KEY=
GOOGLE_APPLICATION_CREDENTIALS_FILE=./google-credentials.json

SESSION_DRIVER=cookie
CACHE_VIEWS=false
```

Generate a new application key by running the following command:

```
adonis key:generate
```

Start the development server using the following command:

```
npm run dev
```

The server will be running at http://127.0.0.1:3333

Database

Install PostgresSQL

Download PostgreSQL from the official website at https://www.postgresql.org/download/

Install PostgreSQL using the downloaded installer.

During the installation process, set a password for the default "postgres" user.

After the installation is complete, open the env. file and replace "<your-password>" with the password you set during the installation process:

```
PG_PASSWORD=<your-password>
```

Note:

If the default port 5432 is already in use on your system, you can specify a different port for the installation, make sure to change the port number in the env. file, for example:

```
PG_PORT=5433
```

Migration

Navigate to the back-end directory `adonis-server`:

```
cd adonis-server
```

Install the pg package (PostgreSQL client for Node.js):

```
npm install pg
```

Start Adonis server in watch mode with this command:

```
node ace serve --watch
```

Run the next command to create the database:

```
node ace pg:setup
```

To create the tables, run the next command:

```
node ace migration:run
```

Front-End

Setting up

Clone the project from GitHub repository called `next-react-app`:

```
git clone https://github.com/Meyd-it/next-react-app.git
```

Change your current directory to the cloned project directory:

```
cd next-react-app
```

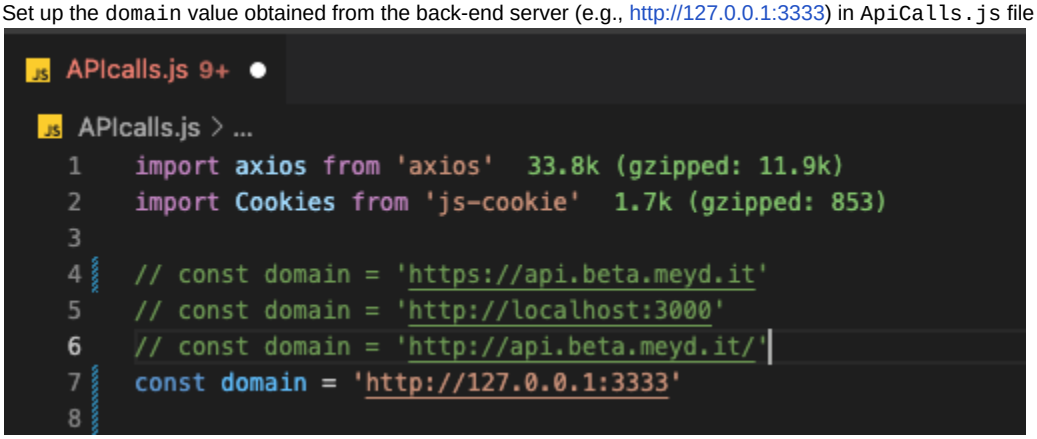
Navigate to the `minh_dev` development branch:

```
git checkout minh_dev
```

Create your own branch using the branch naming conventions specified below Branch Naming Conventions:

```
git checkout -b new_branch_name
```

Set up the `domain` value obtained from the back-end server (e.g., http://127.0.0.1:3333) in `ApiCalls.js` file



Install the required dependencies by running the following command:

```
npm install --force
```

Start the development server by running the following command:

```
npm run dev
```

Error running the server

If you encounter the following error when running the server:

```
ERROR
  opensslErrorStack: [ 'error:03000086:digital envelope routines::
initialization error' ],
  library: 'digital envelope routines',
  reason: 'unsupported',
  code: 'ERR_OSSL_EVP_UNSUPPORTED'
```

Then, run the following command:

