Create a simple pipeline (CodeCommit repository)

- In this tutorial, you use CodePipeline to deploy code maintained in a CodeCommit repository to a single Amazon EC2 instance. Your pipeline is triggered when you push a change to the CodeCommit repository. The pipeline deploys your changes to an Amazon EC2 instance using CodeDeploy as the deployment service.

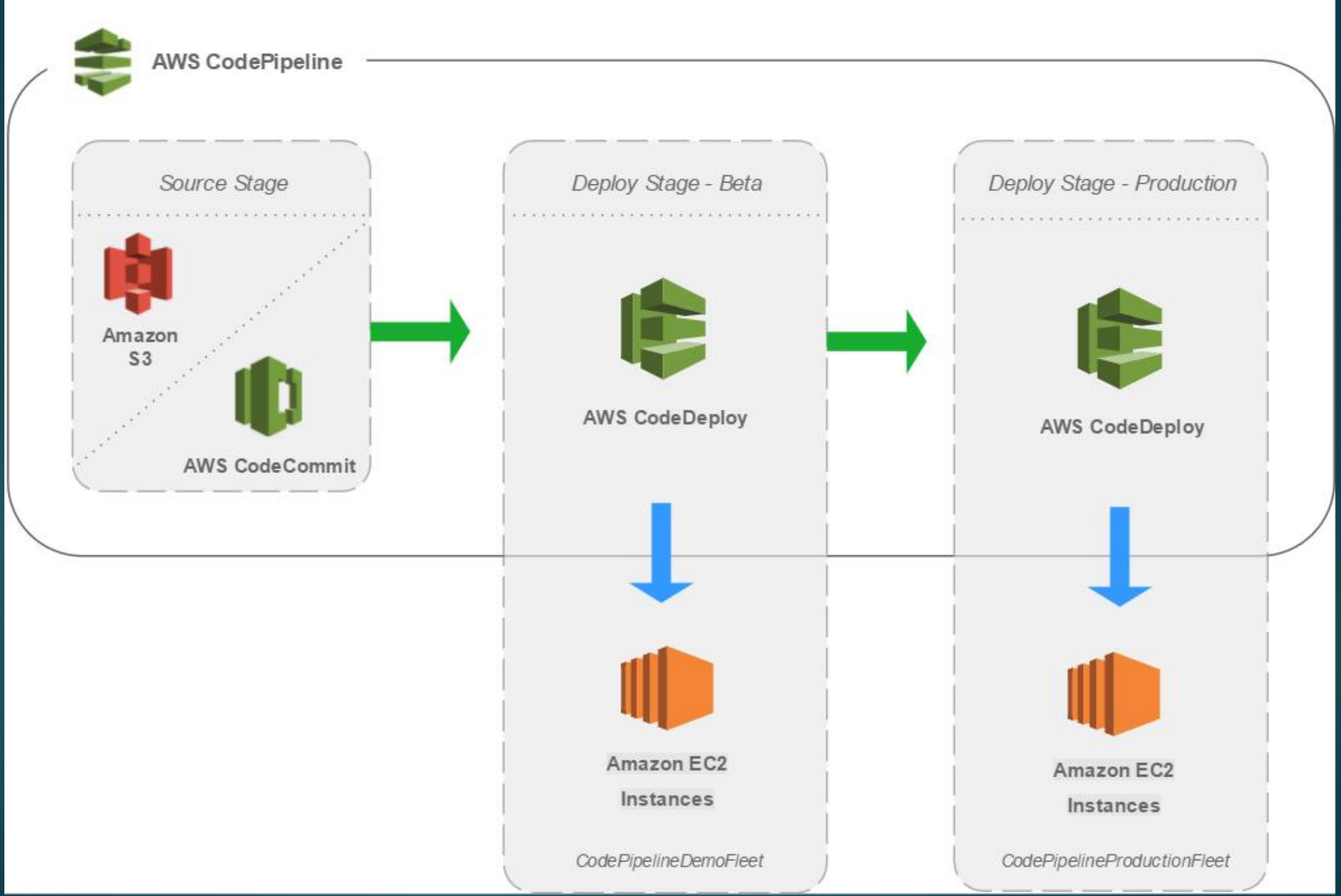
- **The pipeline has two stages**:

- A source stage (**Source**) for your CodeCommit source action.
- A deployment stage (**Deploy**) for your CodeDeploy deployment action.

The easiest way to get started with AWS CodePipeline is to use the **Create Pipeline** wizard in the CodePipeline console.

Note

Before you begin, make sure you've set up your Git client to work with CodeCommit.


AWS CodePipeline
Source Stage
Amazon S3
AWS CodeCommit
Deploy Stage - Beta
AWS CodeDeploy
Amazon EC2 Instances
CodePipelineDemoFleet
Deploy Stage - Production
AWS CodeDeploy
Amazon EC2 Instances
CodePipelineProductionFleet

Setting up for AWS CodeCommit

View and manage your credentials

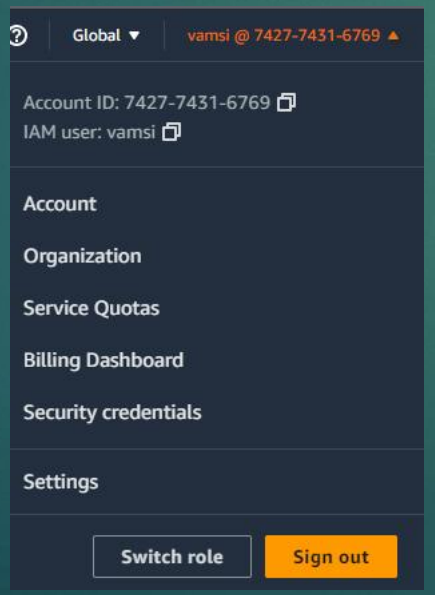
You can view and manage your CodeCommit credentials from the AWS console through **My Security Credentials**.

Note

This option is not available for users using federated access, temporary credentials, or a web identity provider.

1.Sign in to the AWS Management Console and open the IAM console.

2.In the navigation bar on the upper right, choose your user name, and then choose **My Security Credentials**.



3.Choose the **AWS CodeCommit credentials** tab.

AWS IAM credentials | AWS CodeCommit credentials | Amazon Keyspaces credentials

SSH public keys for AWS CodeCommit (0)

User SSH public keys to authenticate access to AWS CodeCommit repositories. You can have a maximum of five SSH public keys (active or inactive) at a time. Learn more

Actions ▼ | Upload SSH public key

SSH Key ID	Uploaded	Status

No SSH public keys

Upload SSH public key

HTTPS Git credentials for AWS CodeCommit (0)

Generate a user name and password you can use to authenticate HTTPS connections to AWS CodeCommit repositories. You can have a maximum of 2 sets of credentials (active or inactive) at a time. Learn more

Actions ▼ | Generate credentials

User name	Created	Status

No credentials

Generate credentials

Generate credentials

Your new credentials are available.

Save your user name and password or download the credentials file.

This is the only time you can view the password or download it. You cannot recover it later. However, you can reset your password at any time.

You can use these credentials when connecting from your local computer, or from tools that require a static user name and password. Learn more

User name

vamsi-at-742774316769

Password

e+YY1R30xthBQGoUE39jHRc8iYiLRWl3ZSA445oLAig= Hide

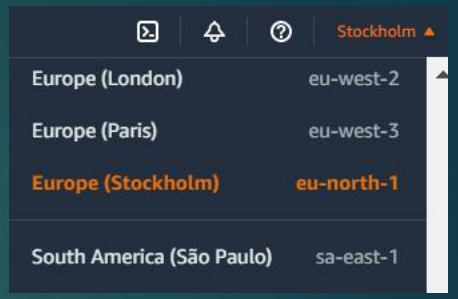
Download credentials | Close

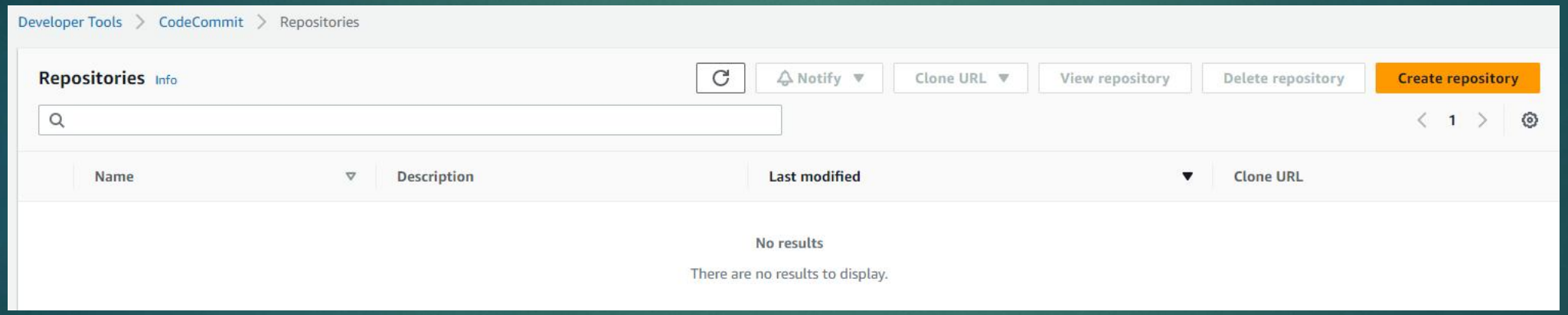
Step 1: Create a CodeCommit repository

First, you create a repository in CodeCommit. Your pipeline gets source code from this repository when it runs. You also create a local repository where you maintain and update code before you push it to the CodeCommit repository.

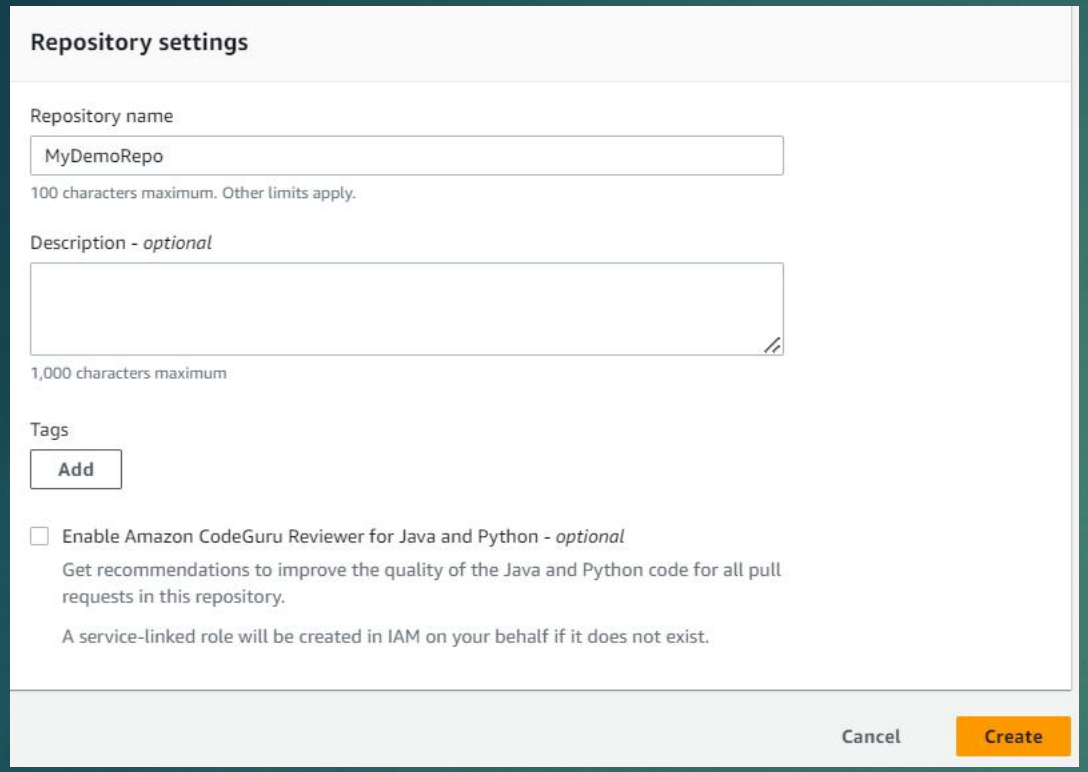
To create a CodeCommit repository

1. Open the CodeCommit console.
2. In the Region selector, choose the AWS Region where you want to create the repository and pipeline.
3. On the **Repositories** page, choose **Create repository**.





4.On the **Create repository** page, in **Repository name**, enter a name for your repository (for example, **MyDemoRepo**).
5.Choose **Create**.



Note
The remaining steps in this tutorial use **MyDemoRepo** for the name of your CodeCommit repository. If you choose a different name, be sure to use it throughout this tutorial.

To set up a local repository

In this step, you set up a local repository to connect to your remote CodeCommit repository.

Note

You are not required to set up a local repository. You can also use the console to upload files as described in Step2 repository.

1.With your new repository open in the console, choose **Clone URL** on the top right of the page, and then choose **Clone SSH**. The address to clone your Git repository is copied to your clipboard.

2.In your terminal or command line, navigate to a local directory where you'd like your local repository to be stored. In this tutorial, we use /tmp.

