Reference Architecture for Java Stack

OneDevOps
DevOps Reference Architecture across DevOps Vectors

### Implementation Details

**Build**
- Code Storage
- Compile
- Unit Test
- Store Artifact

**Deploy**
- Trigger
- Deployment
- Fetch & Copy
- Artifact
- Deploy Artifact
- Sanity Test
- Notify

**Verify**
- Test Initiation
- Functional & Regression Testing
- NFR Testing
- Verification
- Approval
- Test Closure

**Release**
- Planning
- Definition
- Workflow & Approvals
- Rollout
- Closure

**Measure**
- Define KPI’s
- Implement
- Collect & Collate
- Measure & Evolve

**Environment**
- Planning
- Procurement
- Provisioning
- Maintenance
- Teardown

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**Continuous Integration**
- Continuous Build
- Automated Unit Testing
- Quality Gates
- Automated Packaging & Versioning

**Deployment Automation**
- Automated Artifact Movement
- Automated Deployment
- Automated Smoke Test

**Continuous Testing**
- Functional & Regression Automation
- Automated Load & Performance Testing

**Enterprise Release Management**
- Release Cadence
- Release Strategy
- Automated Release Orchestration

**Continuous Monitoring**
- Data Collation
- Data indexing
- Alerting
- Business Intelligence

**Smart Environment**
- Automated Provisioning
- Infra as code
- Cookie cut environments
- Easy Maintenance

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DEVOPS BUILDING BLOCKS TO ENABLE AUTOMATION ACROSS THE DEVOPS VECTORS
Reference Architecture – Build Vector for Java Stack

**Check out Code**
- Create Branch
- Check-in Changes
- Merge Changes
- Pull Latest Code
- Check code Standards

**Compile Code**
- Setup compile Env
- Pull Dependencies
- Compile Code
- Package Code & versioning

**Unit Test**
- Run unit Test
- Publish Result
- Measure Coverage
- Publish Coverage Result

**Store Artifact**
- Upload artifact
- Publish artifact

### Functions

| SCM: | • GIT |
| Build Tool: | • Gradle • Maven |
| Static Analyzer: | • Sonarqube |
| Code Review: | • Crucible |
| Code Coverage: | • Cobertura |
| Unit Testing: | • Junit • TestNG |
| CI Engine: | • Jenkins • Bamboo |
| Artifact Repository: | • Nexus • Artifactory |
### Reference Architecture – Deploy Vector for Java Stack

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<th>Tool Recommendation</th>
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<tr>
<td>Trigger Deployment</td>
<td>Deployment Req portal or CI Engine → Deployment workflow → Deployment Request → Invoke Deployment</td>
<td>Deployment Workflow → Deployment Request → Invoke Deployment</td>
<td>CI Engine: Jenkins, Bamboo</td>
</tr>
<tr>
<td>Fetch &amp; Copy Artifact(s)</td>
<td>Fetch Artifact → Fetch Dependency → Copy Artifact to target → Copy Dependency to target</td>
<td>Fetch Artifact → Fetch Dependency → Copy Artifact to Target → Copy dependency to target</td>
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<td>Deploy Artifact</td>
<td>Setup App Environment → Update Config/Metadata → Deploy Artifact</td>
<td>Setup App Environment → Update Config/Metadata → Deploy Artifact</td>
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<tr>
<td>Sanity Test</td>
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<td>Run Sanity Test → Update Sanity Test Results</td>
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<td>Test Automation: Selenium, UFT</td>
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<td>Test Management: HP ALM, Jira</td>
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## Reference Architecture – Verify Vector for Java Stack