```
export NODE_OPTIONS=--openssl-legacy-provider
```

API Requests

To test the back-end routes, you will need to generate a token and install Postman to make API requests.

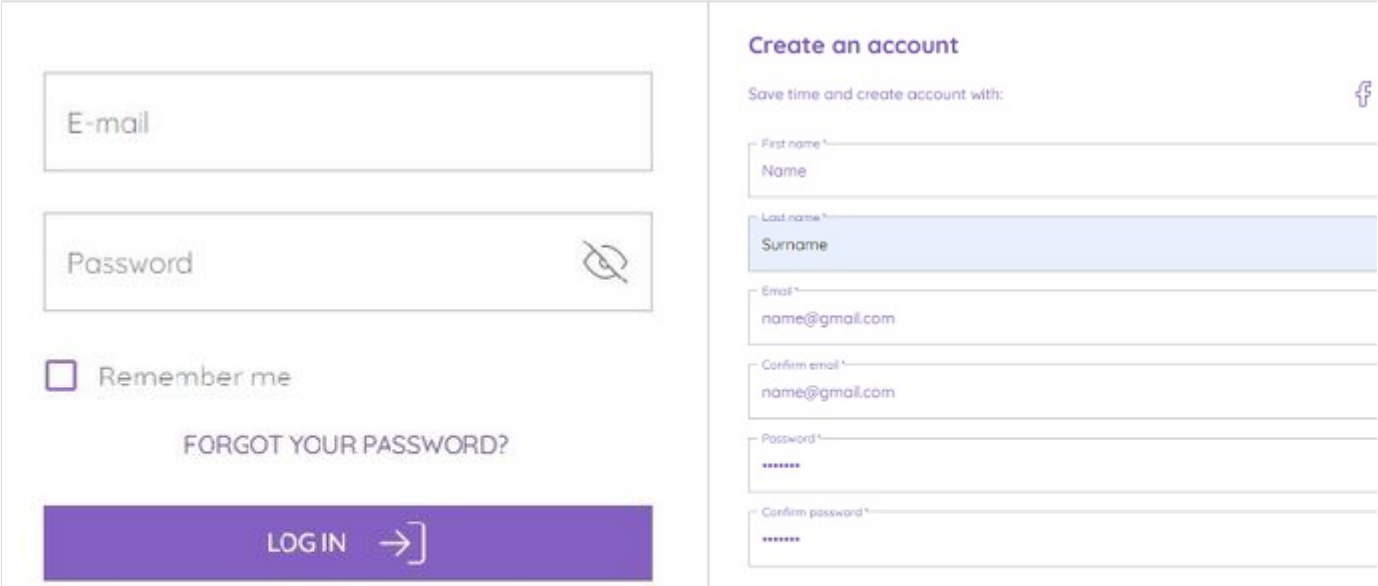
Postman Installation

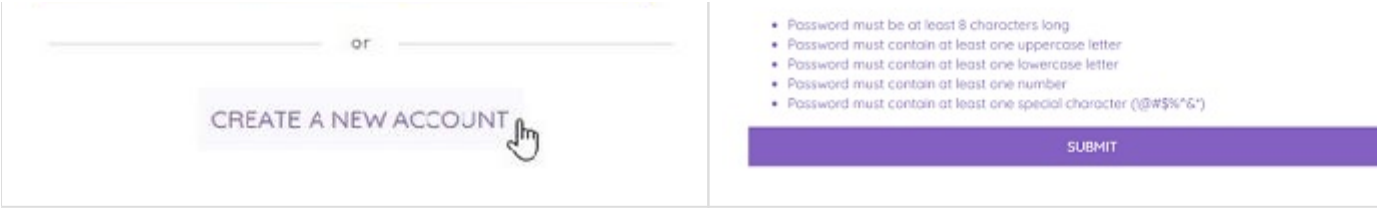
- Go to the Postman website at https://www.postman.com/downloads/.
- Click the "Download" button for the last version of Postman.
