

# **CI/CD Pipeline Implementation for PHP Applications**

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## **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&rctm=ACoAADzCKfEBZK3LPTQ5D0pi879scjlAX0g4FTk](https://www.linkedin.com/posts/sally-m-09546a245_devops-cicd-jenkins-activity-7404805001014927360-sOjH?utm_source=share&utm_medium=member_desktop&rctm=ACoAADzCKfEBZK3LPTQ5D0pi879scjlAX0g4FTk)