3.Run the following command to clone the repository, replacing the SSH address with the one you copied in the previous step. This command creates a directory called MyDemoRepo. You copy a sample application to this directory.

git clone https://git-codecommit.eu-north-1.amazonaws.com/v1/repos/MyDemoRepo

Step 2: Add sample code to your CodeCommit repository

In this step, you download code for a sample application that was created for a CodeDeploy sample walkthrough, and add it to your CodeCommit repository.

1.Download the following file: SampleApp_Linux.zip

2.Unzip the files from SampleApp_Linux.zip into the local directory you created earlier (for example, /tmp/MyDemoRepo or c:\temp\MyDemoRepo).

Be sure to place the files directly into your local repository. Do not include a SampleApp_Linux folder. On your local Linux, macOS, or Unix machine, for example, your directory and file hierarchy should look like this:

```
/tmp
  └-- MyDemoRepo
      |-- appspec.yml
      |-- index.html
      |-- LICENSE.txt
      └-- scripts
          |-- install_dependencies
          |-- start_server
          └-- stop_server
```

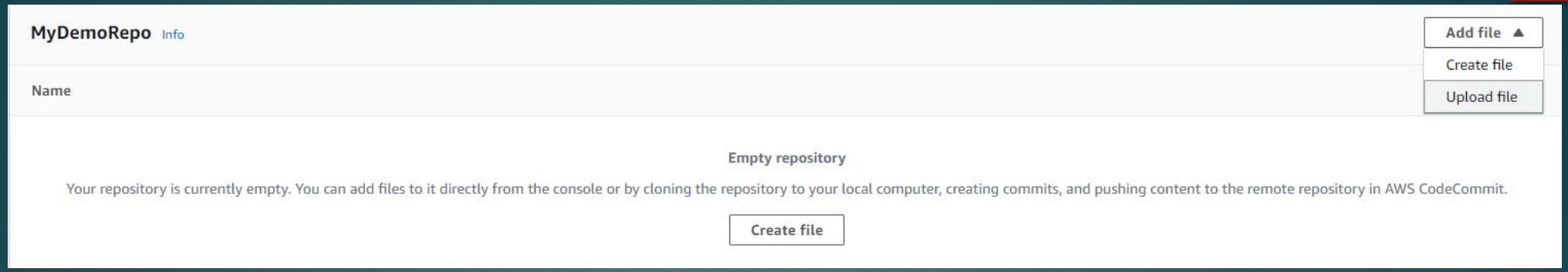
```
PS C:\tmp\MyDemoRepo> tar -xvf '.\SampleApp_Linux (1).zip'
x scripts/install_dependencies
x scripts/start_server
x scripts/stop_server
x appspec.yml
x index.html
x LICENSE.txt
PS C:\tmp\MyDemoRepo>
```

3.To upload files to your repository, use one of the following methods.

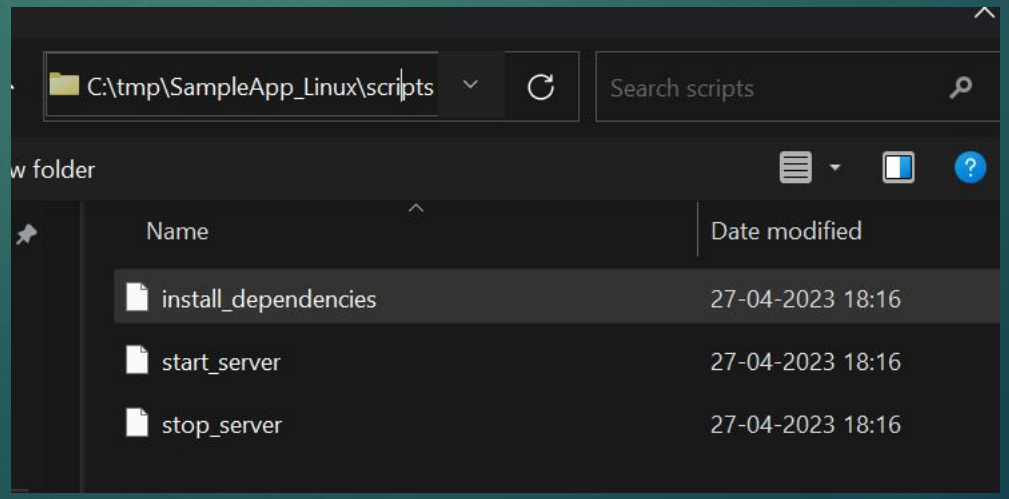
a. To use the CodeCommit console to upload your files:

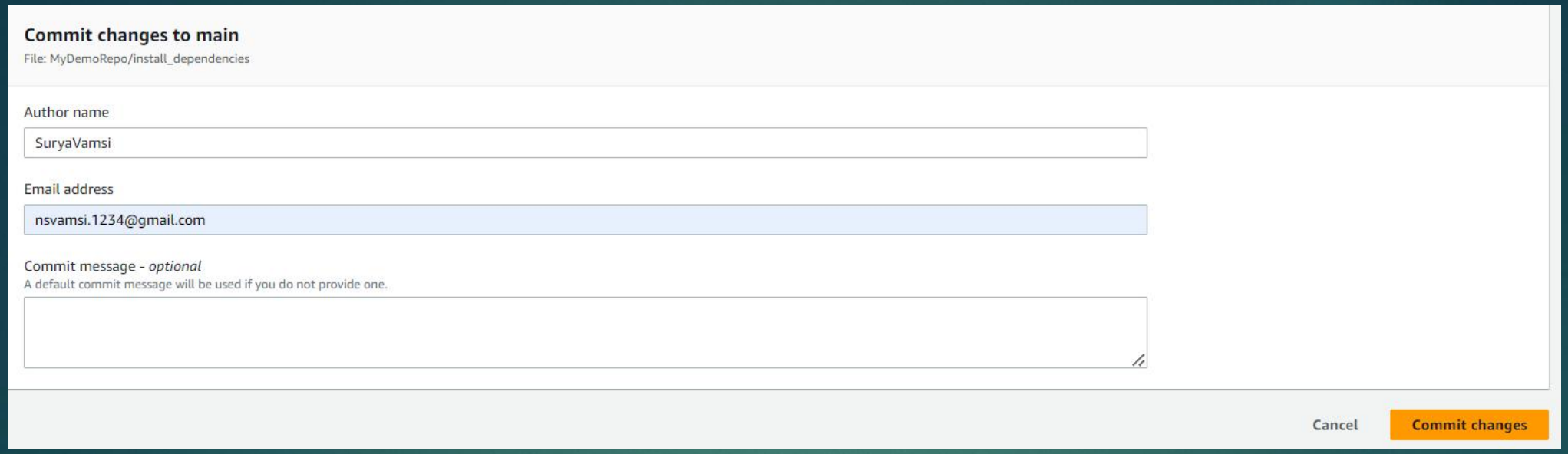
1.Open the CodeCommit console, and choose your repository from the **Repositories** list.

2.Choose **Add file**, and then choose **Upload file**.



3.Select **Choose file**, and then browse for your file. To add a file under a folder, choose **Create file** and then enter the folder name with the file name, such as scripts/install_dependencies. Paste the file contents into the new file. Commit the change by entering your user name and email address. Choose **Commit changes**.





4.Repeat this step for each file.
Your repository contents should look like this:

```
├-- appspec.yml
├-- index.html
├-- LICENSE.txt
└-- scripts
    ├-- install_dependencies
    ├-- start_server
    └-- stop_server
```

5.To use git commands to upload your files:

1.Change directories to your local repo:

(For Linux, macOS, or Unix) cd /tmp/MyDemoRepo

(For Windows) cd c:\temp\MyDemoRepo

```
PS C:\tmp\MyDemoRepo> ls


    Directory: C:\tmp\MyDemoRepo


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----        27-04-2023     20:08            377 appspec.yml
-a----        27-04-2023     20:08            752 index.html
-a----        27-04-2023     20:08             37 install_dependencies
-a----        27-04-2023     20:08          11085 LICENSE.txt
-a----        27-04-2023     20:08             36 start_server
-a----        27-04-2023     20:08            111 stop_server
```

2.Run the following command to stage all of your files at once:
   git add -A

```
PS C:\tmp\MyDemoRepo> git add -A
warning: in the working copy of 'LICENSE.txt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'appspec.yml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'index.html', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'scripts/install_dependencies', LF will be replaced by CRLF the next time Git touche
warning: in the working copy of 'scripts/start_server', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'scripts/stop_server', LF will be replaced by CRLF the next time Git touches it
PS C:\tmp\MyDemoRepo> git add -A
PS C:\tmp\MyDemoRepo> git status
On branch master
Your branch is up to date with 'origin/master'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   LICENSE.txt
        new file:   SampleApp_Linux (1).zip
        new file:   appspec.yml
        new file:   index.html
        new file:   scripts/install_dependencies
        new file:   scripts/start_server
        new file:   scripts/stop_server

PS C:\tmp\MyDemoRepo>
```

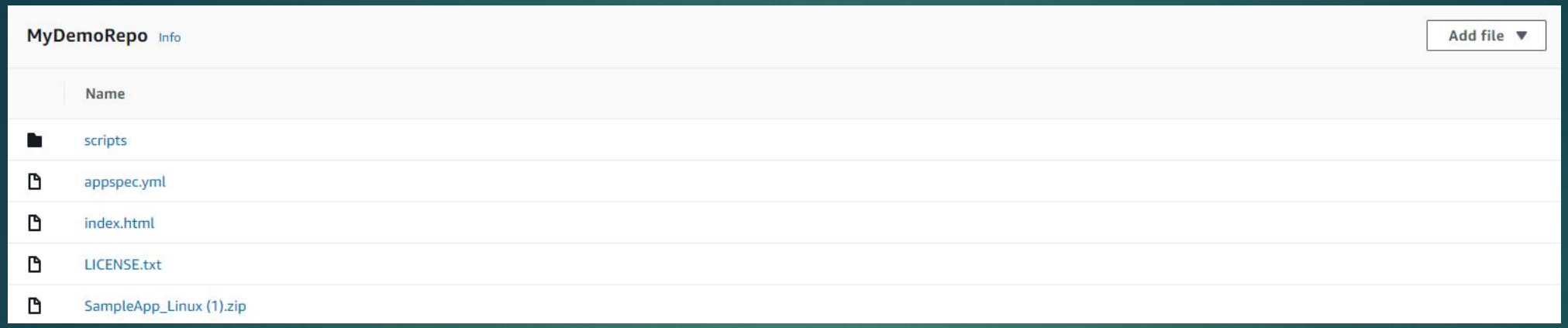
3.Run the following command to commit the files with a commit message:
git commit -m "Add sample application files“

```
PS C:\tmp\MyDemoRepo> git commit -m "Add sample application files“
[master 1b2352a] Add sample application files
 7 files changed, 266 insertions(+)
 create mode 100644 LICENSE.txt
 create mode 100644 SampleApp_Linux (1).zip
 create mode 100644 appspec.yml
 create mode 100644 index.html
 create mode 100644 scripts/install_dependencies
 create mode 100644 scripts/start_server
 create mode 100644 scripts/stop_server
PS C:\tmp\MyDemoRepo>
```

4.Run the following command to push the files from your local repo to your CodeCommit repository:
git push

```
PS C:\tmp\MyDemoRepo> git push
Enumerating objects: 11, done.
Counting objects: 100% (11/11), done.
Delta compression using up to 4 threads
Compressing objects: 100% (8/8), done.
Writing objects: 100% (10/10), 9.98 KiB | 2.50 MiB/s, done.
Total 10 (delta 0), reused 0 (delta 0), pack-reused 0
remote: Validating objects: 100%
To https://git-codecommit.eu-north-1.amazonaws.com/v1/repos/MyDemoRepo
   b4c423a..1b2352a  master -> master
PS C:\tmp\MyDemoRepo>
```

5. The files you downloaded and added to your local repo have now been added to the **master** branch in your CodeCommit **MyDemoRepo** repository and are ready to be included in a pipeline.