- Once the download is complete, open the downloaded file to start the installation process.
- Once the installation is complete, open Postman and start using it to make API requests. To make request a token is required. In the next section it will be explain how to generate it.

Create token

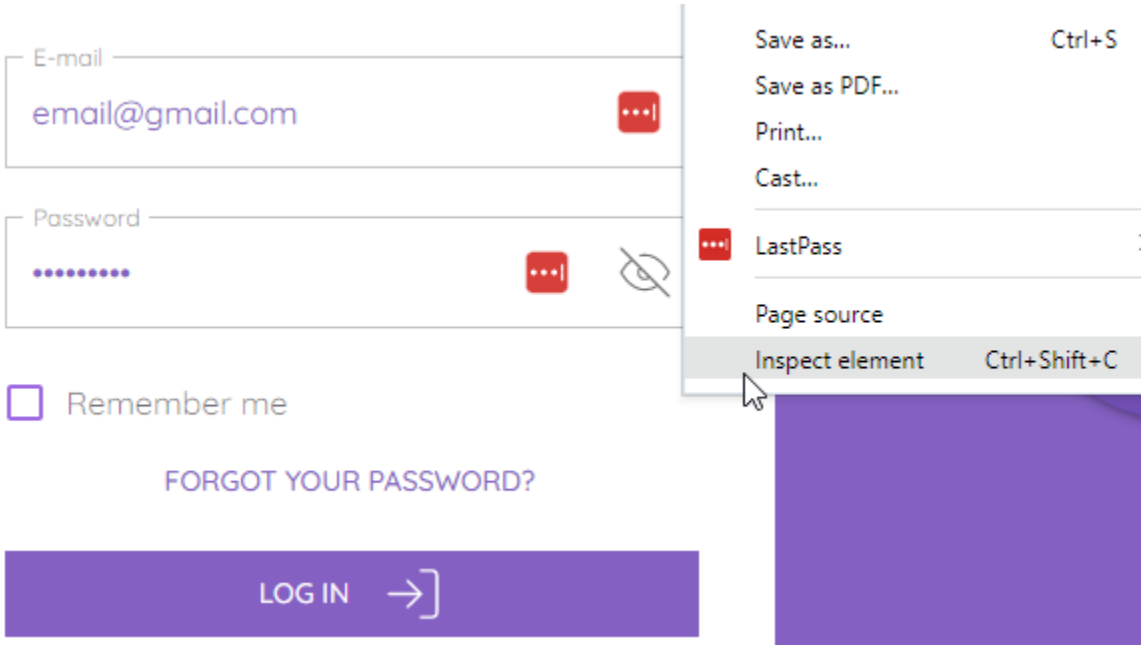
Open the URL for the front-end.

Click on the `Create a New Account` button to create a new user:

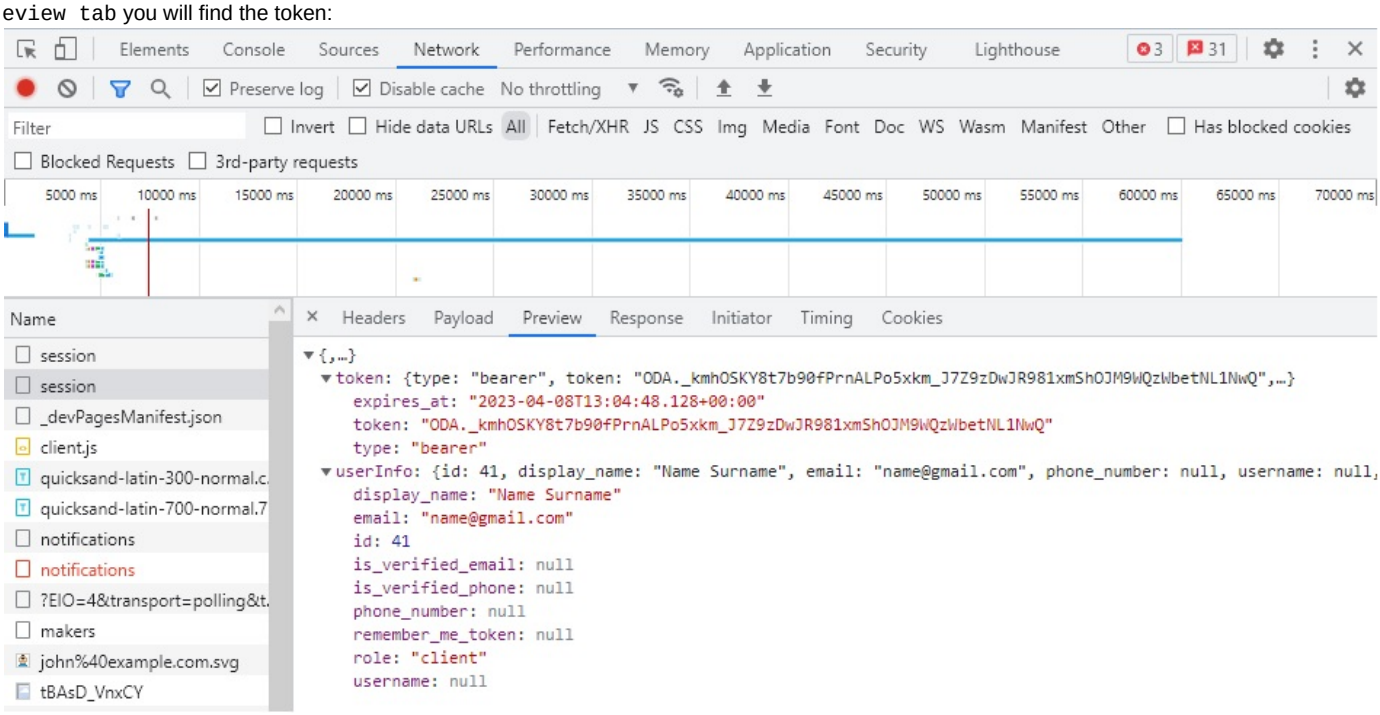




Go to Login, and open the `Inspect Element` tool in the browser to view the network traffic:



In the network traffic enable `Preseve log` and `Disable cache` options. Click the `Log In` button. Look for the `session` request, and in the `Preview tab` you will find the token:



Copy the token and to use it for any authenticated requests.

List Routes

To see all the routes in the project run the following command:

