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DIV:D15A - 24

ADVANCED DEV-OPS EXPERIMENT-02

AIM:To Build Your Application using AWS CodeBuild and Deploy on S3 / SEBS using AWS CodePipeline, deploy Sample Application on EC2 instance using AWS CodeDeploy.

Theory:

AWS Elastic Beanstalk (Elastic Beanstalk)

AWS Elastic Beanstalk is a fully managed service that makes it easy to deploy, manage, and scale web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker. It abstracts the underlying infrastructure management (like servers, networking, and storage) so that developers can focus on writing code.

Key Features:

- **Ease of Use:** You can simply upload your code, and Elastic Beanstalk automatically handles deployment, from capacity provisioning, load balancing, and auto-scaling to application health monitoring.
- **Platform Flexibility:** Elastic Beanstalk supports a variety of application platforms, making it a versatile choice for different types of projects.
- **Customization:** While Elastic Beanstalk manages the infrastructure, you still have full control over the AWS resources that power your application.
- **Environment Management:** Elastic Beanstalk allows you to create and manage multiple environments, making it easier to test and deploy new versions of your application.
- **Cost-Effectiveness:** You pay only for the AWS resources needed to run your applications, and there is no additional charge for Elastic Beanstalk.
- Elastic Beanstalk is ideal for developers who want to focus on writing code rather than managing infrastructure. It is commonly used to quickly deploy web applications or RESTful APIs.

AWS CodePipeline

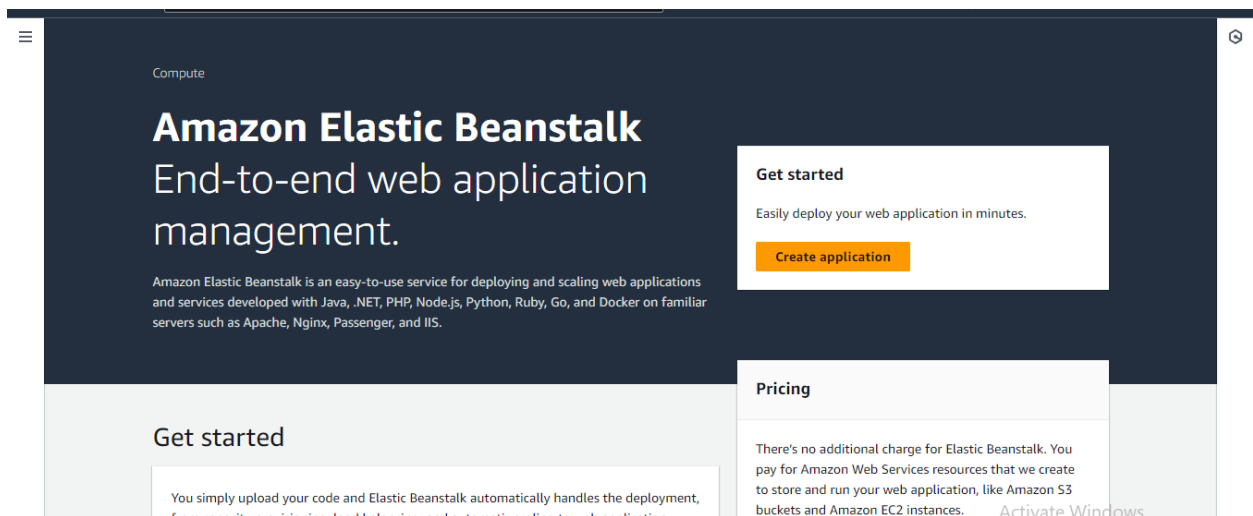
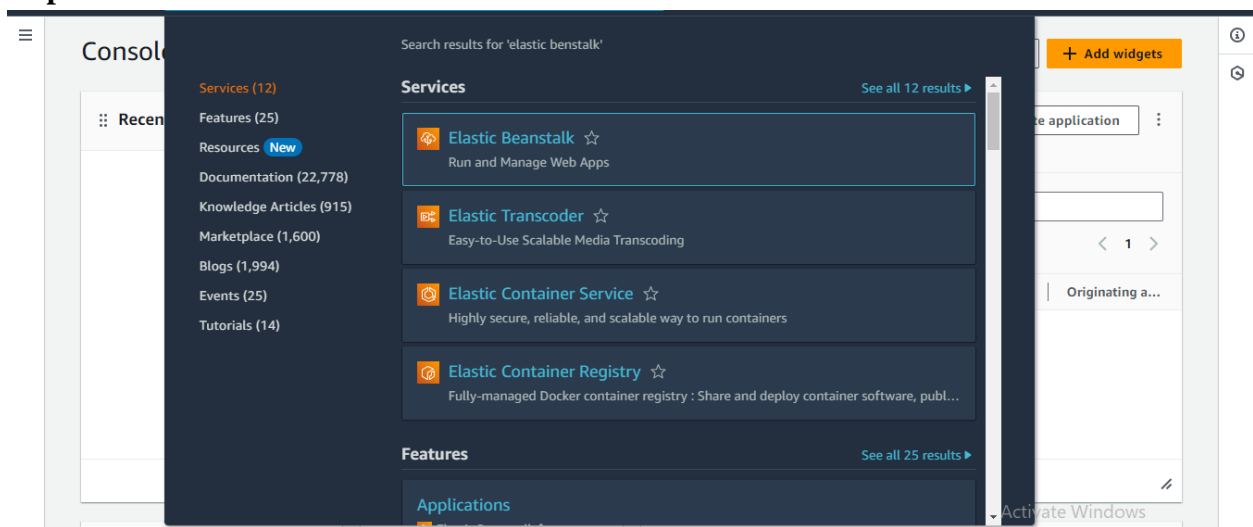
AWS CodePipeline is a fully managed continuous integration and continuous delivery (CI/CD) service that automates the build, test, and deployment phases of your release process. It enables you to model and automate the steps required to release your software.

