



CI/CD Pipeline Setup (Azure DevOps, GitHub Actions, Jenkins)

Automate. Integrate. Deliver.

Introduction

The objective of this initiative is to establish a standardized CI/CD framework that streamlines code integration, testing, and deployment across multiple environments.

Our CI/CD pipelines will enhance delivery speed, reliability, and consistency, ensuring that Dev, QA, and Ops teams collaborate effectively from commit to production.

Key Drivers:

- Increasing demand for faster release cycles and shorter time-to-market.
- Lack of standardized pipelines across teams and environments.
- Frequent manual deployments leading to downtime and human errors.
- Need for automated validation, rollback, and version control.
- Executive priority for DevSecOps maturity and end-to-end automation.



Why Implement CI/CD Pipelines

- ✓ Enable continuous integration with automated builds, tests, and code quality checks.
- ✓ Ensure continuous delivery to staging and production environments with minimal downtime.
- ✓ Enhance developer productivity and reduce integration issues.
- ✓ Strengthen deployment reliability through repeatable automation.
- ✓ Support multi-cloud and hybrid deployments (Azure, AWS, On-prem).
- ✓ Integrate security and compliance validation in every stage.



Current Environment Overview

- ✓ Disconnected build and release processes across multiple tools.
- ✓ Manual deployment scripts lacking standardization.
- ✓ Inconsistent version control practices and branching strategies.
- ✓ Limited visibility into build/test success rates.
- ✓ Lack of rollback automation or post-deployment monitoring.
- ✓ Dependency on specific engineers for pipeline execution and troubleshooting.



CI/CD Framework Highlights

- ✓ **Integration:** Centralized repositories in GitHub/Azure Repos for unified code management.
- ✓ **Automation:** End-to-end pipelines using Azure DevOps, GitHub Actions, or Jenkins.
- ✓ **Testing:** Integrated unit, functional, and security testing gates.
- ✓ **Security:** DevSecOps integration via SAST/DAST tools and policy checks.
- ✓ **Observability:** Pipeline dashboards and deployment health metrics.
- ✓ **Governance:** Role-based approvals and environment segregation.



CI/CD Goals

- ✓ Achieve 90% automation in build, test, and deploy processes within 6 months.
- ✓ Reduce deployment time by 50–70% per release.
- ✓ Ensure zero-downtime deployment for production environments.
- ✓ Implement automated rollback and recovery mechanisms.
- ✓ Integrate security scanning in every CI/CD stage.
- ✓ Improve collaboration between Dev, QA, and Ops through shared visibility.



How We Plan to Migrate



Discovery & Assessment

- Identify repetitive manual steps suitable for automation.
- Assess tools (Azure DevOps, GitHub Actions, Jenkins) for best-fit integration.



Framework Design

- Establish environment segregation (Dev, QA, UAT, Prod).
- Integrate security and compliance validations.



Pilot Implementation

- Roll out a pipeline for one key project.
- Measure deployment time, test pass rate, and rollback efficiency.



Full Rollout & Governance

- Scale pipelines across all projects.
- Establish monitoring dashboards and audit compliance reviews.

Tools & Techniques

- ✓ **Version Control:** GitHub, Azure Repos
- ✓ **Pipeline Orchestration:** Azure DevOps Pipelines, Jenkins, GitHub Actions
- ✓ **Build & Artifact Management:** Maven, npm, Docker, Nexus, or ACR
- ✓ **Testing:** Selenium, JUnit, Postman, SonarQube, OWASP ZAP
- ✓ **Infrastructure Automation:** Terraform, Bicep, ARM templates
- ✓ **Security & Compliance:** Azure Defender, Dependabot, Checkov
- ✓ **Monitoring:** Application Insights, Prometheus, Grafana