### Functions

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<th>Release Approval</th>
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<td>Deploy Artifact to Env</td>
<td>Sanity Test - Pass</td>
<td>Create Test Cycle</td>
<td>Deploy Artifact to Env</td>
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<td>Functional Test Automation</td>
<td>Load/ Performance Test Automation</td>
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<td>Correlate Automated Load/ Performance Test Results</td>
<td>Approve Release based on Test Results</td>
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<td><strong>Test Automation:</strong></td>
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<td>Test Closure:</td>
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<td>• Jmeter</td>
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<td><strong>Test Management:</strong></td>
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<td>• XL Release</td>
<td>• Performance &amp; Load Testing:</td>
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<td>• HP ALM</td>
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<td><strong>Service Virtualization:</strong></td>
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<td>• Jira</td>
<td>• Actifio</td>
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<td>Service Virtualization:</td>
<td>Data Virtualization:</td>
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<td>• CA DevTest</td>
<td>• Delphix</td>
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<td><strong>Test Data Management:</strong></td>
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<td></td>
<td>• Parasoft Virtualize</td>
<td>• Actifio</td>
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<td>Test Data Management:</td>
<td>Performance &amp; Load Testing:</td>
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### Implementation Tasks

- **Test Initiation**
  - Deploy Artifact to Env
  - Sanity Test - Pass
  - Create Test Cycle

- **Functional & Regression Testing**
  - Run Functional Test
  - Record Functional Test Results
  - Run Regression Test
  - Record Regression Test Results

- **NFR Testing**
  - Run Load/ Performance Test
  - Record Load/ Performance Test Results

- **Verification Approval**
  - Approve Release based on Test Results

- **Test Closure**
  - Perform Smoke Test
  - Archive Test Results
  - Perform Production Smoke Test
# Reference Architecture – Release Vector for Java Stack

## Functions

<table>
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<tr>
<th>Planning</th>
<th>Definition</th>
<th>Workflow &amp; Approval</th>
<th>Rollout</th>
<th>Closure</th>
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<tr>
<td><strong>Implementation Tasks</strong></td>
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<tr>
<td>Establish Release Cadence</td>
<td>Define Release Scope</td>
<td>Track Release Dependency</td>
<td>Map work items to release</td>
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<tr>
<td></td>
<td>Release Request</td>
<td>Release Approval</td>
<td>Release to next env</td>
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<td>Release Approval</td>
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<td>Prod Rollout Request</td>
<td>Prod Rollout Approval</td>
<td>Rollout Release</td>
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<tr>
<td></td>
<td>Publish Release Notes</td>
<td>Archive release work items</td>
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</tbody>
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## Automation Considerations

- **Release Management:**
  - Jira
  - XL Release
- **Artifact Repository:**
  - Nexus
  - Artifactory
- **Deployment Tool:**
  - XL Deploy
  - UrbanCode Deploy
  - CA Nolio
- **DB Deployment:**
  - Liquibase
  - DB Mastro
- **Test Automation:**
  - Selenium
  - UFT
- **Test Management:**
  - HP ALM
  - Jira

## Tool Recommendation

- **Release Management:**
  - Jira
  - XL Release
- **Artifact Repository:**
  - Nexus
  - Artifactory
- **Deployment Tool:**
  - XL Deploy
  - UrbanCode Deploy
  - CA Nolio
- **DB Deployment:**
  - Liquibase
  - DB Mastro
- **Test Automation:**
  - Selenium
  - UFT
- **Test Management:**
  - HP ALM
  - Jira
Reference Architecture – Measure Vector for Java Stack

Define KPI’s

- Define the KPI’s to be measured

Implement

- Instrument Code for KPI
  - Collect data
  - Index data
  - Collate data
  - Create visualization

Collect & Collate

- Collect data
  - Index data
  - Collate data

Measure

- Business Dashboard
  - Infra Dashboard
  - Alerting

Automation Considerations

- Recipes for Agent Installation
  - Forward data
  - Collect Data
  - Index data
  - Collate data
  - Business Dashboard
  - Infra Dashboard
  - Alerting

Tool Recommendation

Log Management:
- Splunk
- ELK

Infra Monitoring:
- Nagios
- Zabbix
- Zenoss
- Dynatrace

Configuration Management:
- Chef
- Puppet

Application Performance Monitoring:
- AppDynamics
- New Relic

Communication:
- Hipchat

ITSM:
- ServiceNow
- Jira Service Desk
Reference Implementation – Java Stack (Indicative)
Thank You