Key Features:

- **Continuous Integration and Delivery:** CodePipeline automates the release process, enabling you to rapidly deliver updates and new features to your users.
- **Integration with Other AWS Services:** CodePipeline integrates seamlessly with other AWS services such as CodeBuild, CodeDeploy, Elastic Beanstalk, and S3, providing a powerful and cohesive toolset for CI/CD.

- Customizable Workflows: You can define your workflow and customize the steps for building, testing, and deploying your application.
- Third-Party Integration: CodePipeline can integrate with third-party tools such as GitHub, Jenkins, and Bitbucket, allowing you to use existing tools and workflows.
- Parallel Execution: CodePipeline can execute multiple stages in parallel, which speeds up the deployment process.
- AWS CodePipeline is ideal for teams looking to implement CI/CD practices. It is used to automate the entire release process, ensuring that your application is tested and deployed consistently and reliably every time there is a change in the code.

Implementation:



Step 1

Configure environment

Step 2

Configure service access

Step 3 - optional

Set up networking, database, and tags

Step 4 - optional

Configure instance traffic and scaling

Step 5 - optional

Configure updates, monitoring, and logging

Step 6

Review

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

Niraj

Maximum length of 100 characters.

► Application tags (optional)

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

Python

Platform branch

Python 3.11 running on 64bit Amazon Linux 2023

Platform version

4.1.3 (Recommended)

Application code [Info](#)

- ☒ Sample application
- ☐ Existing version
Application versions that you have uploaded.
- ☐ Upload your code
Upload a source bundle from your computer or copy one from Amazon S3.

Presets [Info](#)

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

Configuration presets

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

Cancel

Activate Windows
Go to Settings to activate Windows.

Next

iam

×

Search results for 'iam'

Services (11)

Features (24)

Resources **New**

Documentation (59,485)

Knowledge Articles (461)


Marketplace (860)

Blogs (1,844)


Events (12)

Tutorials (1)


Services [See all 11 results ▶](#)

 IAM ☆


Manage access to AWS resources

 IAM Identity Center ☆

Manage workforce user access to multiple AWS accounts and cloud applications

 Resource Access Manager ☆

Share AWS resources with other accounts or AWS Organizations

 AWS App Mesh ☆

Easily monitor and control microservices

Features [See all 24 results ▶](#)

IAM > Roles > Create role

Step 1
Select trusted entity

Step 2
Add permissions

Step 3
Name, review, and create

Select trusted entity Info

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

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

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

Use case

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

Service or use case

EC2

Choose a use case for the specified service.

Use case

☒ **EC2**
Allows EC2 instances to call AWS services on your behalf.