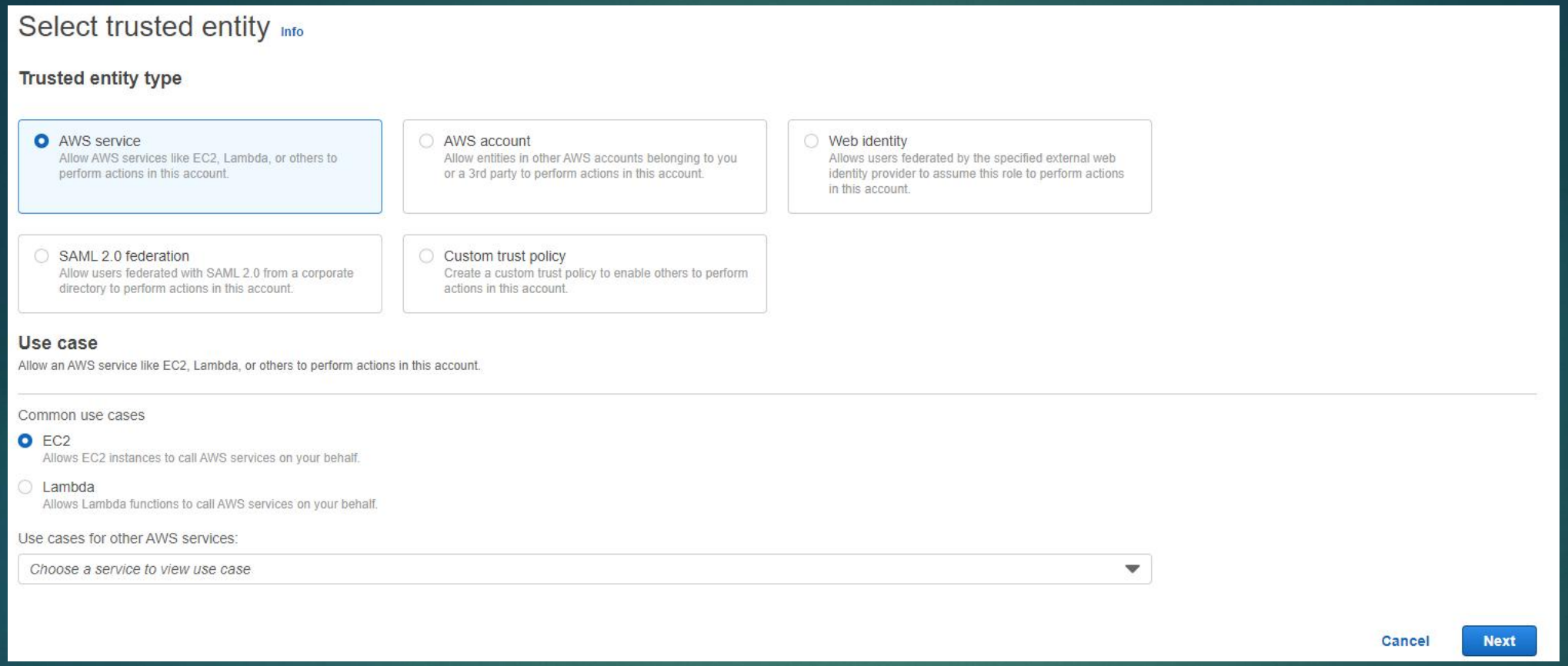
Step 3: Create an Amazon EC2 Linux instance and install the CodeDeploy agent

- In this step, you create the Amazon EC2 instance where you deploy a sample application. As part of this process, create an instance role that allows install and management of the CodeDeploy agent on the instance. The CodeDeploy agent is a software package that enables an instance to be used in CodeDeploy deployments. You also attach policies that allow the instance to fetch files that the CodeDeploy agent uses to deploy your application and to allow the instance to be managed by SSM.

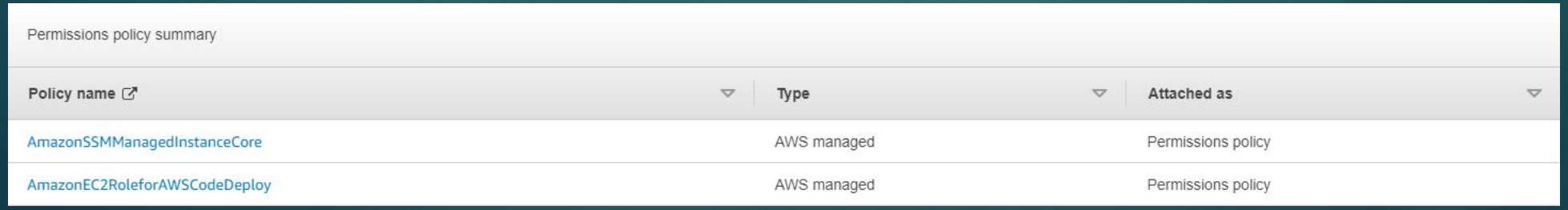
To create an instance role

1. Open the IAM console at https://console.aws.amazon.com/iam/).
2. From the console dashboard, choose **Roles**.
3. Choose **Create role**.

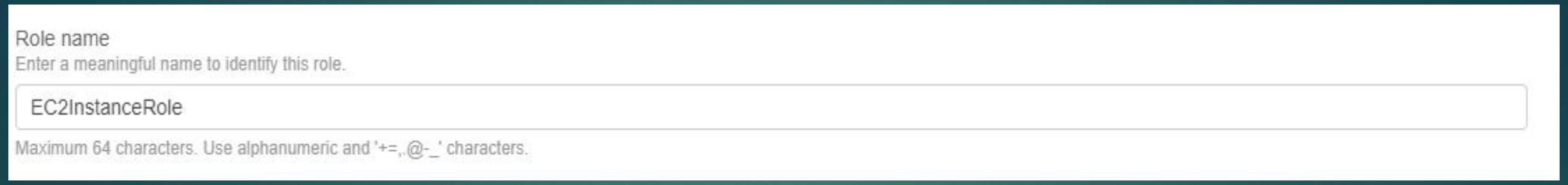
4.Under **Select type of trusted entity**, select **AWS service**. Under **Choose a use case**, select **EC2**. Under **Select your use case**, choose **EC2**. Choose **Next: Permissions**.



5.Search for and select the policy named **AmazonEC2RoleforAWSCodeDeploy**.
6.Search for and select the policy named **AmazonSSMManagedInstanceCore**.

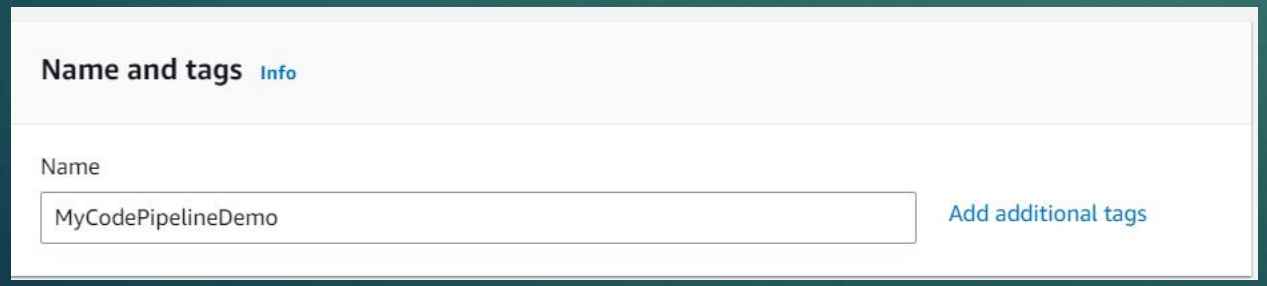


7.Choose **Next: Tags**.
8.Choose **Next: Review**. Enter a name for the role (for example, **EC2InstanceRole**).

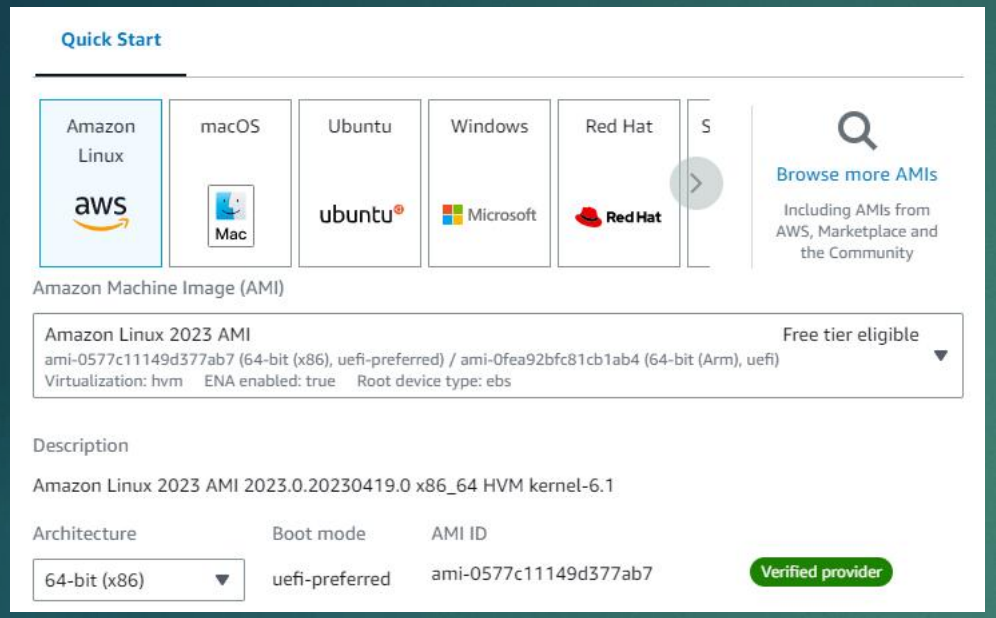


To launch instances

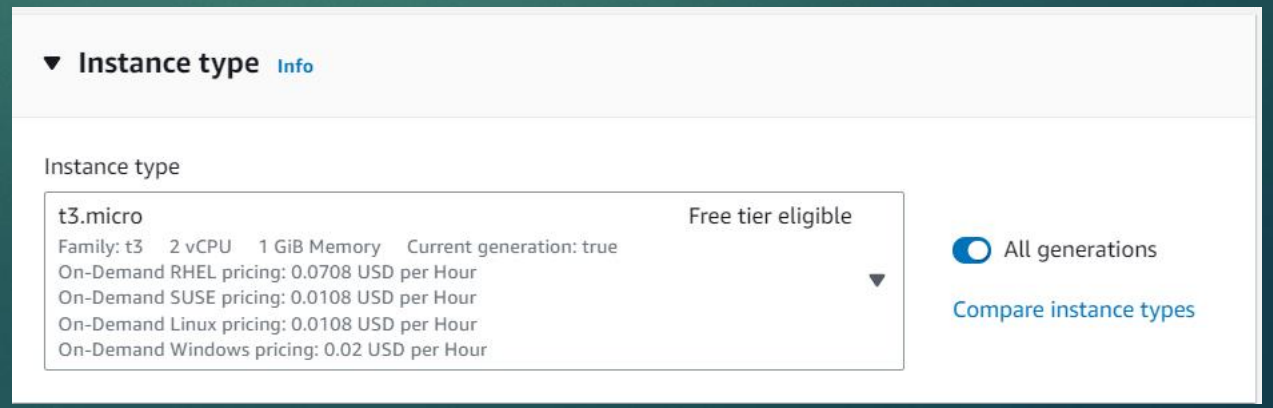
1. Open the Amazon EC2 console at https://console.aws.amazon.com/ec2/.
2. From the side navigation, choose **Instances**, and select **Launch instances** from the top of the page.
3. Under **Name and tags**, in **Name**, enter **MyCodePipelineDemo**. This assigns the instances a tag **Key** of **Name** and a tag **Value** of **MyCodePipelineDemo**. Later, you create a CodeDeploy application that deploys the sample application to the instances. CodeDeploy selects instances to deploy based on the tags.



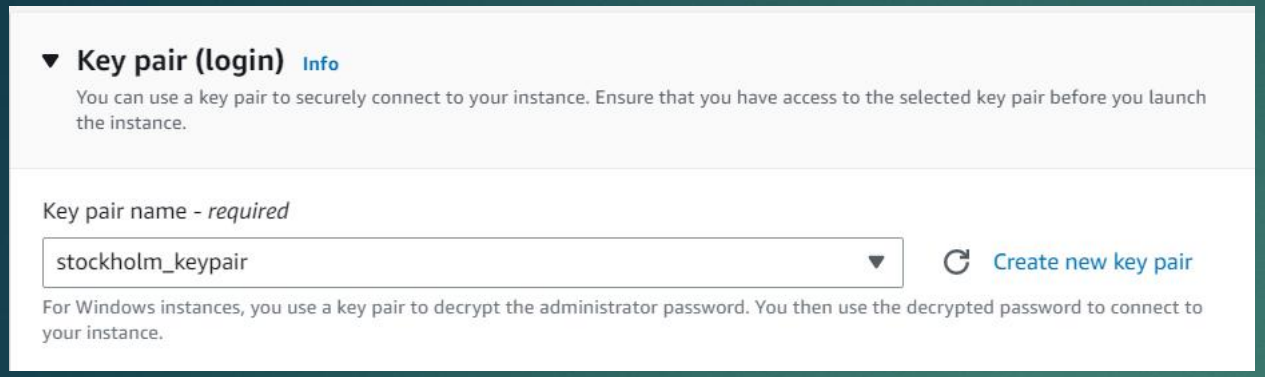
1.4. Under **Application and OS Images (Amazon Machine Image)**, locate the **Amazon Linux** AMI option with the AWS logo, and make sure it is selected. (This AMI is described as the Amazon Linux 2 AMI (HVM) and is labeled "Free tier eligible".)



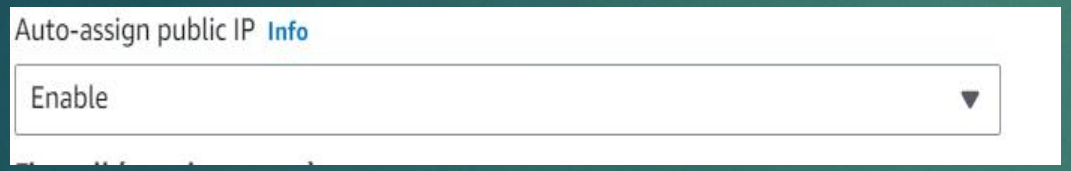
5.Under **Instance type**, choose the free tier eligible t3.micro type as the hardware configuration for your instance.



