

CI/CD Pipeline Implementation for PHP Applications

Name: Sally Munga

Date: 12/11/2025

Project Overview

Implemented a complete end-to-end CI/CD pipeline for PHP-based applications (Tooling and TODO web apps) using modern DevOps tools. The pipeline automates building, testing, security scanning, quality gating, and deployment across multiple environments.

Technical Stack

- **Orchestration:** Jenkins
- **Configuration Management:** Ansible
- **Code Quality:** SonarQube 7.9.3
- **Artifact Repository:** Artifactory
- **Reverse Proxy:** Nginx
- **Database:** PostgreSQL (SonarQube), MySQL (Applications)
- **Languages:** PHP, Python, Groovy (Jenkinsfile)

Key Features Implemented

1. Multi-Stage Jenkins Pipeline

- Automated code checkout and dependency management
- Unit testing with PHPUnit
- Code analysis using phploc
- Quality gates with SonarQube
- Artifact packaging and deployment
- Multi-environment deployment support

2. Quality Assurance

- SonarQube integration for static code analysis
- Code coverage requirements (80%+)
- Security vulnerability scanning
- Maintainability and reliability ratings
- Automated quality gate enforcement

3. Multi-Environment Deployment

- Development → SIT → UAT → Pentest → Pre-Prod → Prod
- Parameterized inventory management
- Environment-specific configurations
- Rollback capabilities

4. Local Testing Setup

- All tools configured on localhost for cost-effective testing
- Docker containers simulating production environments
- Complete pipeline validation in isolated environment

Project Deliverables

- ✓ Complete Jenkins pipeline with quality gates
- ✓ Ansible roles for all infrastructure components
- ✓ SonarQube quality profiles and rules
- ✓ Artifactory repository configuration
- ✓ Multi-environment deployment strategy
- ✓ Comprehensive documentation and troubleshooting guides

Challenges Overcome

- Tool integration complexities
- Quality gate configuration and tuning
- Local environment simulation
- Pipeline debugging and optimization
- Multi-tool authentication and connectivity

Learning Outcomes

- Mastered end-to-end CI/CD pipeline design
- Gained expertise in DevOps tool integration
- Developed troubleshooting skills for complex systems
- Learned to implement and enforce code quality standards
- Acquired experience in multi-environment deployment strategies

GitHub Repository

[StegHub_DevOps/project13/README.md at main · 123Origami/StegHub_DevOps](#)

LinkedIn Post

https://www.linkedin.com/posts/sally-m-09546a245_devops-cicd-jenkins-activity-7404805001014927360-sOjH?utm_source=share&utm_medium=member_desktop&rcm=ACoAADzCKfEBZK3LPTQ5D0pi879scjlAX0g4FTk