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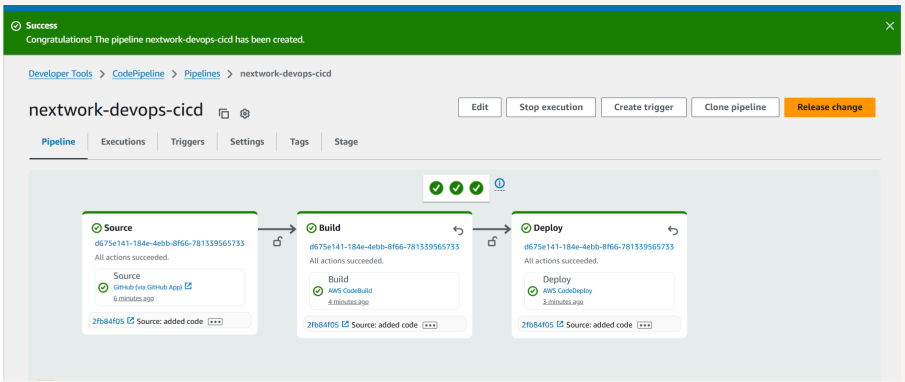
Build a CI/CD Pipeline with AWS

shilpa kale



Introducing Today's Project!

In this project, we will demonstrate how to use CodePipeline to set up a CI/CD pipeline! CodePipeline will automate the flow from GitHub all the way to CodeDeploy. We'll be able to push a change to code & see the updated webapp without going to CB,CD

Key tools and concepts

Services we used were CodePipeline, CodeDeploy, CodeBuild, CodeConnection, CodeArtifact, GitHub, S3, EC2, IAM, CloudFormation, VS Code. Key concepts we learnt include the different stages in CI/CD pipelines and webhooks.

Project reflection

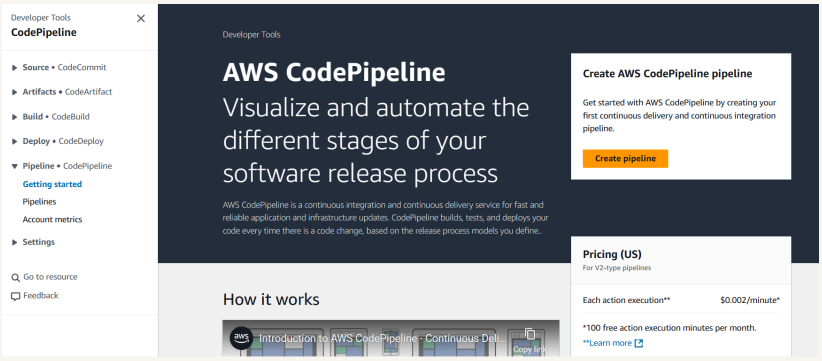
This project took us approx 3 hrs including documentation and troubleshooting time. The most challenging part was to push our code changes and resolve permissions errors. It was most rewarding to see our deployed web app update without doing ourselve

Starting a CI/CD Pipeline

AWS CodePipeline is AWS DevOps tool that helps us create a workflow that automatically moves code from GitHub all the way to CodeDeploy. This helps to make sure deployments are consistent and reliable.

CodePipeline offers different execution modes based on how we treat multiple run of the same pipeline. We chose 'Superseded' which means we will focus on running the latest push that we did and cancel older runs. Other options are Queued & Parallel.

A service role gets created automatically during setup so that CodePipeline has access to the resources it needs to coordinate the diff stages i.e access to CodeConnection to connect to GitHub, access to CodeBuild and S3 to store artifacts.



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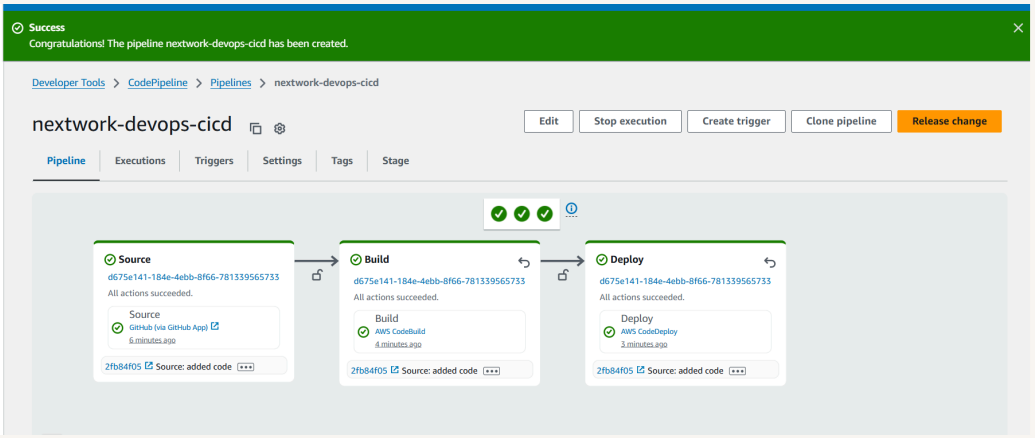
CI/CD Stages