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

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

☐ **EC2 - Spot Fleet Auto Scaling**
Allows Auto Scaling to access and update EC2 spot fleets on your behalf.















☐ **EC2 - Spot Fleet Tagging**
Allows EC2 to launch spot instances and attach tags to the launched instances on your behalf.

☐ **EC2 - Spot Instances**
Allows EC2 Spot Instances to launch and manage spot instances on your behalf.

☐ **EC2 - Spot Fleet**
Allows EC2 Spot Fleet to launch and manage spot fleet instances on your behalf.

Activate Windows

Go to Settings to activate Windows

Filter by Type				
Q beanstalk		X	All types	14 matches
	Policy name	Type	Description	
<input type="checkbox"/>	 AdministratorAccess-AWS...	AWS managed	Grants account administrative permissions. Explicitly allows developers and administrators t...	
<input type="checkbox"/>	 AWSElasticBeanstalkCust...	AWS managed	Provide the instance in your custom platform builder environment permission to launch EC...	
<input type="checkbox"/>	 AWSElasticBeanstalkEnha...	AWS managed	AWS Elastic Beanstalk Service policy for Health Monitoring system	
<input type="checkbox"/>	 AWSElasticBeanstalkMan...	AWS managed	This policy is for the AWS Elastic Beanstalk service role used to perform managed updates o...	
<input checked="" type="checkbox"/>	 AWSElasticBeanstalkMulti...	AWS managed	Provide the instances in your multicontainer Docker environment access to use the Amazon ...	
<input type="checkbox"/>	 AWSElasticBeanstalkRead...	AWS managed	Grants read-only permissions. Explicitly allows operators to gain direct access to retrieve inf...	
<input type="checkbox"/>	 AWSElasticBeanstalkRole...	AWS managed	AWSElasticBeanstalkRoleCore (Elastic Beanstalk operations role) Allows core operation of a ...	
<input type="checkbox"/>	 AWSElasticBeanstalkRole...	AWS managed	(Elastic Beanstalk operations role) Allows an environment to manage Amazon CloudWatch L...	
<input type="checkbox"/>	 AWSElasticBeanstalkRole...	AWS managed	(Elastic Beanstalk operations role) Allows a multicontainer Docker environment to manage ...	
<input type="checkbox"/>	 AWSElasticBeanstalkRole...	AWS managed	(Elastic Beanstalk operations role) Allows an environment to integrate an Amazon RDS insta...	
<input type="checkbox"/>	 AWSElasticBeanstalkRole...	AWS managed	(Elastic Beanstalk operations role) Allows an environment to enable Amazon SNS topic inte...	
<input type="checkbox"/>	 AWSElasticBeanstalkRole...	AWS managed	(Elastic Beanstalk operations role) Allows a worker environment tier to create an Amazon D...	
<input checked="" type="checkbox"/>	 AWSElasticBeanstalkWeb...	AWS managed	Provide the instances in your web server environment access to upload log files to Amazon S3.	
<input checked="" type="checkbox"/>	 AWSElasticBeanstalkWor...	AWS managed	Provide the instances in your worker environment access to upload log files to Amazon S3, t...	

Name, review, and create

Role details

Role name

Enter a meaningful name to identify this role.

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

Description

Add a short explanation for this role.

Maximum 1000 characters. Use letters (A-Z and a-z), numbers (0-9), tabs, new lines, or any of the following characters: _+=, @-/_!#\$%^&*(){};:'" `

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.

↻

EC2 key pair

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

↻

EC2 instance profile

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

↻

[View permission details](#)

Cancel

Skip to review

Previous

Next

[Elastic Beanstalk](#) > [Environments](#) >

Info



Actions ▾

Upload and deploy

Environment overview

Health

⌚ Pending

Domain

-

Environment ID

📄 e-5gujukvgkpa

Application name

Niraj24

Platform

[Change version](#)

Platform

Python 3.11 running on 64bit Amazon Linux 2023/4.1.3

Running version

-

Platform state

✅ Supported

cloud formation

Search results for 'cloud formation'

Services (66)

Features (110)

Resources New

Documentation (116,209)

Knowledge Articles (1,064)

Marketplace (724)

Blogs (10,144)

Events (374)

Tutorials (26)

Services

CloudFormation

Create and Manage Resources with Templates

Application Composer

Visually design and build modern applications quickly

Athena

Serverless interactive analytics service

AWS Supply Chain

Supply chain management application to manage your supply chain systems.

