

GitOps: Concepts, Tools, and Best Practices

Introduction

GitOps is a declarative approach to managing infrastructure and deployments using Git as the source of truth.

Core Principles

GitOps relies on declarative infrastructure, version control, automated reconciliation, and pull-based deployment.

Functionality & Advantages

GitOps improves deployment speed, consistency, security, auditability, and disaster recovery.

Tools & Integrations

Key tools include Git, CI/CD platforms (Jenkins, GitHub Actions), and GitOps agents (Argo CD, Flux).

Use Cases

GitOps is used for application deployment, infrastructure management, and microservices orchestration.

Best Practices

Recommendations include using Git workflows, monitoring drift, and enforcing security policies.

Conclusion

GitOps enhances automation, collaboration, and operational efficiency in cloud-native environments.