The three stages we've set up in my CI/CD pipeline are Source(source code which is GitHub), Build(building ththe web app using CodeBuild), Deploy(deploying changes of our web app using CodeDeploy).

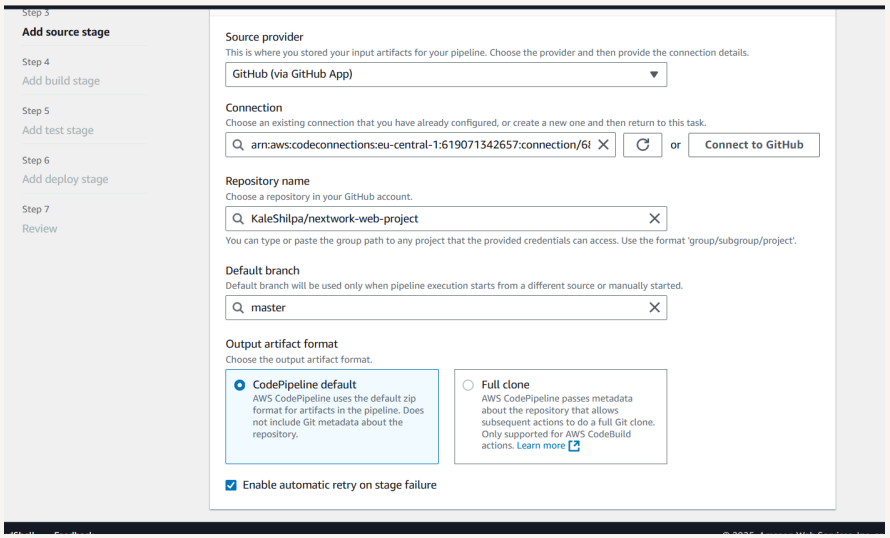
CodePipeline organizes the three stages into a single diagram that showcases the flow of changes from of changes from source to deploy. In each stage, you can see more details on the pipeline execution that it belongs to & shortcuts to conectd servic



Source Stage

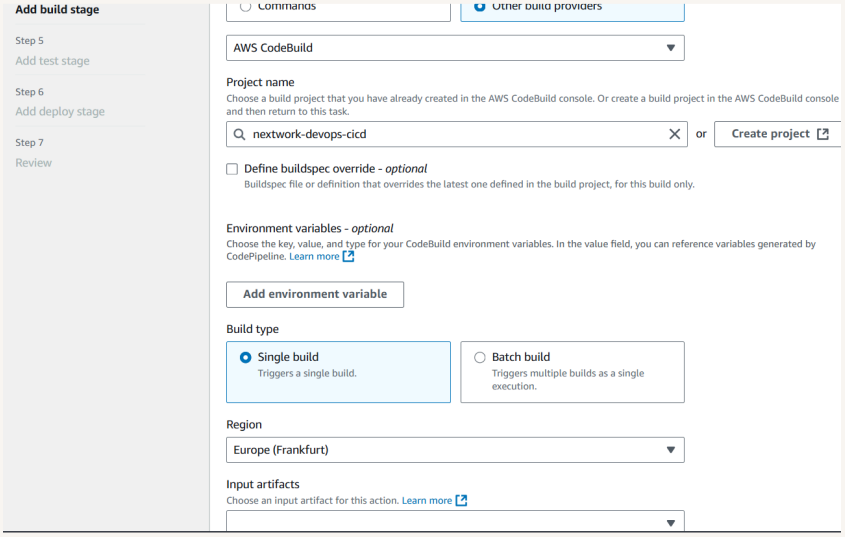
In the Source stage, the default branch tells CodePipeline exactly which version of our code we want to use in this workflow. In prod env. you can have many diff branches to represent many diff versions of your code.

The source stage is also where you enable webhook events, which are like notifications. Whenever you make change to the code, webhook events will detect the change and alert CodePipeline to trigger a new run.