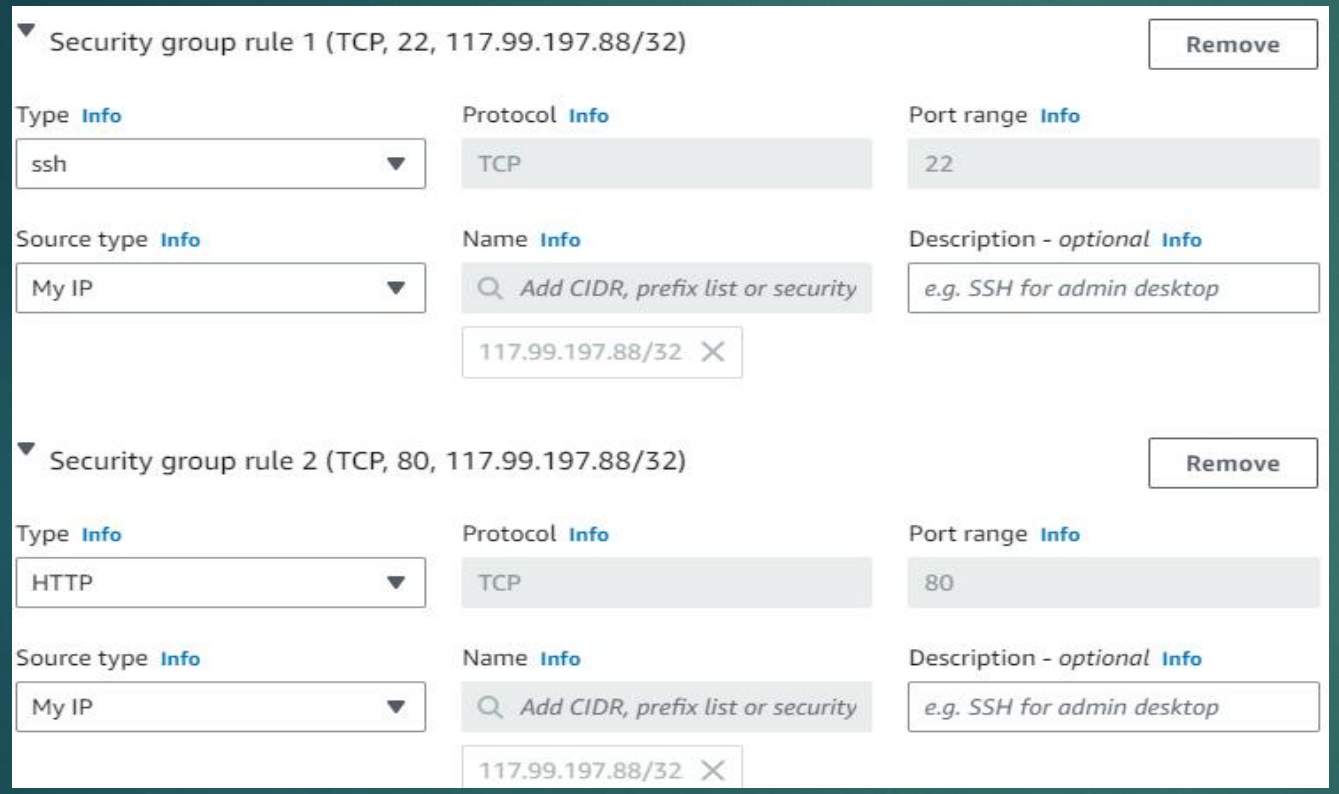
6. Under **Key pair (login)**, choose a key pair or create one or continue with the existing Key Pair.



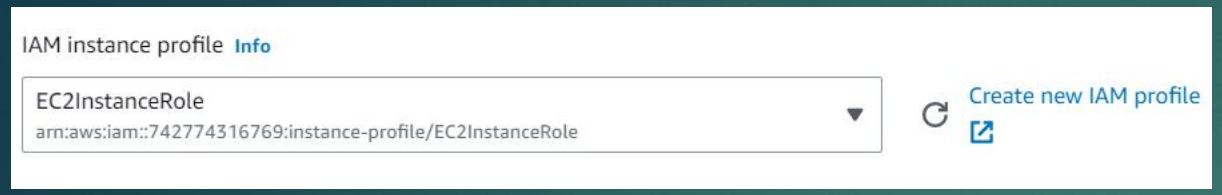
7. Under **Network settings**, do the following.
   In **Auto-assign Public IP**, make sure the status is **Enable**.



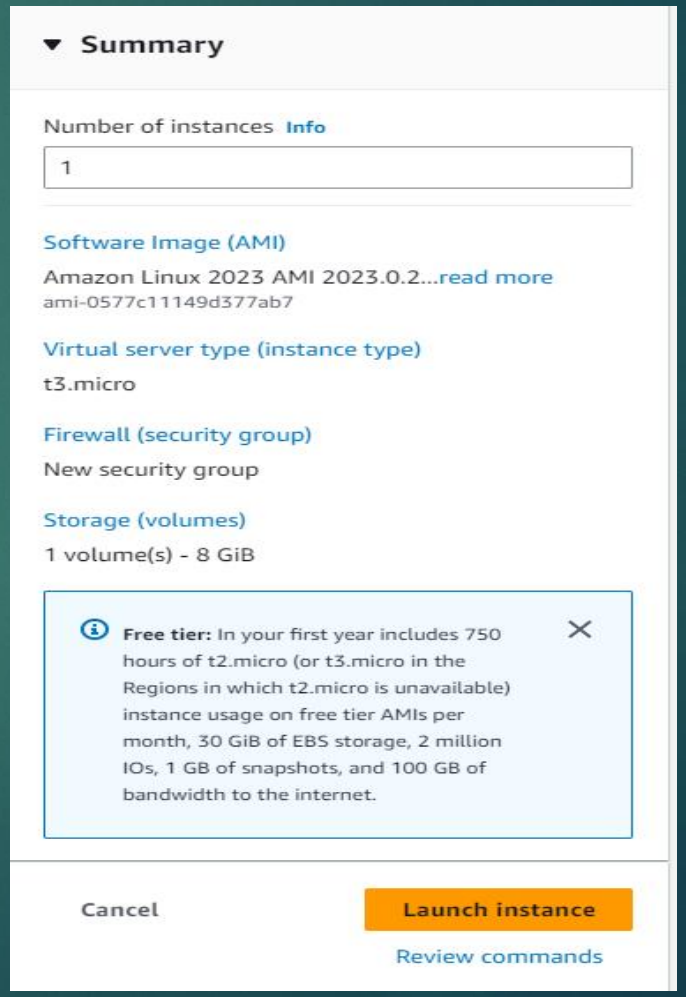
- Next to **Assign a security group**, choose **Create a new security group**.
- In the row for **SSH**, under **Source type**, choose **My IP**.
- Choose **Add security group**, choose **HTTP**, and then under **Source type**, choose **My IP**.



8. Expand **Advanced details**. In **IAM instance profile**, choose the IAM role you created in the previous procedure (for example, **EC2InstanceRole**).



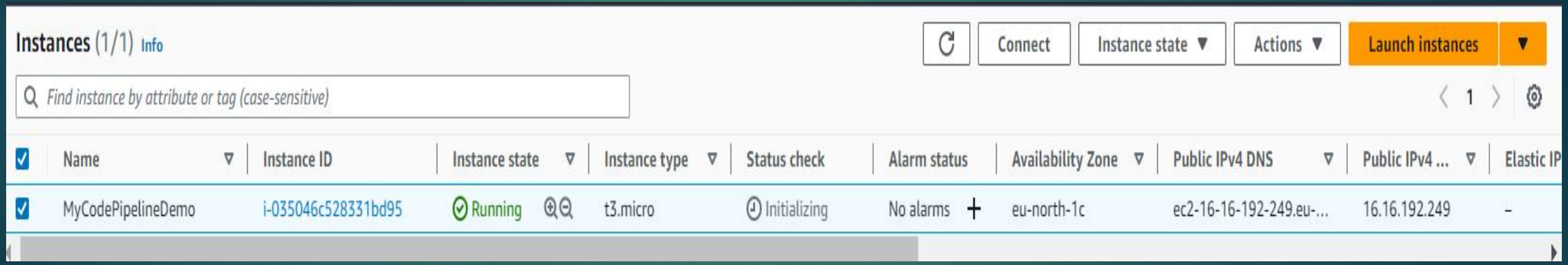
9. Under **Summary**, under **Number of instances**, enter 2..
10. Choose **Launch instance**.



11. Choose **View all instances** to close the confirmation page and return to the console.

12. You can view the status of the launch on the **Instances** page. When you launch an instance, its initial state is pending. After the instance starts, its state changes to running, and it receives a public DNS name. (If the **Public DNS** column is not displayed, choose the **Show/Hide** icon, and then select **Public DNS**.)

13. It can take a few minutes for the instance to be ready for you to connect to it. Check that your instance has passed its status checks. You can view this information in the **Status Checks** column.

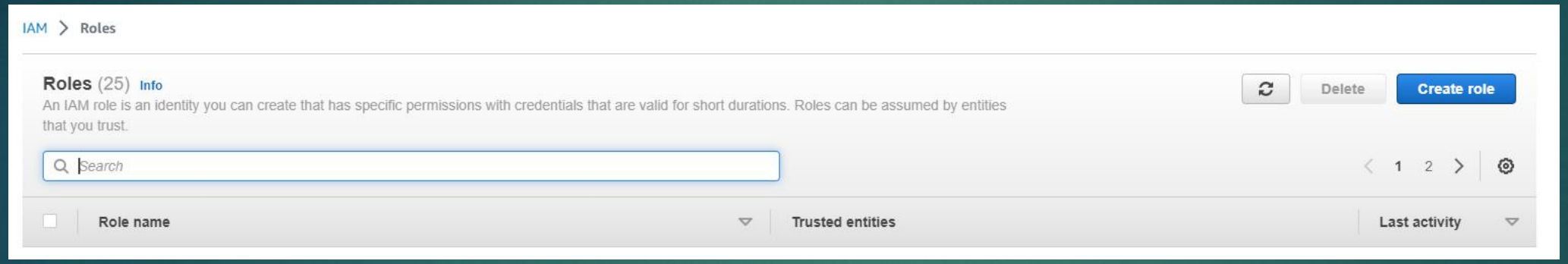


Step 3: Create an application in CodeDeploy

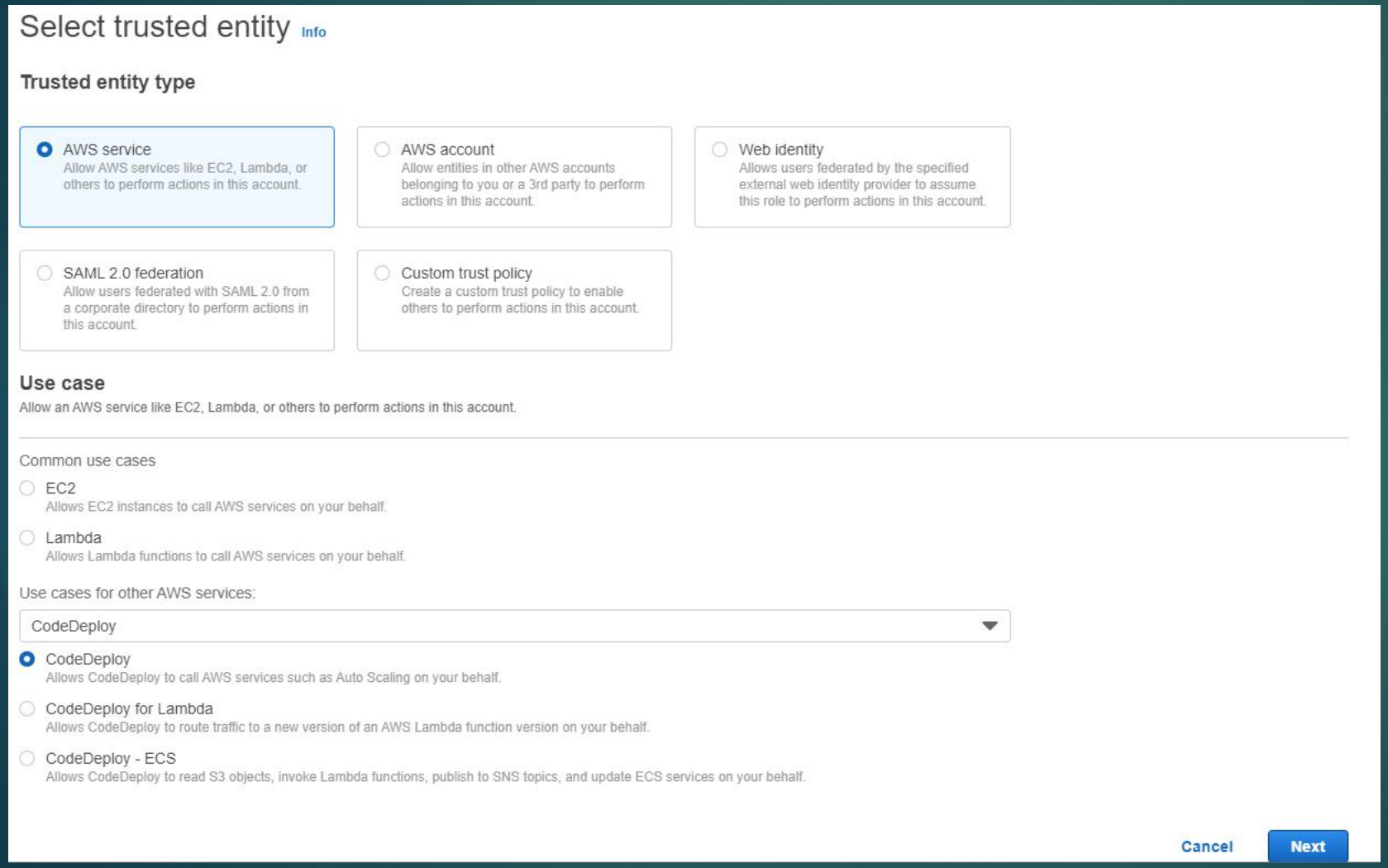
You first create a service role for CodeDeploy to use. If you have already created a service role, you do not need to create another one.