Features

laC Generator

See all 66 results

See all 110 results

CloudFormation > Stacks

Stacks (1)

Filter status

Active

View nested

Stack name	Status	Created time	Description
awseb-e-5gujukvgkpa-stack	CREATE_COMPLETE	2024-08-21 17:42:52 UTC+0530	AWS Elastic Beanstalk environment (Name: 'Vaishna127-env' Id: 5gujukvgkpa)

Instances (1) Info

Last updated less than a minute ago

Connect

Instance state

Actions

Launch instances

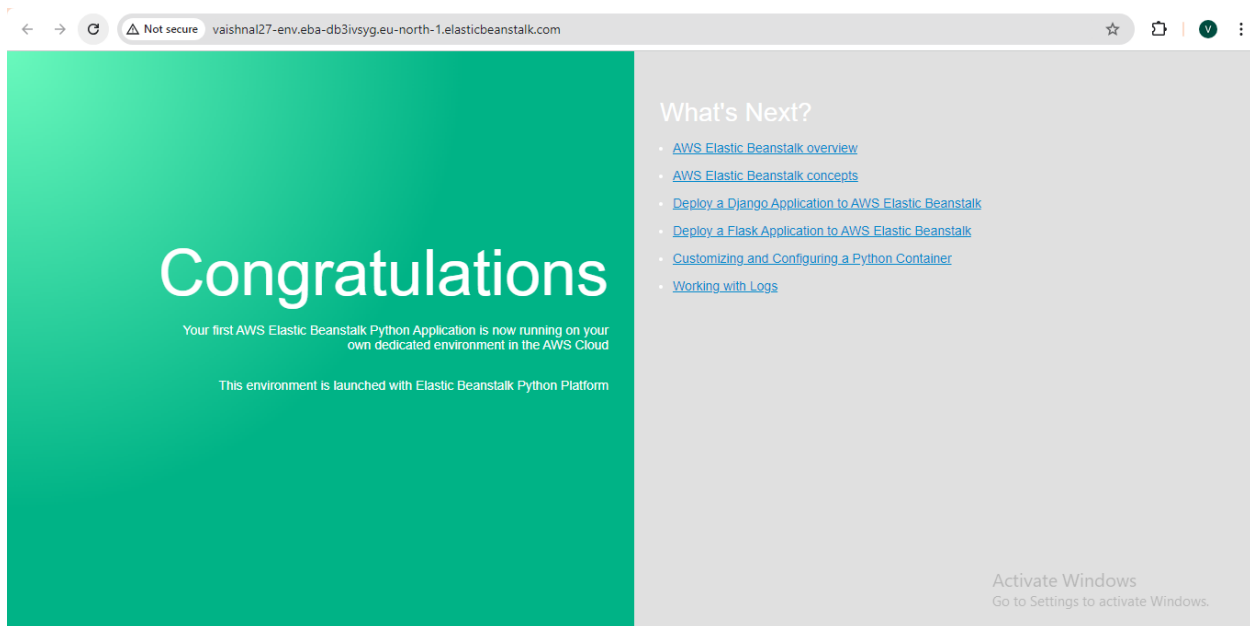
Find Instance by attribute or tag (case-sensitive)