CI/CD Process

Code Commit

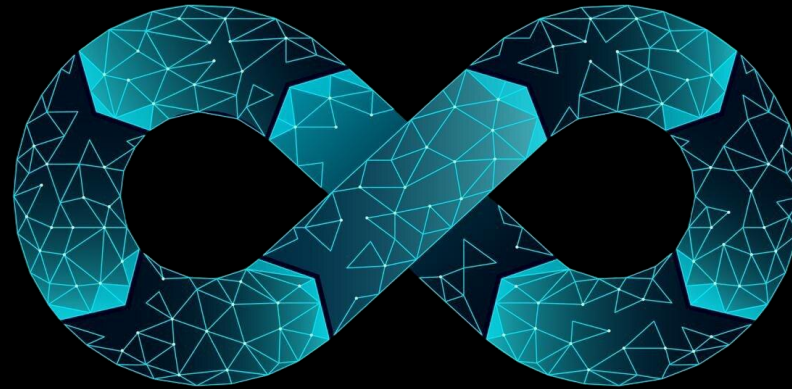
- ❖ Developers push code to a shared repository.

Build Automation

- ❖ Code compiled, dependencies resolved, and unit tests run.

Automated Testing

- ❖ Functional and security tests executed.



Artifact Packaging

- ❖ Build artifacts stored in a central repository.

Deployment Automation

- ❖ Release to Dev/UAT/Prod environments.

Continuous Improvement

- ❖ Review and optimize based on metrics.

Expected Outcomes

- ✓ Reduced deployment errors and rework.
- ✓ Faster, more reliable release cycles.
- ✓ Enhanced transparency across all environments.
- ✓ Stronger DevSecOps alignment with automated governance.
- ✓ Improved developer satisfaction and productivity.
- ✓ Accelerated delivery of business value through continuous improvement.



Challenges and How We Address Them

Manual deployments causing delays

- ❖ Implement fully automated pipelines.

Inconsistent environments

- ❖ Use Infrastructure as Code (IaC) for standardization.

Lack of rollback capability

- ❖ Add automated rollback steps using deployment gates.

Security vulnerabilities in builds

- ❖ Integrate static/dynamic scans within pipelines.

Poor pipeline visibility

- ❖ Enable centralized dashboards and alerts.

Tool fragmentation

- ❖ Consolidate into Azure DevOps or hybrid model.



Deliverables

- ✓ CI/CD Framework Document – Architecture, policies, and pipeline templates.
- ✓ Automated Pipeline Scripts – YAML/JSON definitions for builds and releases.
- ✓ DevSecOps Integration Setup – Security scans and compliance automation.
- ✓ Pilot Implementation Report – Deployment time, test coverage, rollback validation.
- ✓ Dashboards & Reports – Build/test metrics and environment health.
- ✓ Training & Handover Materials – User guides for Dev, QA, and Ops teams.
- ✓ Governance & Review Schedule – Continuous improvement process.
- ✓ Final CI/CD Maturity Assessment – Metrics and performance outcomes.



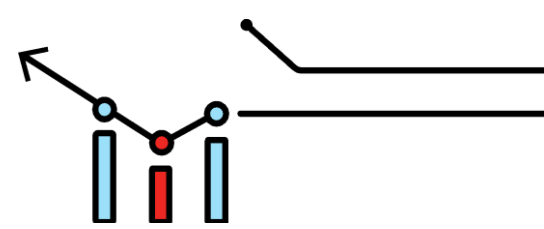
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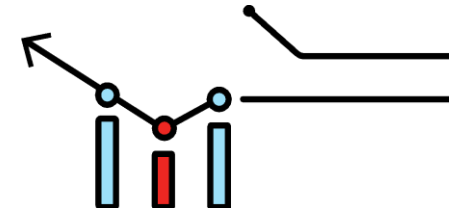
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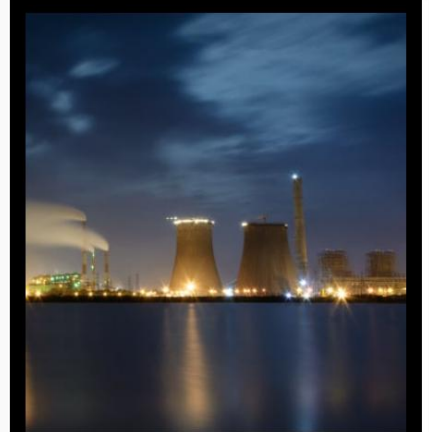
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Thank You!
Let's Discuss

How We Can Accelerate Your Transformation Journey

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