

GitOps with ArgoCD - Project Report

This project demonstrates GitOps using ArgoCD and Minikube on a Ubuntu Server. Kubernetes deployments are automatically synced from a GitHub repository using a declarative approach.

Tools Used:

- Kubernetes (Minikube)
- ArgoCD
- GitHub
- Docker

Objective:

Implement GitOps by managing Kubernetes deployment states directly via Git and ArgoCD.

Workflow:

1. Kubernetes manifests are stored in a GitHub repository.
2. ArgoCD watches the Git repository.
3. Any update in Git (e.g., image version) triggers automatic synchronization with the Kubernetes cluster.

Setup Steps:

1. Start Minikube on Ubuntu server.
2. Install ArgoCD in a separate namespace.
3. Expose ArgoCD UI via port forwarding.
4. Login to ArgoCD using CLI and deploy the application from the GitHub repository.
5. Enable auto-sync to allow automatic updates from Git.

Demo:

- Initial deployment uses nginx:1.25.
- Change to nginx:1.26 in GitHub repo and push.
- ArgoCD detects the change and updates the deployment automatically.

Resume Line:

Implemented GitOps pipeline using ArgoCD and Kubernetes to enable declarative and automated application deployments from GitHub.