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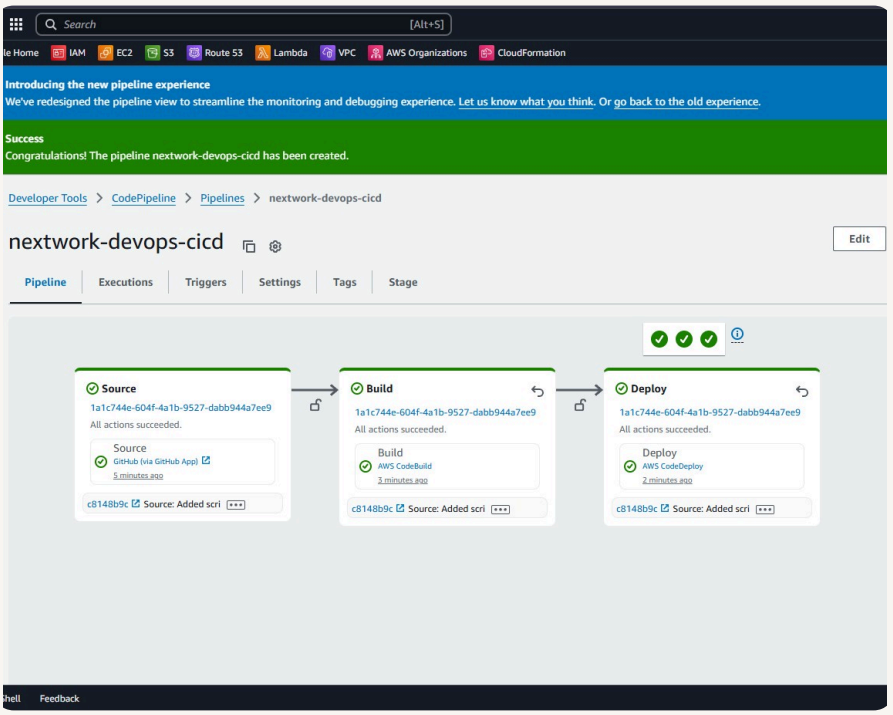
Build a CI/CD Pipeline with AWS

Gursimran Singh



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Introducing Today's Project!

In this project, I will demonstrate how to build a CI/CD pipeline using AWS CodePipeline. I'm doing this project to learn how to automate code deployment, integrate build/test stages, and handle rollbacks effectively in real-world scenarios.

Key tools and concepts

Services I used were **AWS CodePipeline**, **CodeBuild**, **CodeDeploy**, and **GitHub**. Key concepts I learnt include setting up CI/CD pipelines, integrating source control, automating deployments, and using webhooks for continuous delivery.

Project reflection

This project took me approximately 2 hours. The most challenging part was making the GitHub webhooks work correctly with CodePipeline. It was most rewarding to see my code automatically build and deploy after each push.

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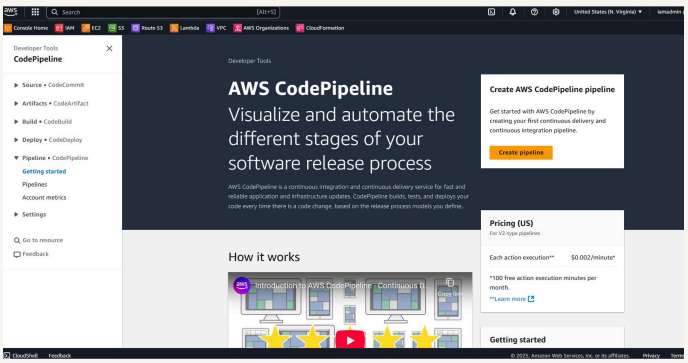
Starting a CI/CD Pipeline

AWS CodePipeline is a fully managed CI/CD service that automates your build, test, and deployment phases. We're using it to ensure every code change is automatically tested and deployed, making our delivery process faster and more reliable.

CodePipeline offers different execution modes based on how it handles multiple pipeline runs. I chose **Superseded** mode to ensure only the latest code is deployed. Other options include **Queued** and **Parallel** for different workflow needs.

A service role gets created automatically during setup so CodePipeline can access and interact with other AWS services like CodeBuild, CodeDeploy, and S3 on your behalf to execute each stage of the pipeline securely and efficiently.



