

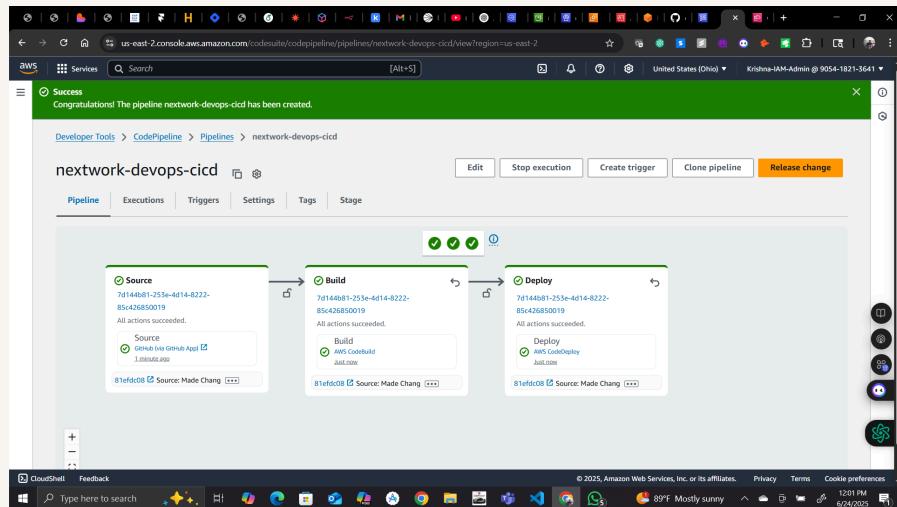


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Build a CI/CD Pipeline with AWS

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Introducing Today's Project!

In this project, I will demonstrate how to create an automated CI/CD pipeline using AWS CodePipeline. I'm doing this project to learn how to integrate GitHub, CodeBuild, and CodeDeploy for seamless, reliable, and hands-free deployments.

Key tools and concepts

Services I used were CodePipeline, CodeBuild, CodeDeploy, CodeArtifact, CloudFormation, EC2, IAM, S3, and CodeConnections. Key concepts I learnt include CI/CD automation, build-deploy flow, role-based access, and webhook triggers.

Project reflection

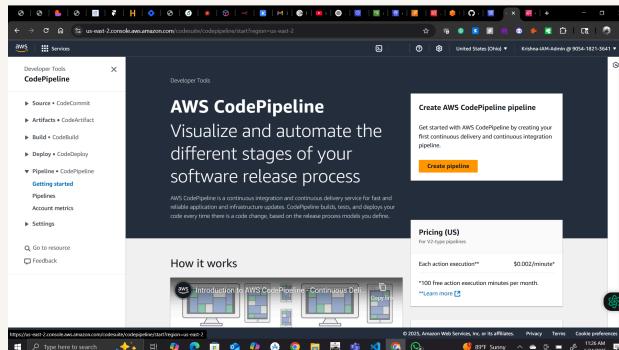
This project took me approximately 4 hours to complete from scratch. The most challenging part was resolving the GitHub connection error. It was most rewarding to see the automated pipeline deploy changes successfully in real time.

Starting a CI/CD Pipeline

AWS CodePipeline is a fully managed continuous integration and delivery (CI/CD) service that automates the build, test, and deploy phases of application development. It helps deliver code changes quickly and reliably with every code commit.

CodePipeline offers different execution modes based on how and when actions run. I chose on-demand mode for manual control. Other options include automatic (polling or webhook) for event-based triggers, and parallel executions for faster pipelines.

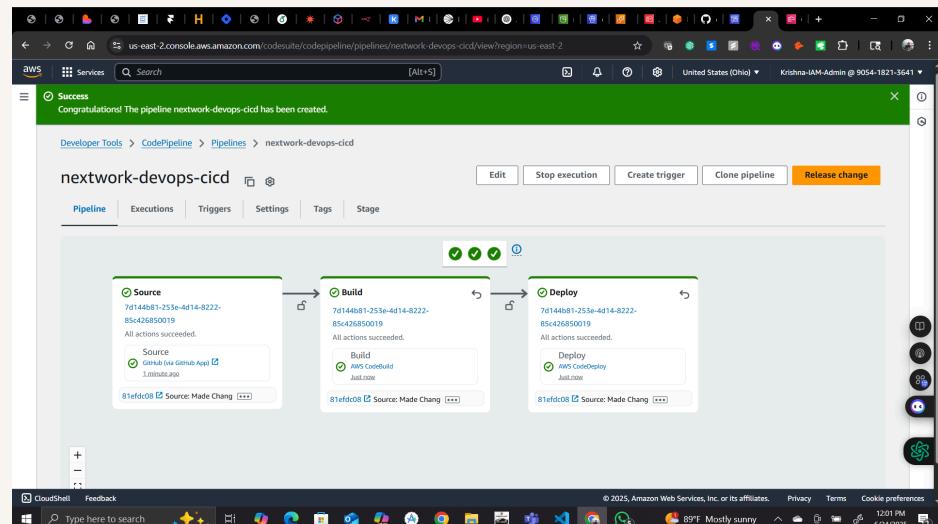
A service role gets created automatically during setup so CodePipeline can interact with other AWS services like CodeBuild, CodeDeploy, and S3 on your behalf. It grants the necessary permissions to execute actions securely throughout the pipeline.



