**Deployment #4**

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**Description:**

Demonstrate your ability to deploy an application into a VPC using IaC.

**Pre-requisites:**

* AWS account
* CI tool of choice (Jenkins)
* GitHub repository you’d like to deploy

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| Install Jenkins on EC2 |
| Install Terraform on the Jenkins(ubuntu) Server:   wget -O- https://apt.releases.hashicorp.com/gpg | gpg --dearmor | sudo tee /usr/share/keyrings/hashicorp-archive-keyring.gpg  echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg]  https://apt.releases.hashicorp.com $(lsb\_release -cs) main" | sudo tee /etc/apt/sources.list.d/hashicorp.list  sudo apt update && sudo apt install terraform  Link: <https://www.terraform.io/downloads> |
| Configure Credentials on Jenkins GUI: In the Jenkins Dashboard, click on manage Jenkins and then select Manage Credentials:  Graphical user interface, text, application  Description automatically generated with medium confidence  Now Select global:  Graphical user interface, application  Description automatically generated  On the right-hand side, select Add Credentials:  A picture containing logo  Description automatically generated |
| Then enter the First Credentials:   * Select “Secret text” for kind * Scope should be Global * Secret: Copy and Paste your AWS access Key * ID: AWS\_ACCESS\_KEY * Select Create   Then enter the Second Credentials:   * Select “Secret text” for kind * Scope should be Global * Secret: Copy and Paste your AWS secret Key * ID: AWS\_SECRET\_KEY * Select Create |
| Create a Pipeline build in Jenkins: With stages:   * Build * Test   Terraform Deploy stages:   * Init * Plan * Apply |
| Issues faced during working on this deployment:  1. I couldn’t add a Security Group directly to the VPC when working the VPC Module in Terraform, so I had to create a separate resource for Security Group. |
| Explaining Workflow:  1. Developers commit their code on GitHub Repo 2. DevOps Engineer will fork the repo and then clone to their local machine 3. Install Jenkins on the Default VPC and then start Jenkins 4. Copy the GitHub repo Link and create a token to connect to Jenkins 5. Add the GitHub Repo information to the Jenkins Server and integrate 6. Create a New Multi Branch Pipeline 7. Go to AWS and create a User and get the AWS Access key and Secret Key 8. Add the Keys to the Manage Credentials 9. You are ready to start your BUILD and TEST for your Deployment 10. Create your resources using Terraform File 11. And you are ready to deploy your application to Terraform |
| Modifications to add:  1. We can add an Application Load balancer between 2 Availability Zones so that we can distribute the traffic 2. We can Use ECS to deploy the Python application to a container. |
| Pipeline Diagram: Diagram  Description automatically generated |