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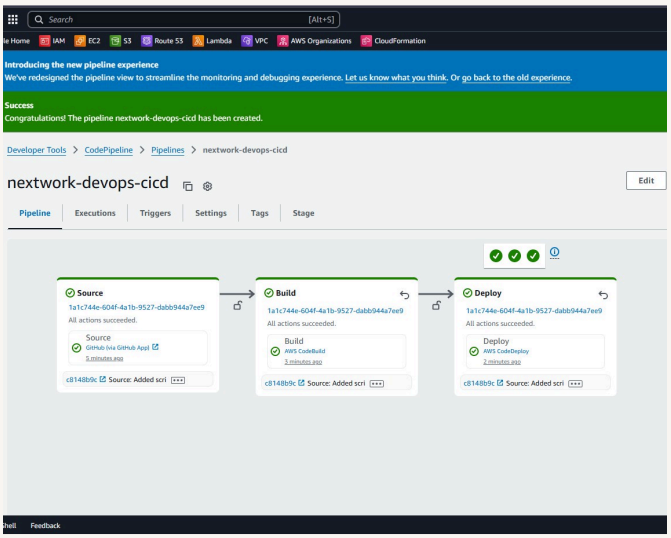
CI/CD Stages

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 automating code fetch, compiling code using CodeBuild, and deploying using CodeDeploy.

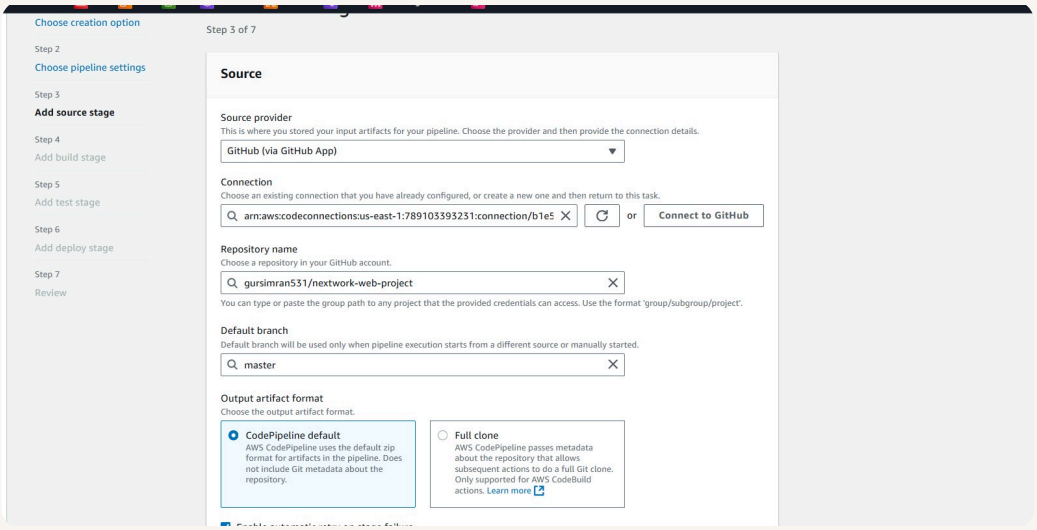
CodePipeline organizes the three stages into a visual timeline. In each stage, you can see more details on execution status, timing, logs, errors, and whether the stage succeeded, failed, or was skipped—helping with quick debugging.



Source Stage

In the Source stage, the default branch tells CodePipeline which branch to monitor for changes so it knows when to trigger a new pipeline execution based on code updates pushed to that specific branch.

The source stage is also where you enable webhook events, which automatically trigger the pipeline whenever you push changes to the repo, ensuring faster feedback and continuous integration without manual intervention.



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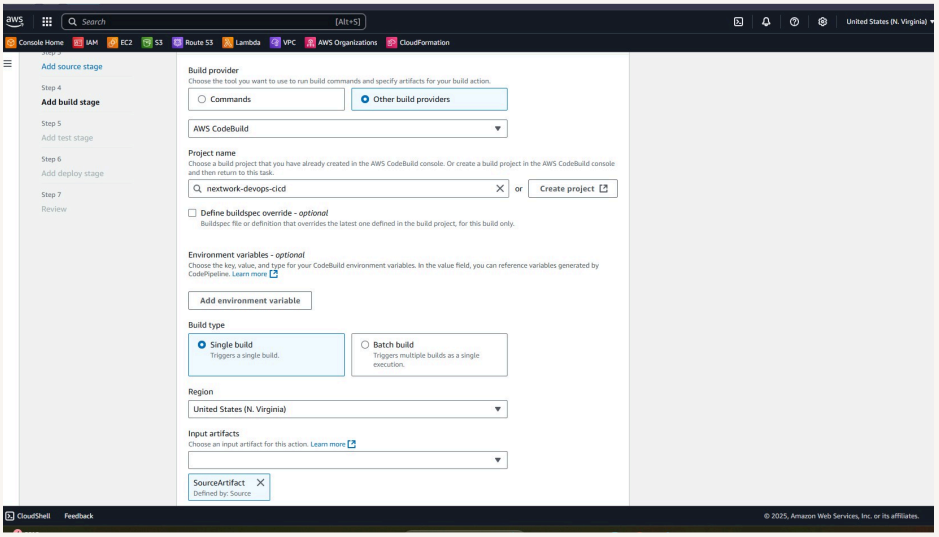
Build Stage

The Build stage sets up the CodeBuild project to compile and package the code. I configured it to use the source output as input. The input artifact for the build stage is **SourceArtifact** because it contains the latest source code.