All states

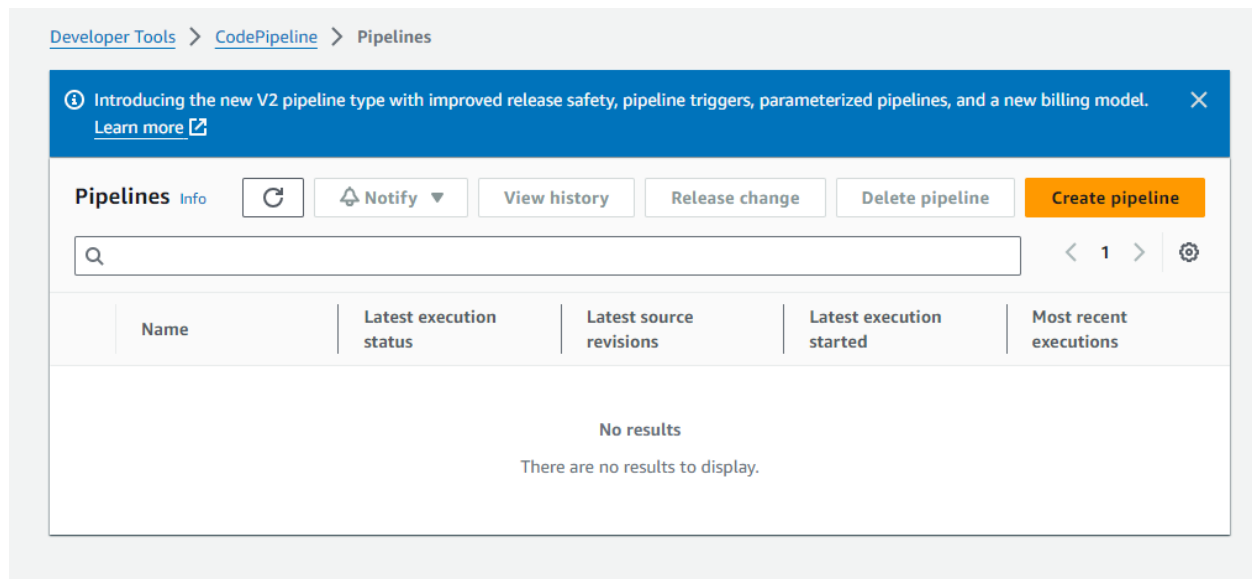
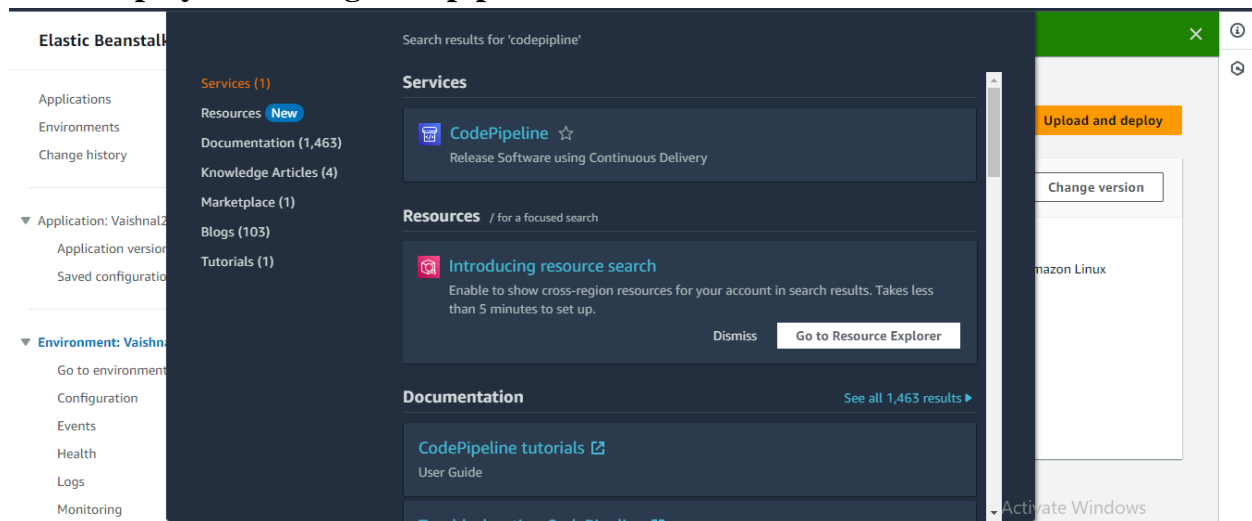
Instance state = running

Clear filters

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability
Niraj24-env	i-09ae763ea6085e5d4	Running	t3.micro	2/2 checks passed	View alarms	eu-north-1



Code Deployment using Codepipeline



Step 1

Choose pipeline settings

Step 2

Add source stage

Step 3

Add build stage

Step 4

Add deploy stage

Step 5

Review

Choose pipeline settings [Info](#)

Step 1 of 5

Pipeline settings

Pipeline name

Enter the pipeline name. You cannot edit the pipeline name after it is created.