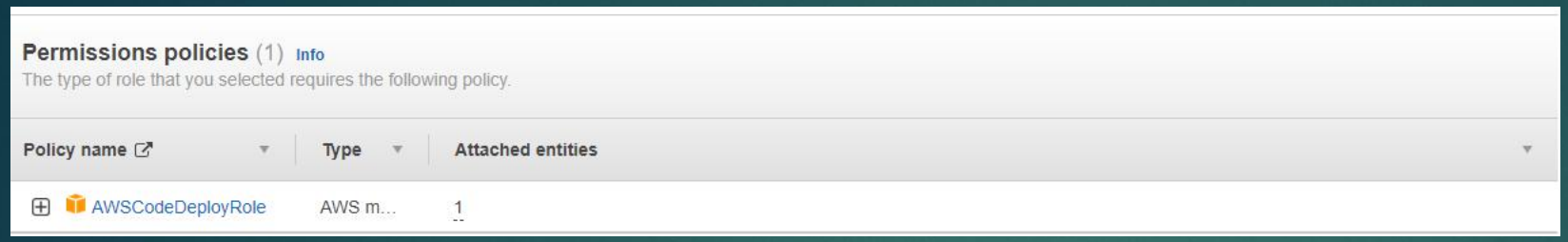
To create a CodeDeploy service role

1. Open the IAM console at https://console.aws.amazon.com/iam/).
2. From the console dashboard, choose **Roles**.
3. Choose **Create role**.



4.Under **Select trusted entity**, choose **AWS service**. Under **Use case**, choose **CodeDeploy**. Choose **CodeDeploy** from the options listed. Choose **Next**. The AWSCodeDeployRole managed policy is already attached to the role.
5.Choose **Next**.





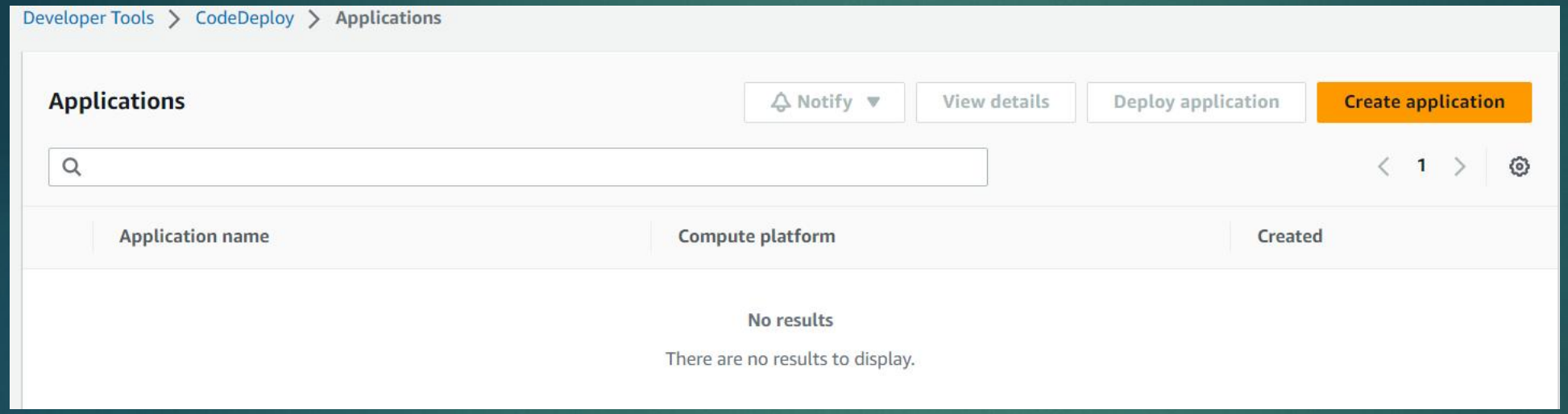
6.Enter a name for the role (for example, **CodeDeployRole**), and then choose **Create role**

To create an application in CodeDeploy

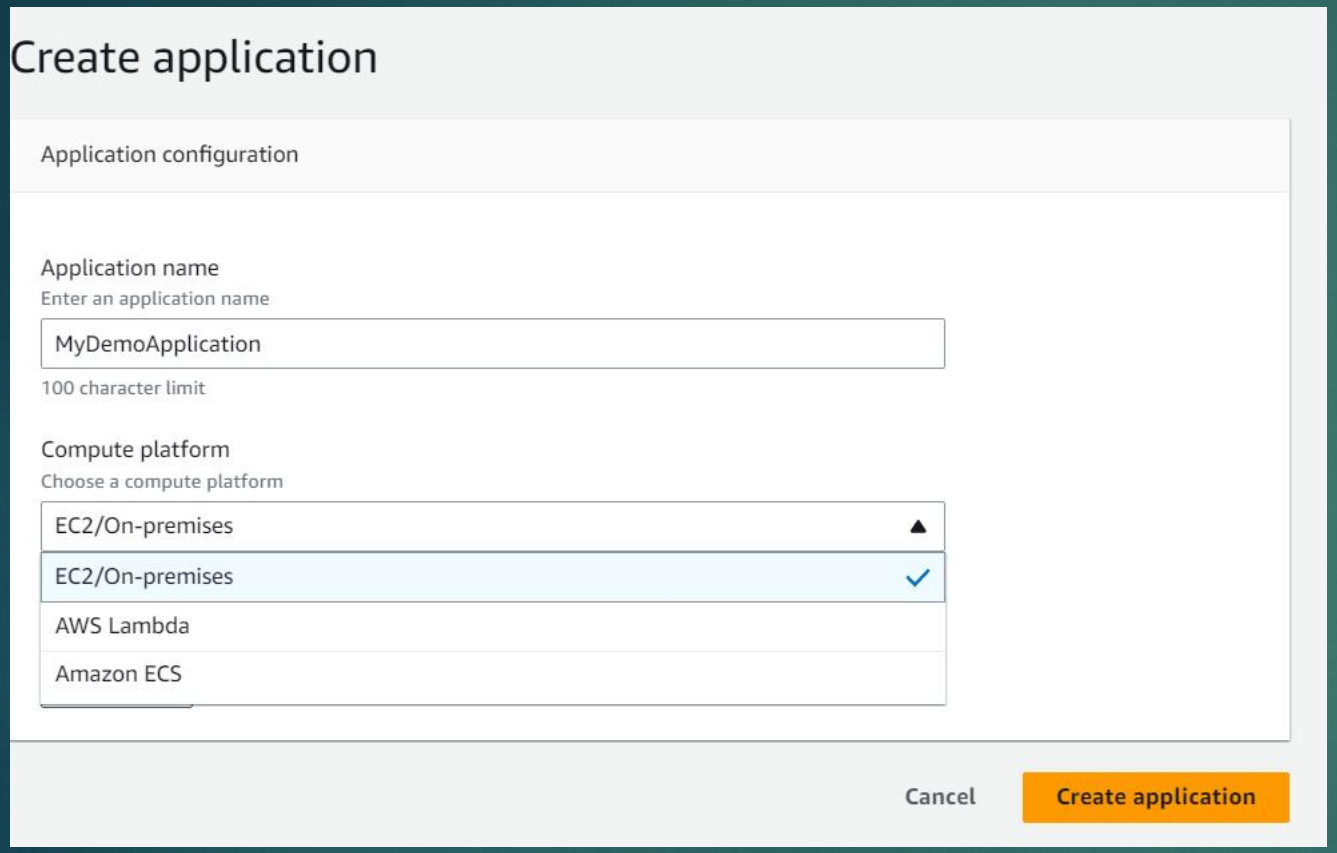
1.Open the CodeDeploy console at https://console.aws.amazon.com/codedeploy.

2.If the **Applications** page does not appear, on the AWS CodeDeploy menu, choose **Applications**.

3.Choose **Create application**.

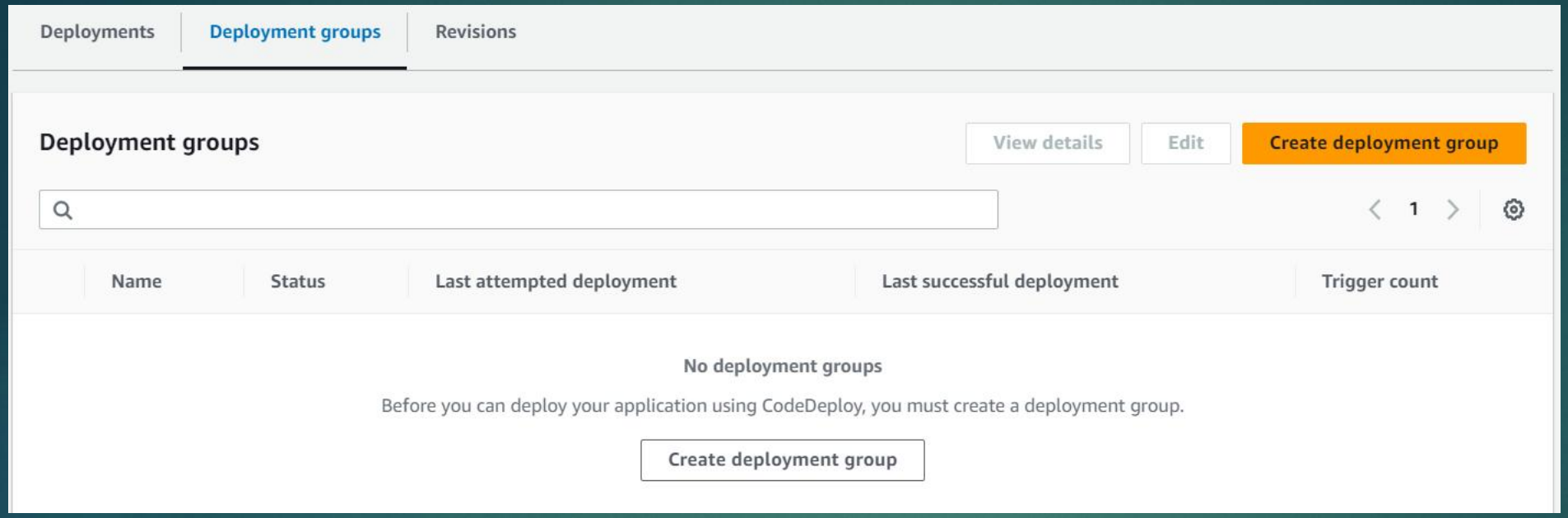


4.In **Application name**, enter MyDemoApplication.
5.In **Compute Platform**, choose **EC2/On-premises**.
6.Choose **Create application**.

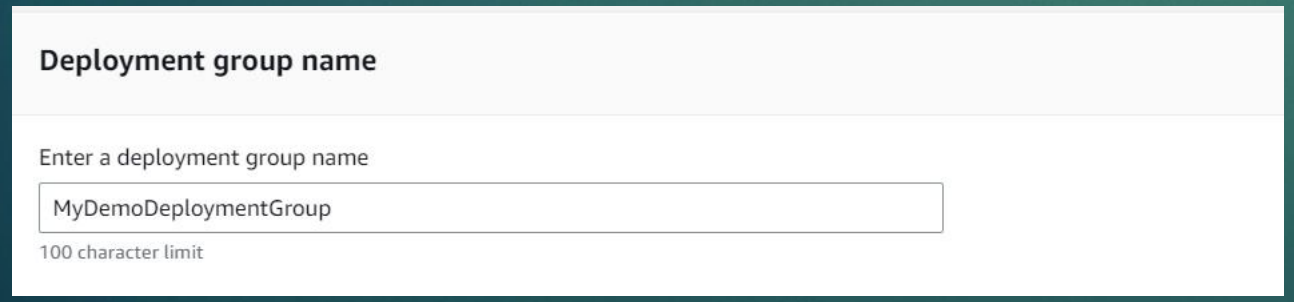


To create a deployment group in CodeDeploy

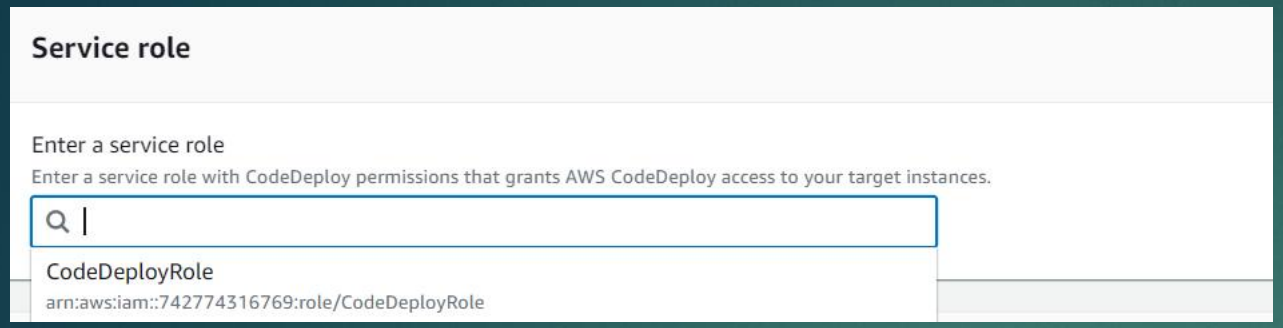
1. On the page that displays your application, choose **Create deployment group**.