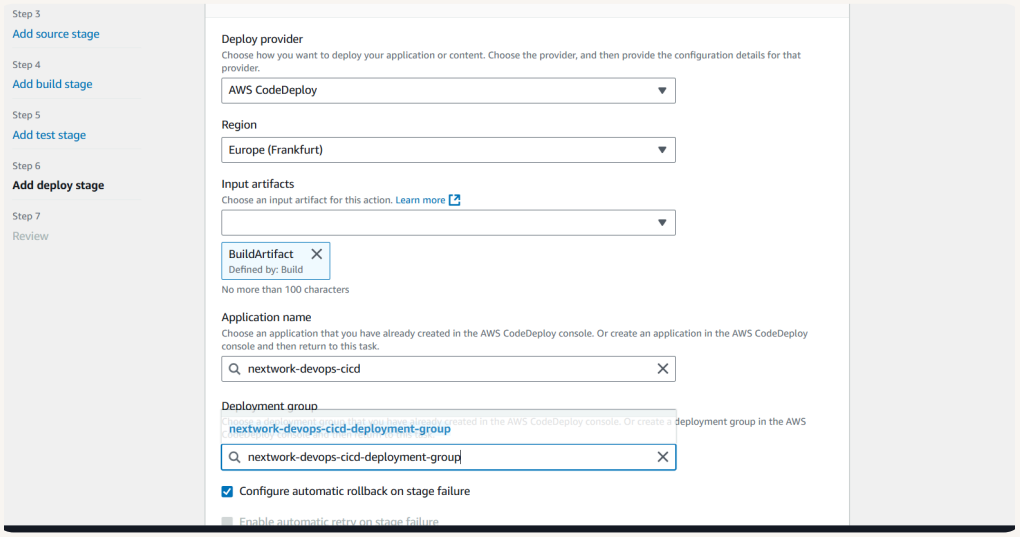
Build Stage

The Build stage sets up how we build our web app and make it ready for deployment. We configured CodeBuild to be our build provider and to use the input artifacts that was outputted by source stage. The input artifact is the zip file.



Deploy Stage

The Deploy stage is where we setup CodeDeploy to be our deployment provider. It takes the BuildArtifact from CodeBuild, application and deployment settings that we set in our deployment group.

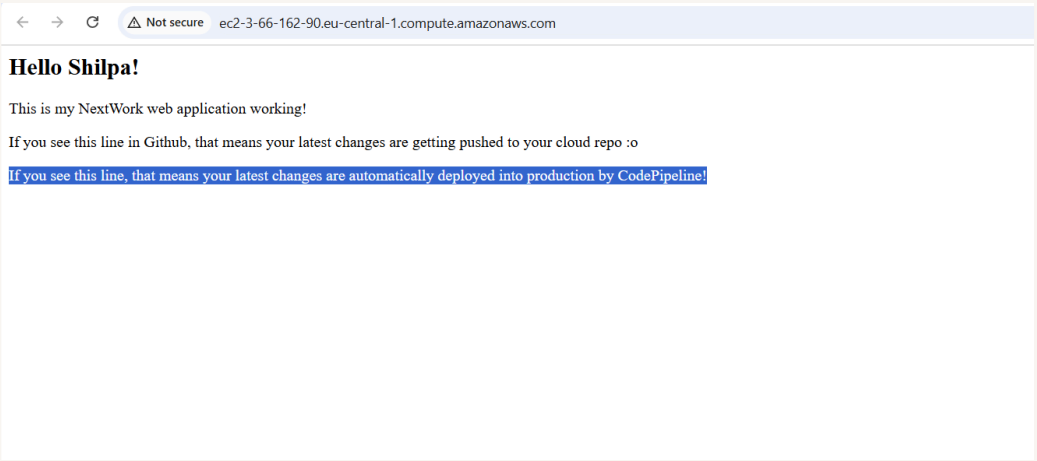


Success!

Since our CI/CD pipeline gets triggered by code changes and webhooks, we tested our pipeline by updating our code. We added a new line to index.jsp and pushed those changes too.

The moment we pushed the code change, CodePipeline responded immidiately by triggering a new build and deploy stage. The commit message under each stage reflects the latest code change that they are using.

Once our pipeline executed successfully, we checked our live webapp and can confirm that it updated without us having to manually rebuild the project in CodeBuild and redeploy the code in CodeDeploy. The changes went live straight away to production.


Not secure
ec2-3-66-162-90.eu-central-1.compute.amazonaws.com
Hello Shilpa!
This is my NextWork web application working!
If you see this line in Github, that means your latest changes are getting pushed to your cloud repo :o
If you see this line, that means your latest changes are automatically deployed into production by CodePipeline!

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