Niraj-pipeline

No more than 100 characters

Pipeline type



You can no longer create V1 pipelines through the console. We recommend you use the V2 pipeline type with improved release safety, pipeline triggers, parameterized pipelines, and a new billing model.

Execution mode

Choose the execution mode for your pipeline. This determines how the pipeline is run.

☐ Superseded

A more recent execution can overtake an older one. This is the default.

☒ Queued (Pipeline type V2 required)

Activate Windows

Go to Settings to activate Windows.

Step 1

Choose pipeline settings

Step 2

Add source stage

Step 3

Add build stage

Step 4

Add deploy stage

Step 5

Review

Add source stage [Info](#)

Step 2 of 5

Source

Source provider

This is where you stored your input artifacts for your pipeline. Choose the provider and then provide the connection details.

GitHub (Version 1)

Grant AWS CodePipeline access to your GitHub repository. This allows AWS CodePipeline to upload commits from GitHub to your pipeline.

Connected



You have successfully configured the action with the provider.



Repository

Q NK2022/IP-lab-Exp-2 X

Branch

Q main X

main

Choose a detection mode to automatically start your pipeline when a change occurs in the source code.



GitHub webhooks (recommended)

Use webhooks in GitHub to automatically start my pipeline when a change occurs



AWS CodePipeline

Use AWS CodePipeline to check periodically for changes

Cancel

Previous

Next

Developer Tools > CodePipeline > Pipelines > Create new pipeline

Step 1

Choose pipeline settings

Step 2

Add source stage

Step 3

Add build stage

Step 4

Add deploy stage

Step 5

Review

Add build stage [Info](#)

Step 3 of 5

Build - optional

Build provider

This is the tool of your build project. Provide build artifact details like operating system, build spec file, and output file names.

Cancel

Previous

Skip build stage

Next

Developer Tools > CodePipeline > Pipelines > Create new pipeline

Step 1

Choose pipeline settings

Step 2

Add source stage

Step 3

Add build stage

Step 4

Add deploy stage

Step 5

Review

Add deploy stage [Info](#)

Step 4 of 5



You cannot skip this stage

Pipelines must have at least two stages. Your second stage must be either a build or deployment stage. Choose a provider for either the build stage or deployment stage.

Deploy

Deploy provider

Choose how you deploy to instances. Choose the provider, and then provide the configuration details for that provider.

AWS Elastic Beanstalk

Region

Europe (Stockholm)

Application name

Choose an application that you have already created in the AWS Elastic Beanstalk console. Or create an application in the AWS Elastic Beanstalk console and then return to this task.

Q Niraj24 X

Environment name

Choose an environment that you have already created in the AWS Elastic Beanstalk console. Or create an environment in the AWS Elastic Beanstalk console and then return to this task.

Q Niraj24 X

Niraj24

Cancel

Previous

Next

Developer Tools > CodePipeline > Pipelines > Create new pipeline

Step 1
Choose pipeline settings

Step 2
Add source stage

Step 3
Add build stage

Step 4
Add deploy stage

Step 5
Review

Review

Step 5 of 5

Step 1: Choose pipeline settings

Pipeline settings

Pipeline name
Niraj-pipeline

Pipeline type
V2

Execution mode
QUEUED

Artifact location
A new Amazon S3 bucket will be created as the default artifact store for your pipeline

Service role name
AWSCodePipelineServiceRole-eu-north-1-Vaishnal-pipeline

Activate Windows
Go to Settings to activate Windows

Developer Tools
CodePipeline

- Source • CodeCommit
- Artifacts • CodeArtifact
- Build • CodeBuild
- Deploy • CodeDeploy
- Pipeline • CodePipeline
 - Getting started
 - Pipelines
 - Pipeline
 - History
 - Settings
- Settings

Success

Congratulations! The pipeline Vaishnal-pipeline has been created.

Create a notification rule for this pipeline

Developer Tools > CodePipeline > Pipelines > Vaishnal-pipeline

Niraj -pipeline

Notify

Edit

Stop execution

Clone pipeline

Release change

Pipeline type: V2 Execution mode: QUEUED

Source Succeeded

Pipeline execution ID: 914dbdae-9746-43a0-917c-96f15484b6e0

Source

GitHub (Version 1)

Succeeded - Just now

2f65ba7d

View details