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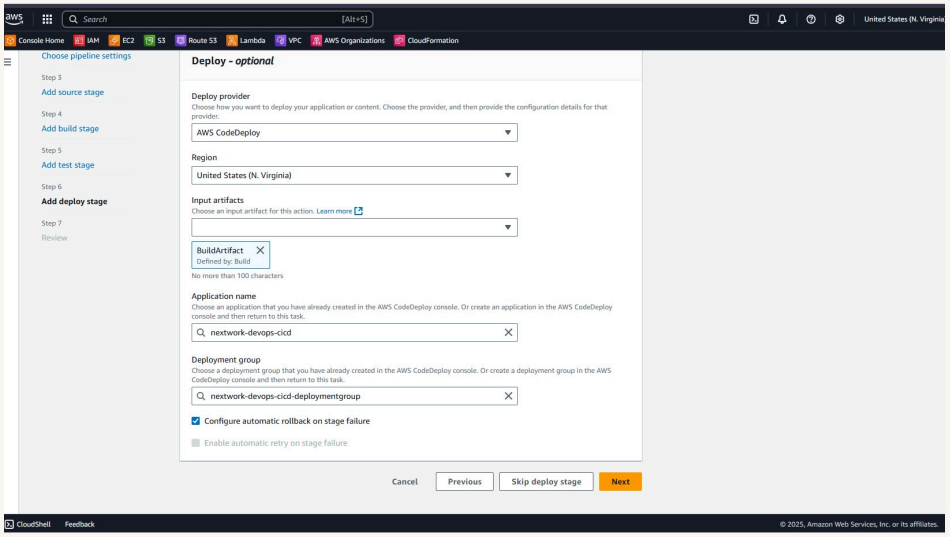
Deploy Stage

The Deploy stage is where the built code gets released to the target environment. I configured it to use CodeDeploy, linked it to my deployment group, and set *BuildArtifact* as the input to deploy the latest build output.

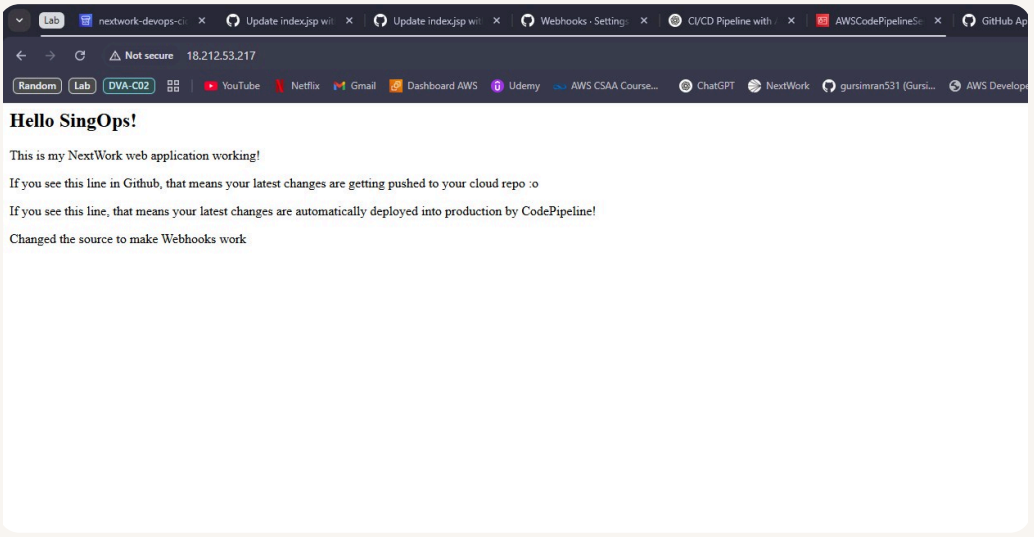


Success!

Since my CI/CD pipeline gets triggered by GitHub pushes, I tested my pipeline by adding a line of HTML: `<p>If you see this line, that means your latest changes are automatically deployed into production by CodePipeline!</p>`

The moment I pushed the code change, the pipeline was automatically triggered. The commit message under each stage reflects the exact GitHub commit that started the execution, confirming the update was detected and processed correctly.

Once my pipeline executed successfully, I checked the deployed application and saw the new content live. This confirmed that the pipeline automatically built and deployed the latest code after my GitHub push.


Not secure 18.212.53.217
Hello SingOps!
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!
Changed the source to make Webhooks work

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