```
adonis list:routes
```

This command display a list of all registered routes in the project:

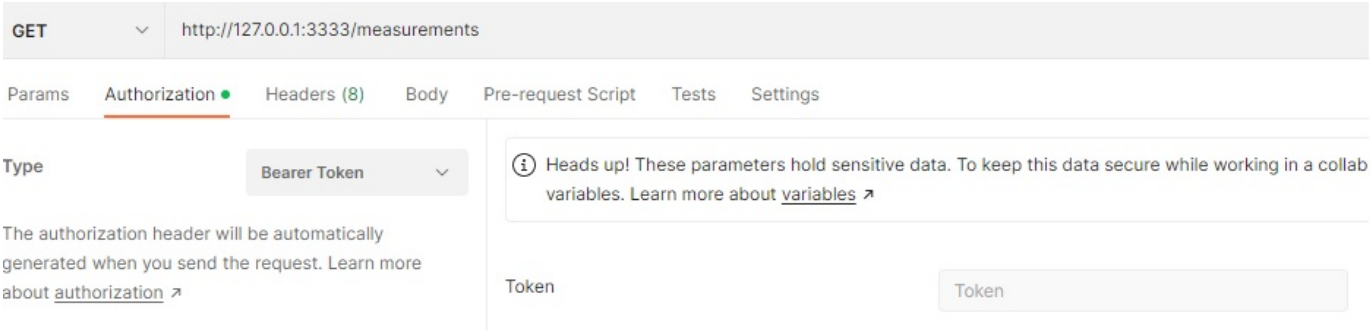
Method	Route	Handler	Middleware	Name
HEAD, GET	/auth/login/:provider	Auth/SocialAuthController.redirect		auth.social.login
HEAD, GET	/auth/callback/:provider	Auth/SocialAuthController.callback		auth.social.callback
POST	/auth/session	Auth/SessionController.create		auth.session.login
DELETE	/auth/session	Auth/SessionController.destroy		auth.session.logout
HEAD, GET	/auth/session	Auth/SessionController.show		auth.session.check
POST	/auth/register	Auth/SessionController.register		auth.session.register
HEAD, GET	/ateliers	AteliersController.index	auth	ateliers.index
POST	/ateliers	AteliersController.store	auth	ateliers.store
HEAD, GET	/ateliers/:id	AteliersController.show	auth	ateliers.show
PUT, PATCH	/ateliers/:id	AteliersController.update	auth	ateliers.update
DELETE	/ateliers/:id	AteliersController.destroy	auth	ateliers.destroy
HEAD, GET	/contacts	ContactsController.index	auth	contacts.index

Make API request in Postman

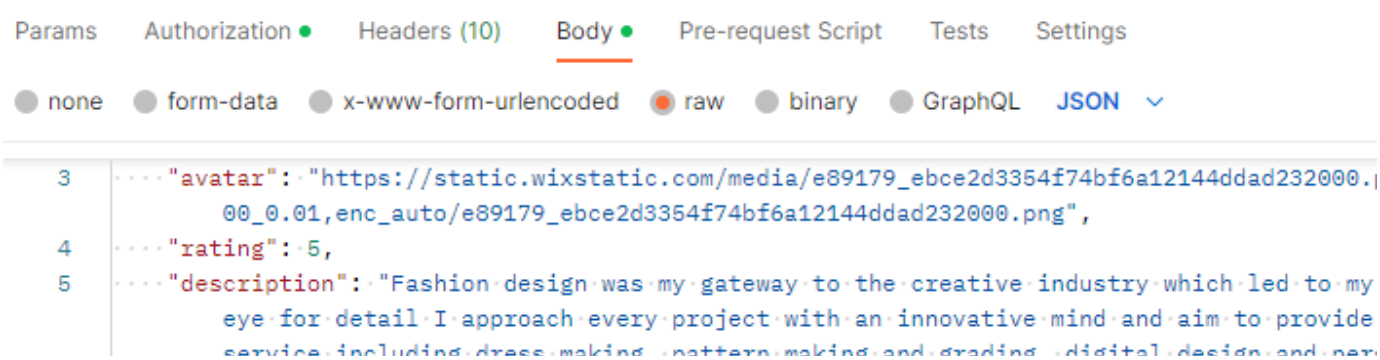
To create API requests through Postman you need to set up the following information:

- Type of request: You can choose between GET, POST, PUT, and DELETE depend on the request you are doing.

- URL: It is the endpoint URL where you want to send the API request. To get the routes check the List Routes section List-Routes.
- Authentication: It necessary to provide an API token. Use the Bearer Token type to authenticate your request. To know how to get the token check Create Token section Create Token.



- Body: If you are making a POST, PUT, or PATCH request, you will need to include a request body in the form of JSON, XML, or other data format. The body can contain information such as data to be inserted or updated. Following you can see an example of the data in JSON format:



