# Build and Deployment Pipeline Document

## 1. Overview

This document outlines the process for building and deploying the **[Project Name]** application. It describes each stage involved in the pipeline, tools used, and approvals required.

## 2. Pipeline Stages

1. Source Code Management
2. Build
3. Testing
4. Artifact Management
5. Deployment

## 3. Tools & Technologies

| Stage | Tool | Description |
|---|---|---|
| Source Code | GitHub | Source code repository |
| Build | Jenkins | CI server for automated builds |
| Testing | JUnit | Automated unit and integration tests |
| Artifacts | Nexus | Artifact storage and retrieval |
| Deployment | Ansible | Automated deployments to environments |

## 4. Pipeline Workflow

1. Code is pushed to the main repository branch.
2. Jenkins pipeline is triggered automatically.
3. Build step compiles the application.
4. Unit and integration tests are executed.
5. Successful builds are packaged and uploaded to Nexus.
6. Deploy step pulls artifact and uses Ansible to deploy to target environment.

## 5. Example: Jenkins Pipeline Configuration

```
pipeline {
    agent any
    stages {
        stage('Build') {
            steps {
                sh 'make build'
            }
        }
        stage('Test') {
            steps {
                sh 'make test'
            }
        }
        stage('Package') {
```

```
        steps {
            sh 'make package'
        }
    }
    stage('Deploy') {
        steps {
            sh 'ansible-playbook deploy.yml'
        }
    }
  }
}
```

## 6. Environment Matrix

| Environment | Purpose | Approval Needed |
|---|---|---|
| Development | Internal testing and feature development | No |
| QA | Testing and user acceptance | QA Lead |
| Production | Live application for end users | Product Owner |

## 7. Rollback Strategy

- Manual or automated rollback scripts are available.
- Previous stable artifacts are stored in Nexus for retrieval.
- Rollbacks are documented and communicated to the team.

## 8. Contact

For questions or pipeline issues, contact: *devops-team@[yourcompany].com*