CI/CD Stages

The three stages I've set up in my CI/CD pipeline are Source, Build, and Deploy. While setting up each part, I learnt about integrating GitHub for code, using CodeBuild to compile it, and deploying via CodeDeploy efficiently.

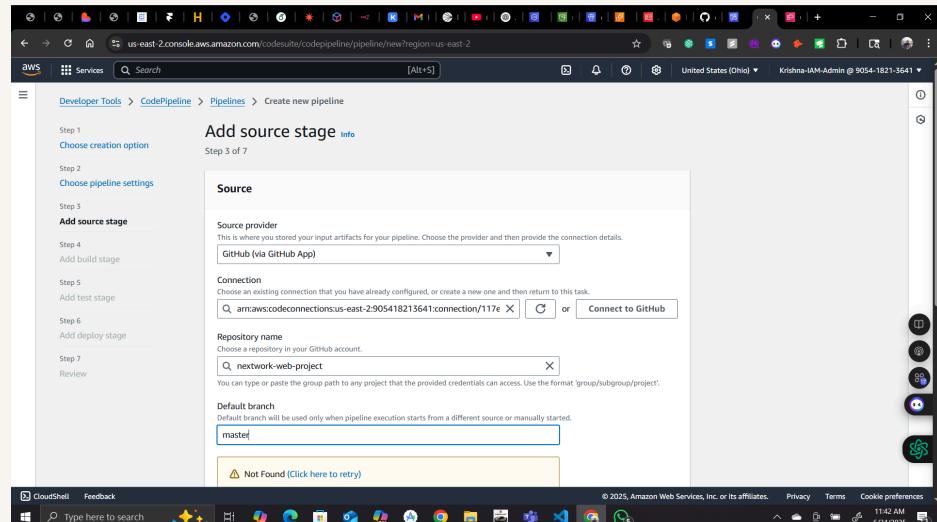
CodePipeline organizes the three stages into a visual workflow. In each stage, you can see more details on execution status, logs, duration, and any errors—helping you monitor progress and troubleshoot issues quickly during the CI/CD process.



Source Stage

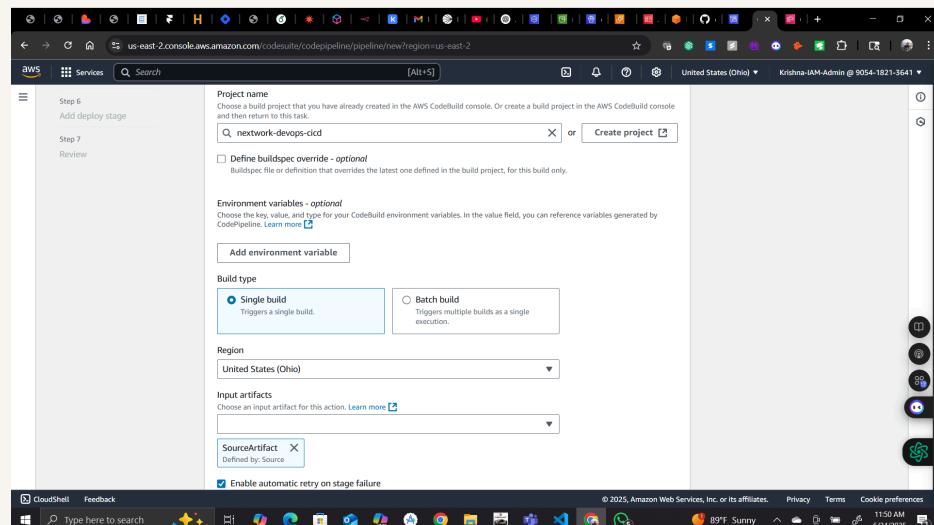
In the Source stage, the default branch tells CodePipeline which branch to monitor for changes. It ensures that builds and deployments are triggered only when updates occur in that specific branch, keeping the pipeline aligned with your main codebase.