```
service including dress making, pattern making and grading, digital design and pol
6   "gallery": "[\"https://static.wixstatic.com/media/e89179_1c956a84f84b4de89dfc195bd3b91f
    jpg\",\"https://static.wixstatic.com/media/e89179_e731fd1208a9443bbad76ecc9dd581f7~mv2_
    e89179_e731fd1208a9443bbad76ecc9dd581f7~mv2_d_1706_2560_s_2.jpg\",\"https://static.wix
    e89179_5e6d8583b33541edab05ab2684c5fc97~mv2_d_3840_5760_s_4_2.jpg/v1/fill/w_446,h_446,
    e89179_5e6d8583b33541edab05ab2684c5fc97~mv2_d_3840_5760_s_4_2.jpg\",\"https://static.w
    fill/w_238,h_238,q_90/e89179_6228dd58962e47e3a755c2bc576ca0e7~mv2.jpg\",\"https://stat
    e89179_f6ca7fcc488840fe9d4ced444ff6d268~mv2_d_1365_2048_s_2.jpg/v1/fill/w_269,h_267,q_
    \"https://static.wixstatic.com/media/e89179_f74499b76d184d91908aa41c7727bb94~mv2.jpg/v
    "
```


Setting up DNS

Check the required domain name Meyd.IT is available on Go daddy website.

1. Log in to the GoDaddy account and navigate to the "My Products" page.Please note that @ Susan Hansen is the only one who has access to DNS Settings, please contact her for any DNS modification.
2. Click on the "DNS" button next to the domain name you want to set up.
3. On the DNS management page, you can add or modify your DNS settings by clicking on the "Add" or "Edit" buttons next to the appropriate fields.f the domain name is available purchase it from the go daddy website.
4. Set Up the Public DNS Service on GoDaddy website.
5. Setup A record in Public DNS to point to the public IP of the website host.

   To set up an A record, which maps a domain name to an IP address, click on the "Add" button next to the "A (Host)" section. In the "Host" field, enter the domain name you want to set up "Meyd.it ". In the "Points to" field, enter the IP address you want to map the domain name to. Click on the "Save" button to save your changes.

   The "A" stands for "address" and this is the most fundamental type of DNS record: **it indicates the IP address of a given domain**.

A

Type	Domain Name	TTL	Address
A	Meyd.it	1800	151.101.1.195 | Check IP Blacklist **Owner:** Fastly Inc. | WHOIS | AS54113

6. It can now be verified on dns checker tool as shown in below screenshot.

A nameserver is a server in the DNS that **translates domain names into IP addresses**. Nameservers store and organize DNS records, each of which pairs a domain with one or more IP addresses. These servers act as the bridge between domain names, which we humans can remember, with IP addresses, which computers can process.

NS

Type	Domain Name	TTL	Canonical Name
NS	Meyd.it	3600	ns81.domaincontrol.com. (97.74.101.32 | Check IP Blacklist) **Owner:** GoDaddy.com LLC | WHOIS | AS44273
NS	Meyd.it	3600	ns82.domaincontrol.com. (173.201.69.32 | Check IP Blacklist) **Owner:** GoDaddy.com LLC | WHOIS | AS44273

7. Setup MX Record for sending and receiving email for meyd.it domain.

An MX record, or mail exchange record, is a DNS record that **routes emails to specified mail servers**. MX records essentially point to the IP addresses of a mail server's domain.

MX

Type	Domain Name	TTL	Preference	Address
MX	meyd.it	3600	30	mx4.email-hosting.net.au.(103.252.152.46 | Check IP Blacklist) **Owner:** Synergy Wholesale Pty Ltd | WHOIS | AS45638

MX	meyd.it	3600	10	mx1.email-hosting.net.au.(103.252.153.1 | Check IP Blacklist) **Owner:** Synergy Wholesale Pty Ltd | WHOIS | AS45638
MX	meyd.it	3600	10	mx2.email-hosting.net.au.(103.252.152.36 | Check IP Blacklist) **Owner:** Synergy Wholesale Pty Ltd | WHOIS | AS45638
MX	meyd.it	3600	20	mx3.email-hosting.net.au.(103.252.153.16 | Check IP Blacklist) **Owner:** Synergy Wholesale Pty Ltd | WHOIS | AS45638

8. Setup TXT Record as and when required for domain ownership verification.

By uploading a new TXT record with specific information included, or editing the current TXT record, an administrator can prove they control that domain. The tool or cloud provider can check the TXT record and see that it has been changed as requested.

TXT

Type	Domain Name	TTL	Record
TXT	meyd.it	3600	google-site-verification =xjdQ7LHOn9DSFu5KssIRANm_6oRJjn6KWEC8-__lifU
TXT	meyd.it	3600	NETORGFT3959574.onmicrosoft.com
TXT	meyd.it	3600	v=spf1 +a +mx +include:spf.email-hosting.net.au ~all
TXT	meyd.it	3600	google-site-verification =ZuVYPKkHWSCtcicMS06RxzHLfLkmvowJAE71BH9ffCI