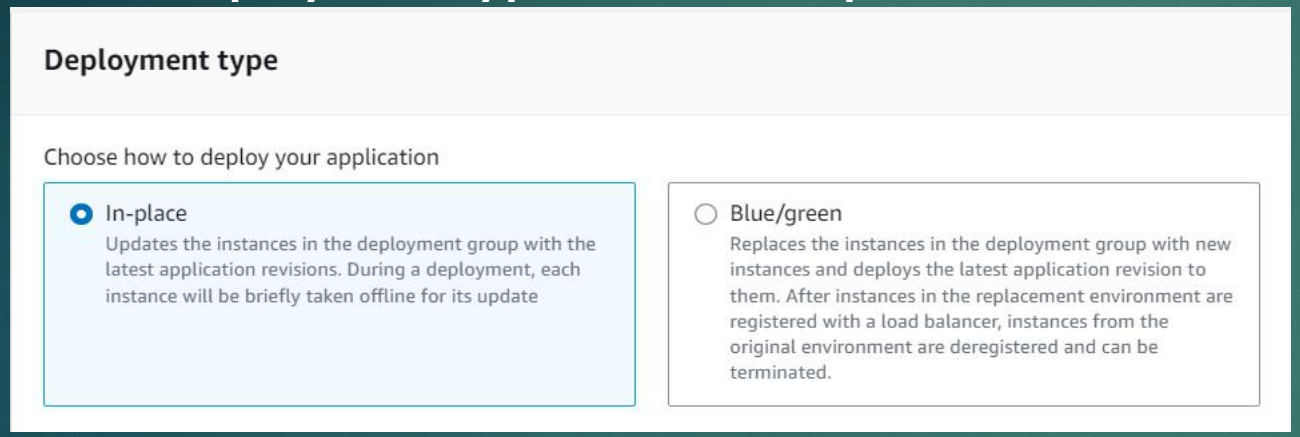
2. In **Deployment group name**, enter **MyDemoDeploymentGroup**.



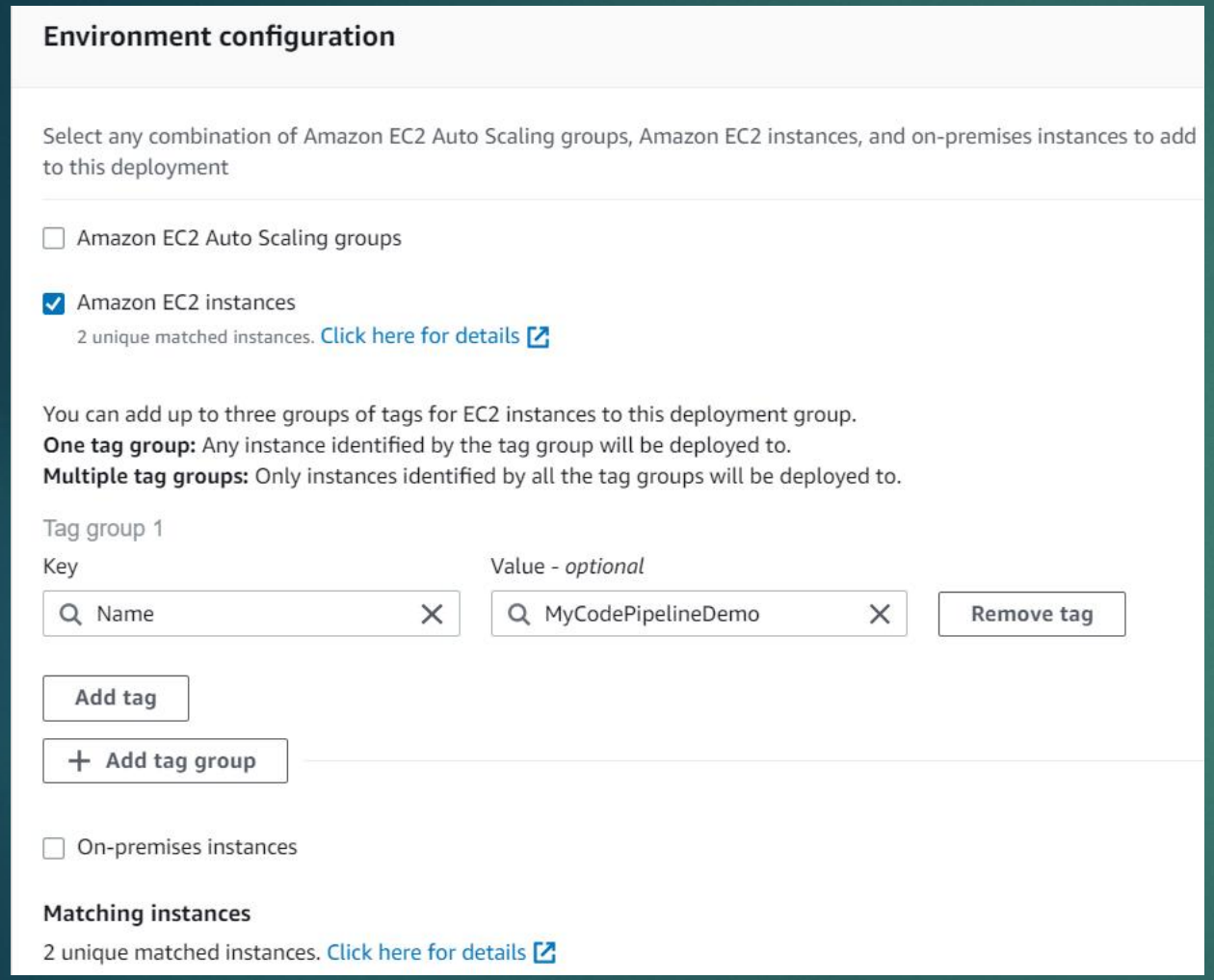
3.In **Service role**, choose the service role you created earlier.



4.Under **Deployment type**, choose **In-place**.

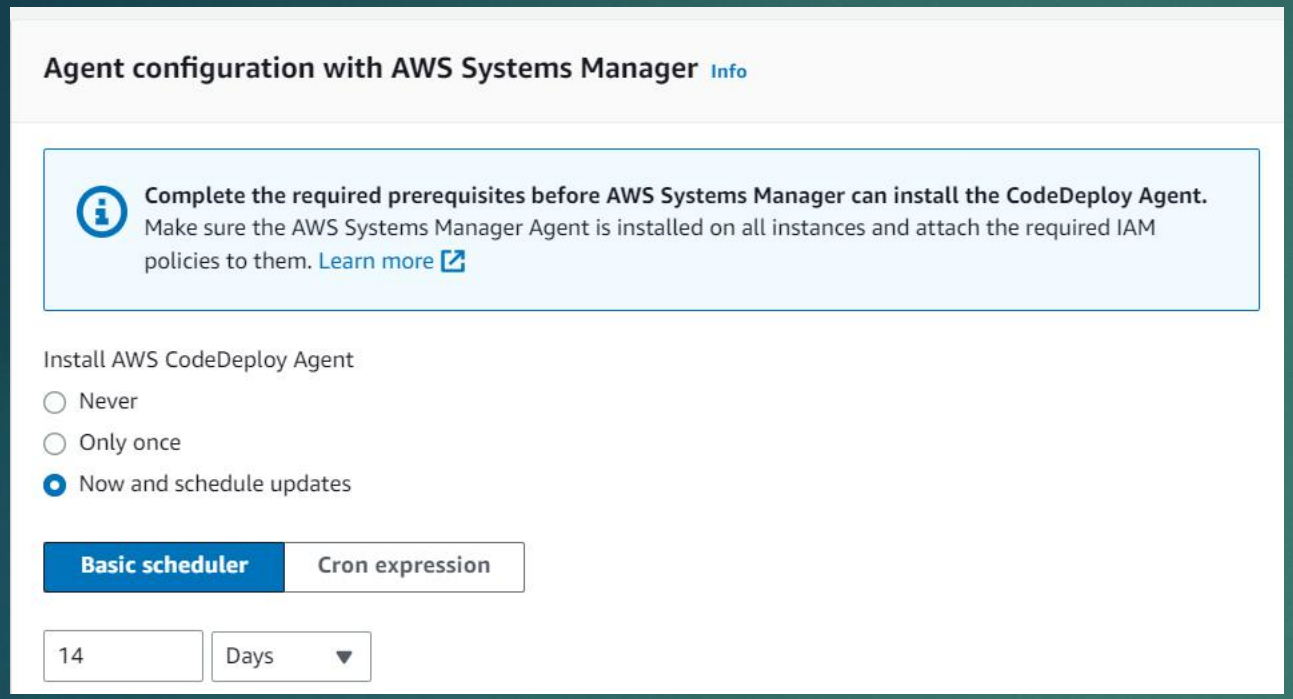


5.Under **Environment configuration**, choose **Amazon EC2 Instances**. Choose **Name** in the **Key** field, and in the **Value** field, enter **MyCodePipelineDemo**.

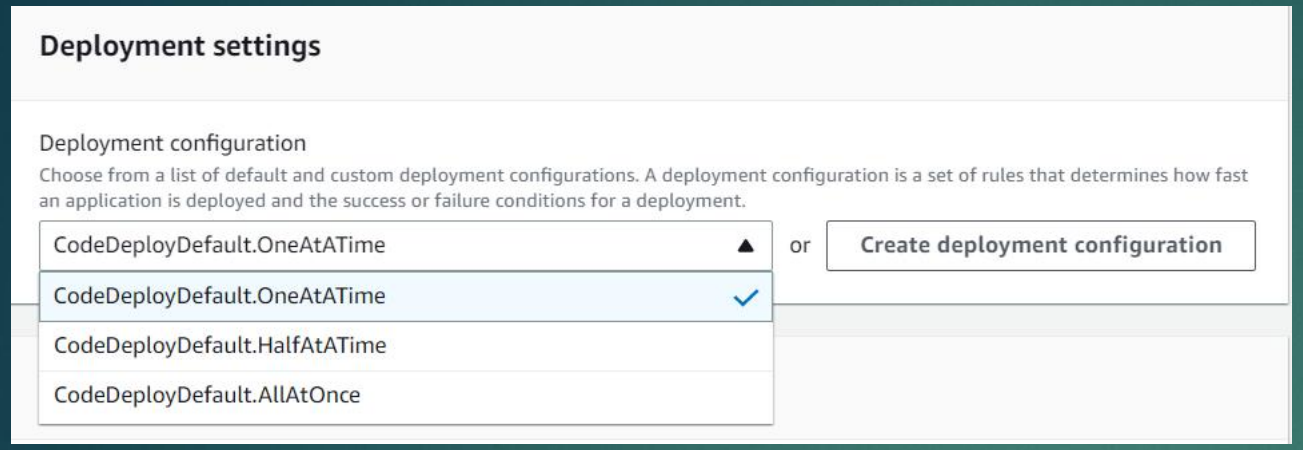


Important
You must choose the same value for the **Name** key here that you assigned to your EC2 instances when you created them. If you tagged your instances with something other than **MyCodePipelineDemo**, be sure to use it here.

6.Under **Agent configuration with AWS Systems Manager**, choose **Now and schedule updates**. This installs the agent on the instance. The Windows instance is already configured with the SSM agent and will now be updated with the CodeDeploy agent.

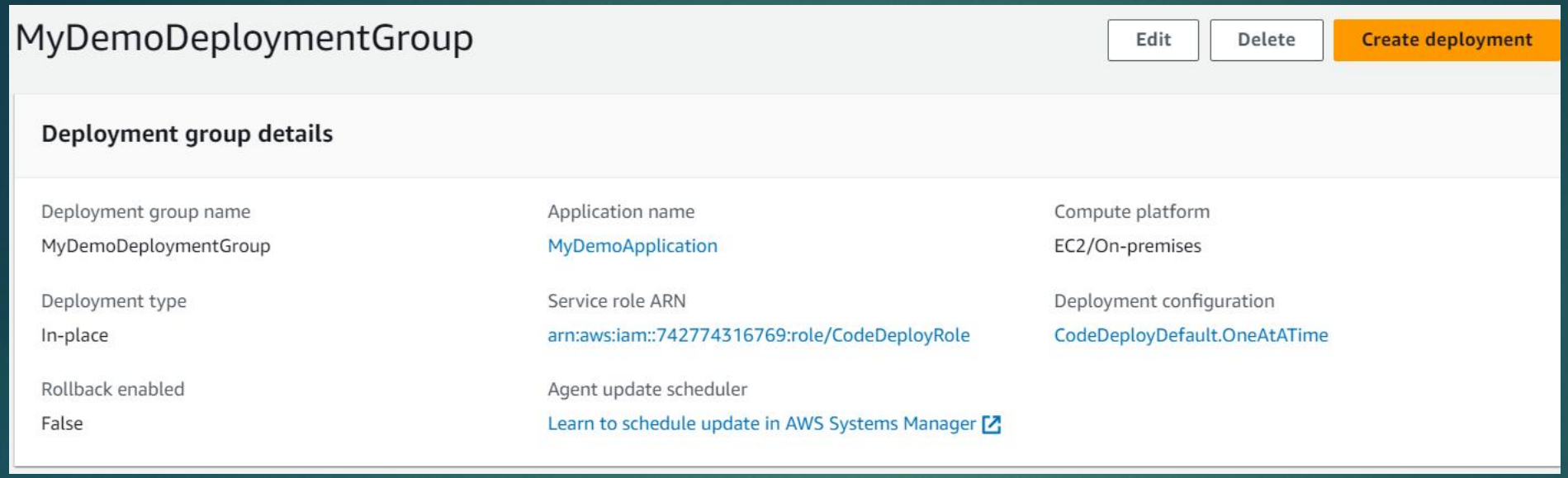


7.Under **Deployment settings**, choose CodeDeployDefault.OneAtaTime.