The source stage is also where you enable webhook events, which are crucial for automating CI/CD. They let GitHub notify CodePipeline of code changes instantly, triggering builds and deployments in real time without any manual action needed.



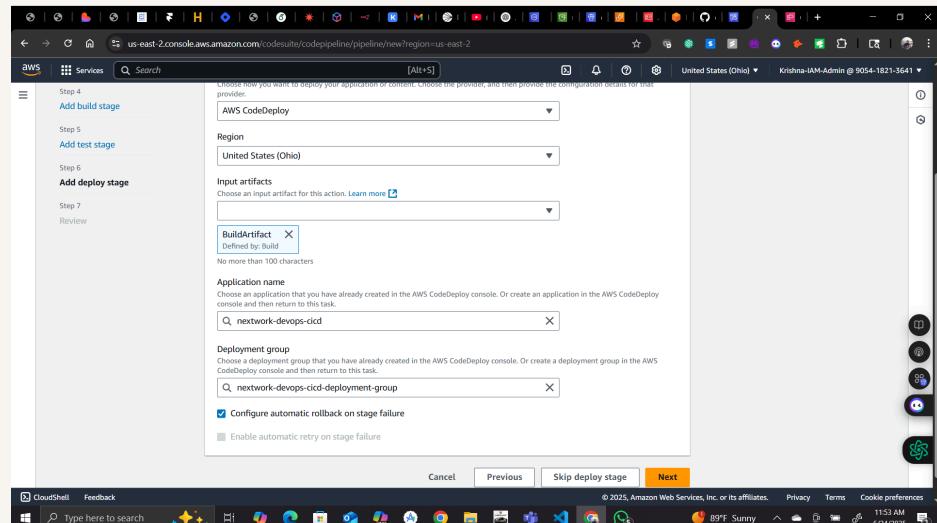
Build Stage

The Build stage sets up the environment to compile and test the source code. I configured it to use SourceArtifact because it contains the output from the Source stage our latest code. The input artifact for the build stage is essential to start build



Deploy Stage

The Deploy stage is where the built and tested code is released to the target environment. I configured it to use AWS CodeDeploy with my deployment group and application name, enabling automated, reliable deployments to EC2 or other targets.



Success!

Since my CI/CD pipeline gets triggered by code changes, I tested my pipeline by adding a confirmation message in the <body> of index.jsp. This change verified that the pipeline builds and deploys updates automatically.

The moment I pushed the code change, the pipeline was triggered automatically. The commit message under each stage reflects the update, showing that the source, build, and deploy stages executed successfully in response to the change.

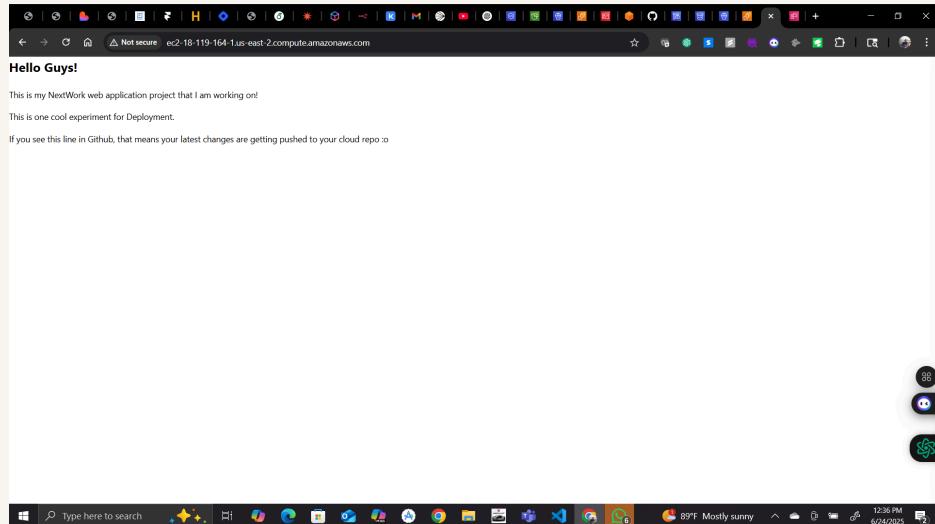
Once my pipeline executed successfully, I checked the deployment target to confirm the changes appeared in the application. Seeing the updated content in the web app verified that the CI/CD pipeline built, tested, and deployed the code correctly.

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