8.Under **Load Balancer**, make sure the **Enable load balancing** box is not selected. You do not need to set up a load balancer or choose a target group for this example. After you de-select the checkbox, the load balancer options do not display.

9.In the **Advanced** section, leave the defaults.
10.Choose **Create deployment group**.

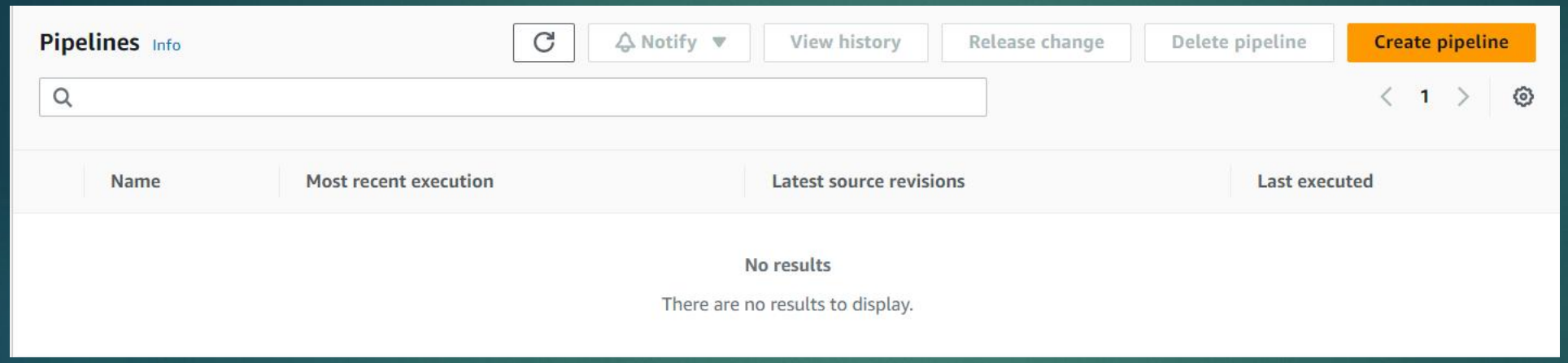


Step 4: Create your first pipeline in CodePipeline

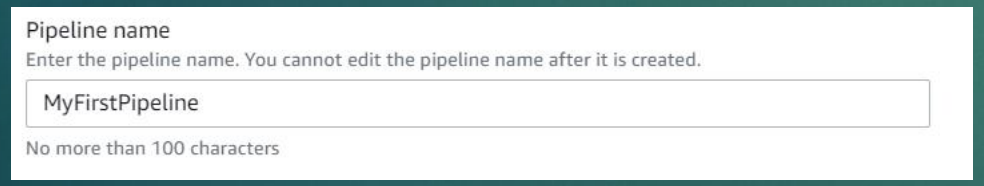
To create a CodePipeline automated release process

1.Sign in to the AWS Management Console and open the CodePipeline console at http://console.aws.amazon.com/codesuite/codepipeline/home.

2.On the **Welcome** page, **Getting started** page, or the **Pipelines** page, choose **Create pipeline**.

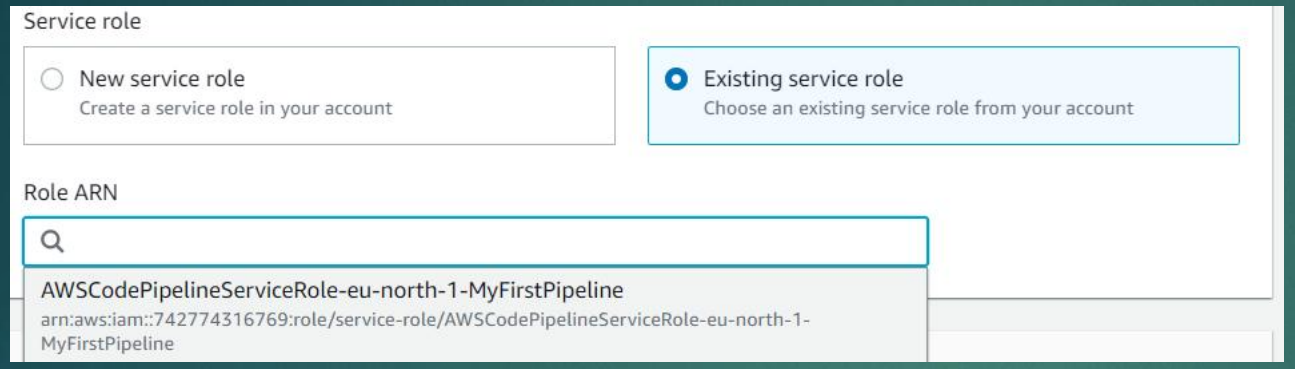


3.In **Step 1: Choose pipeline settings**, in **Pipeline name**, enter **MyFirstPipeline**.



4. In **Service role**, do one of the following:

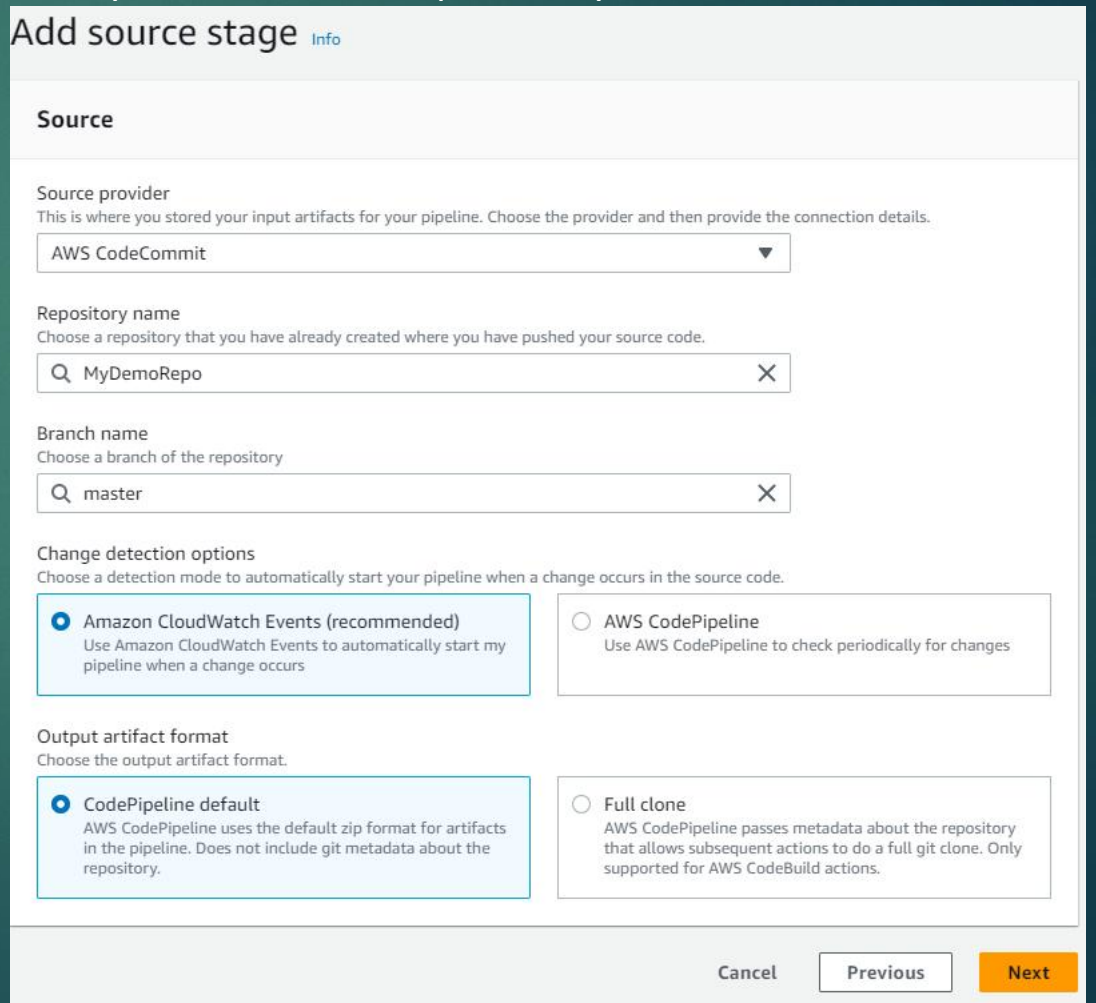
- Choose **New service role** to allow CodePipeline to create a new service role in IAM.
- Choose **Existing service role** to use a service role already created in IAM. In **Role name**, choose your service role from the list.



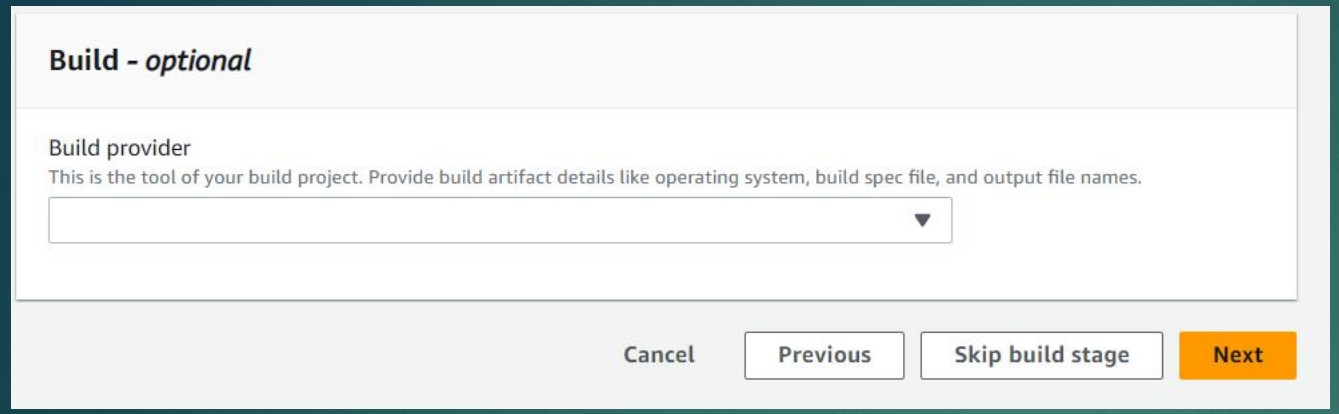
5. Leave the settings under **Advanced settings** at their defaults, and then choose **Next**.

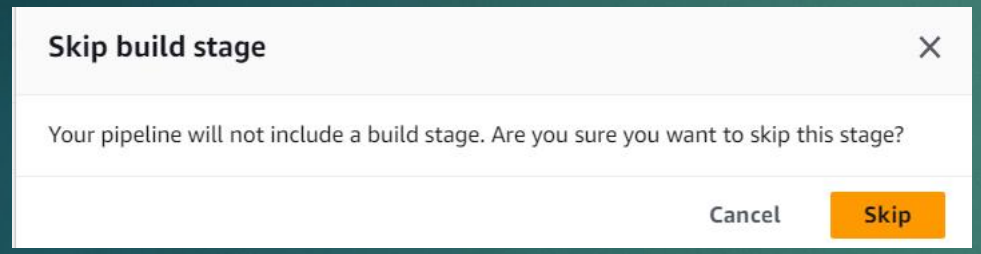
6. In **Step 2: Add source stage**, in **Source provider**, choose **CodeCommit**. In **Repository name**, choose the name of the CodeCommit repository you created in Step 1. In **Branch name**, choose main, and then choose **Next step**.

- After you select the repository name and branch, a message displays the Amazon CloudWatch Events rule to be created for this pipeline.
- Under **Change detection options**, leave the defaults. This allows CodePipeline to use Amazon CloudWatch Events to detect changes in your source repository.
- Choose **Next**.

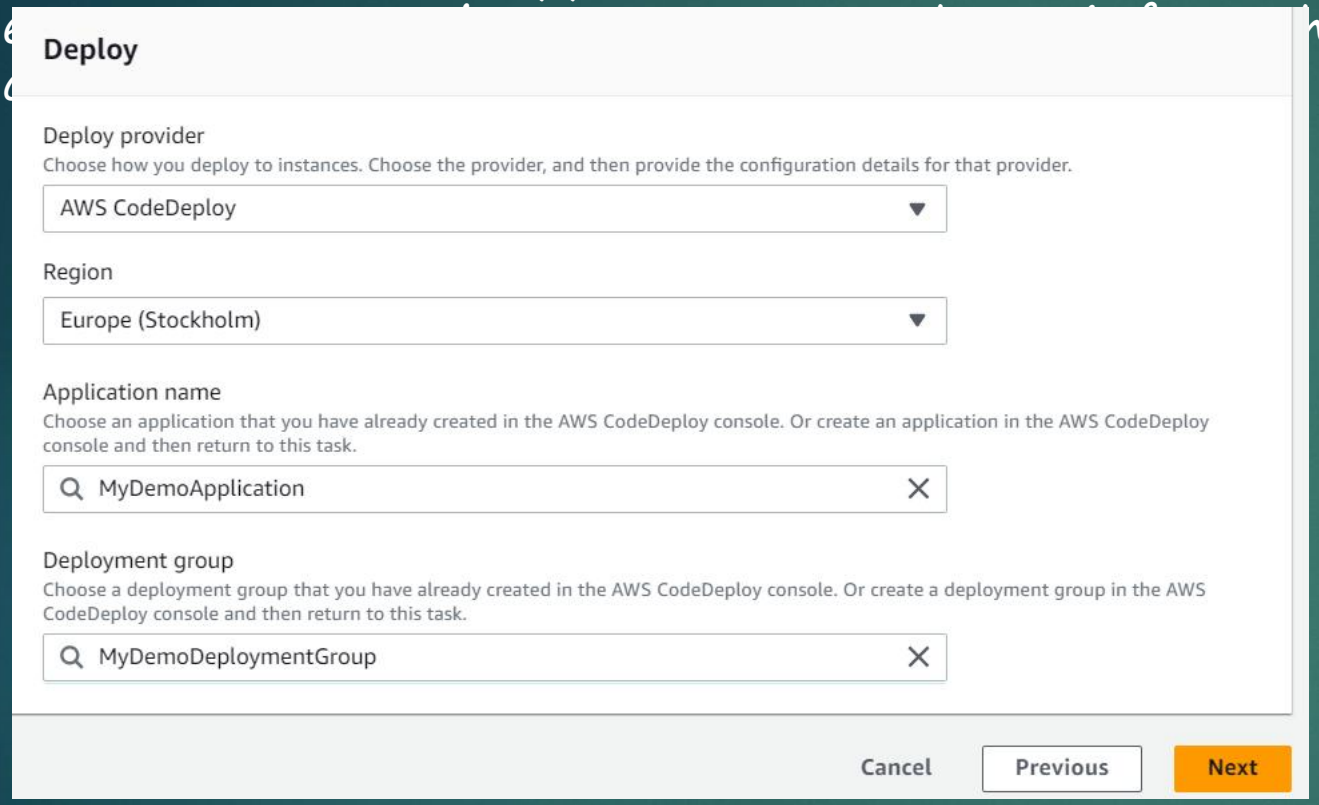


7. In **Step 3: Add build stage**, choose **Skip build stage**, and then accept the warning message by choosing **Skip** again. Choose **Next**.





8. In **Step 4: Add deploy stage**, in **Deploy provider**, choose **CodeDeploy** .
The **Region** field defaults to the same AWS Region as your pipeline.
In **Application name**, enter MyDemoApplication, or choose the **Refresh** button, and then choose the application name from the list. In **Deployment group**,
e list, and then



9. In **Step 5: Review**, review the information, and then choose **Create pipeline**.
10.The pipeline starts to run. You can view progress and success and failure messages as the CodePipeline sample deploys a webpage to each of the Amazon EC2 instances in the CodeDeploy deployment.

MyFirstPipeline

Notify | Edit | Stop execution | Clone pipeline | Release change

Source Succeeded

Pipeline execution ID: d5a9ffa8-c018-433e-97f0-858998e1ef66

Source

AWS CodeCommit

Succeeded - 3 minutes ago

1b2352af

1b2352af Source: Add sample application files

Disable transition

Deploy Succeeded

Pipeline execution ID: d5a9ffa8-c018-433e-97f0-858998e1ef66

Deploy

AWS CodeDeploy

Succeeded - 2 minutes ago

Details

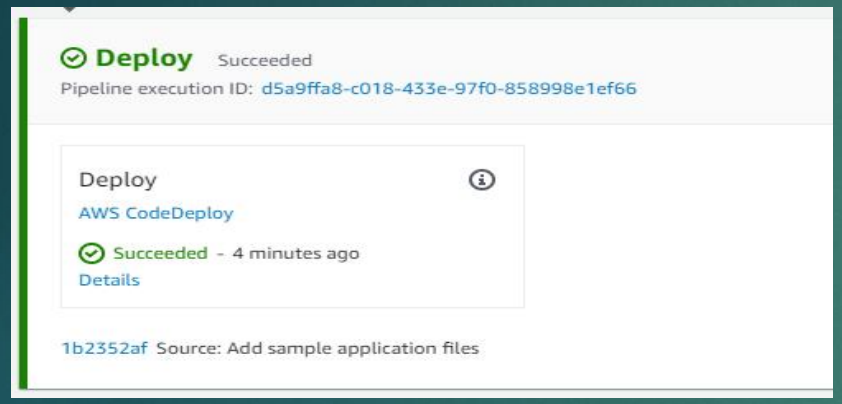
1b2352af Source: Add sample application files

Congratulations! You just created a simple pipeline in CodePipeline.

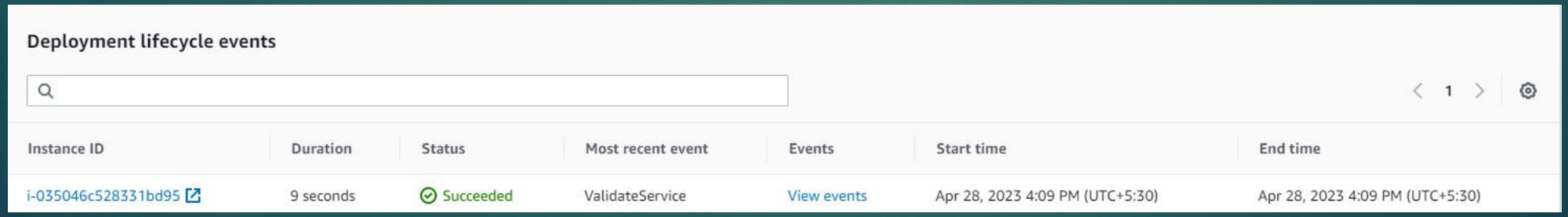
To verify your pipeline ran successfully

1.View the initial progress of the pipeline. The status of each stage changes from **No executions yet** to **In Progress**, and then to either **Succeeded** or **Failed**. The pipeline should complete the first run within a few minutes.

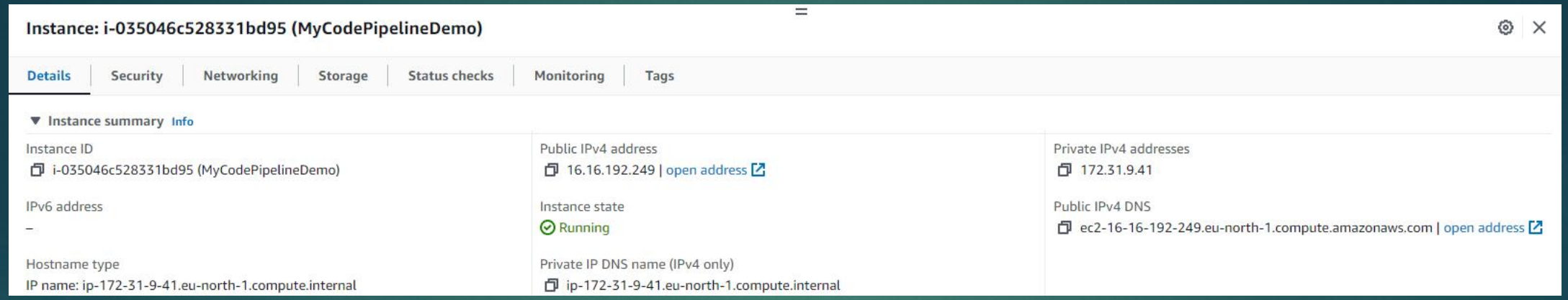
2.After **Succeeded** is displayed for the action status, in the status area for the **Deploy** stage, choose **Details**. This opens the CodeDeploy console.



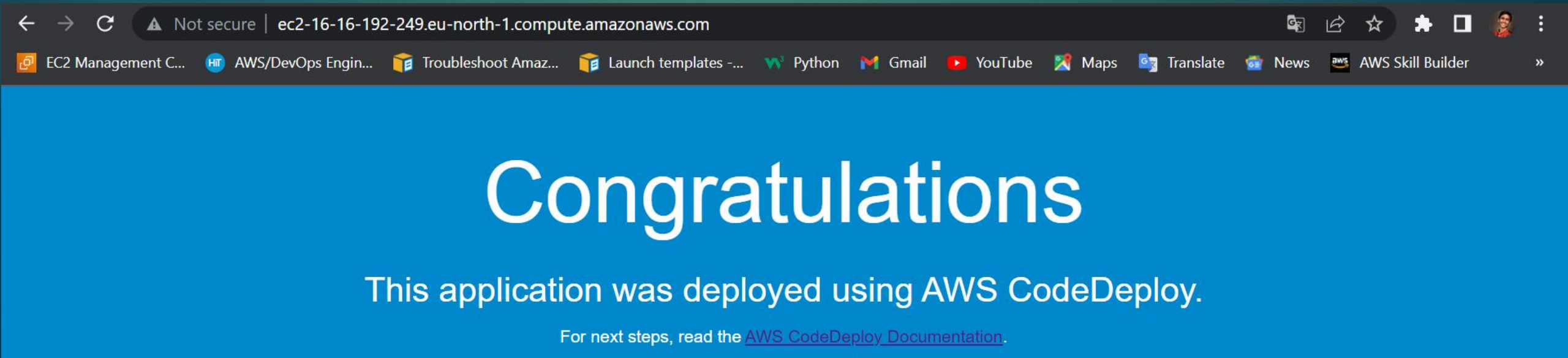
3.In the **Deployment group** tab, under **Deployment lifecycle events**, choose an instance ID. This opens the EC2 console.



4. On the **Description** tab, in **Public DNS**, copy the address, and then paste it into the address bar of your web browser. View the index page for the sample application you uploaded to your S3 bucket.



5. The web page displays for the sample application you uploaded to your S3 bucket.



Step 6: Modify code in your CodeCommit repository

- Your pipeline is configured to run whenever code changes are made to your CodeCommit repository. In this step, you make changes to the HTML file that is part of the sample CodeDeploy application in the CodeCommit repository. When you push these changes, your pipeline runs again, and the changes you make are visible at the web address you accessed earlier.

1. Change directories to your local repo:
(For Linux, macOS, or Unix) cd /tmp/**MyDemoRepo**
(For Windows) cd c:\temp**MyDemoRepo**

2. Use a text editor to modify the index.html file:
(For Linux or Unix) gedit index.html
(For OS X) open –e index.html
(For Windows) notepad index.html

3.Revise the contents of the index.html file to change the background color and some of the text on the webpage, and then save the file.

```
<!DOCTYPE html> <html> <head> <title>Updated Sample Deployment</title> <style>
body { color: #000000; background-color: #CCFFCC; font-family: Arial, sans-serif;
font-size:14px; } h1 { font-size: 250%; font-weight: normal; margin-bottom: 0; } h2 {
font-size: 175%; font-weight: normal; margin-bottom: 0; } </style> </head> <body>
<div align="center"><h1>Updated Sample Deployment</h1></div> <div
align="center"><h2>This application was updated using CodePipeline,
CodeCommit, and CodeDeploy.</h2></div> <div align="center"> <p>Learn
more:</p> <p><a
href="https://docs.aws.amazon.com/codepipeline/latest/userguide/">CodePipeline
User Guide</a></p> <p><a
href="https://docs.aws.amazon.com/codecommit/latest/userguide/">CodeCommit
User Guide</a></p> <p><a
href="https://docs.aws.amazon.com/codedeploy/latest/userguide/">CodeDeploy
User Guide</a></p> </div> </body> </html>
```

4.Commit and push your changes to your CodeCommit repository by running the following commands, one at a time:
git commit -am "Updated sample application files“

```
PS C:\tmp\MyDemoRepo> git commit -am "Updated sample application files"
warning: in the working copy of 'index.html', LF will be replaced by CRLF the next time Git touches it
[master 011ba86] Updated sample application files
 1 file changed, 15 insertions(+), 14 deletions(-)
PS C:\tmp\MyDemoRepo>
```

git push

```
PS C:\tmp\MyDemoRepo> git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 686 bytes | 686.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Validating objects: 100%
To https://git-codecommit.eu-north-1.amazonaws.com/v1/repos/MyDemoRepo
   1b2352a..011ba86  master -> master
PS C:\tmp\MyDemoRepo>
```

To verify your pipeline ran successfully

1.View the initial progress of the pipeline. The status of each stage changes from **No executions yet** to **In Progress**, and then to either **Succeeded** or **Failed**. The running of the pipeline should be complete within a few minutes.

2.After **Succeeded** is displayed for the action status, refresh the demo page you accessed earlier in your browser.

The updated webpage is displayed.