

Guile Deploy Ledger

A Comprehensive Deployment Tracking System

DSP-DR

January 2024

Introduction

The Challenge

- Modern systems require frequent deployments

Our Solution: Deployment Ledger

A ledger-based deployment tracking system that:

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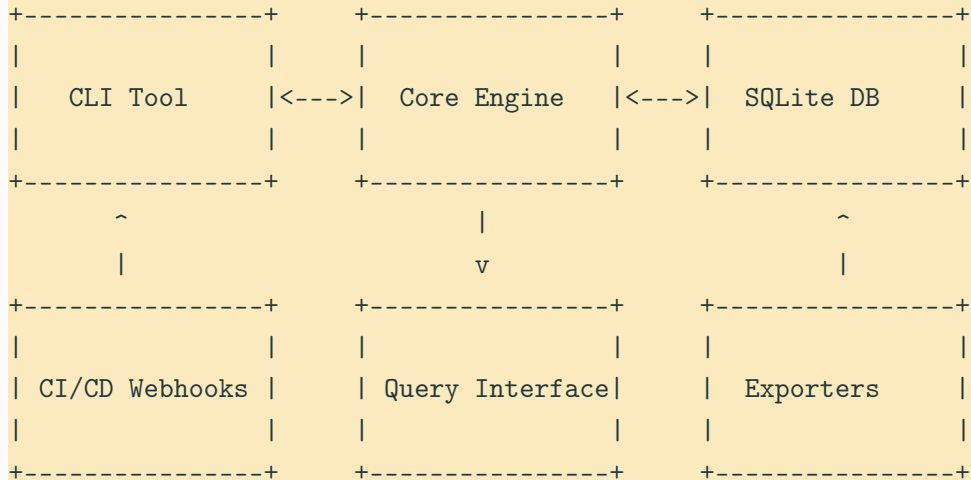
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Architecture

System Architecture



Features

Core Capabilities

- Blue-green deployments
- Canary releases
- Rolling updates
- Big-bang deployments
- Feature flags
- Deployment frequency
- Success rates
- MTTR calculations
- Failure pattern detection
- Health scores

Query Capabilities

```
# Find all failed deployments
guile-deploy-ledger list-deployments \
  --status failure \
  --from "2024-01-01"
```

Live Demo: Recording a Deployment

```
# Record a blue-green deployment
guile-deploy-ledger record-deployment \
  --service api-gateway \
  --version 2.3.0 \
  --environment production \
  --type blue-green \
  --status success
```

Output:

```
Deployment recorded: deploy-1705339200-123456
```

Live Demo: Tracking a Rollback

Monolithic Applications

Perfect for tracking:

- Version upgrades
- Database migrations
- Configuration changes
- Infrastructure updates

Example:

```
(record-monolith-deployment  
  #:application "legacy-erp"  
  #:version "2024.1.15"  
  #:deployment-window "02:00-04:00 UTC"  
  #:downtime-expected #t)
```

Integration

CI/CD Integration

GitHub Actions

```
- name: Record Deployment
  run: |
    guile-deploy-ledger record-deployment \
      --service ${GITHUB_REPOSITORY} \
      --version ${GITHUB_SHA} \
      --environment production
```

Jenkins

```
stage('Deploy') {
  sh 'deploy.sh'
  sh 'guile-deploy-ledger record-deployment ...'
```


Advanced Features

Machine Learning Integration

Predictive capabilities:

- Failure prediction
- Optimal deployment windows
- Resource requirement forecasting
- Anomaly detection

```
model = DeploymentPredictor()  
risk_score = model.predict(  
    service="payment-service",  
    deployment_type="canary",  
    time_of_day=14,  
    day_of_week="Friday"
```

Roadmap

Q1 2024

- ☒ Core deployment tracking
- ☒ SQLite storage backend
- ☒ CLI interface
- ☐ Basic webhook support
- ☐ Prometheus exporter

Q2 2024

- ☐ Kubernetes operator
- ☐ Real-time streaming
- ☐ Multi-region support
- ☐ GraphQL API
- ☐ Mobile app

Getting Started

Installation

```
guix package -f .guix.scm
```

```
git clone https://github.com/dsp-dr/guile-deploy-ledger
cd guile-deploy-ledger
gmake install
```

Quick Start

1. Initialize the database:

```
guile-deploy-ledger init
```

2. Record your first deployment:

```
guile-deploy-ledger record-deployment \  
  --service my-app --version 1.0.0 \  
  --environment staging --type rolling
```

3. View metrics:

Conclusion

Key Benefits

- Comprehensive tracking of all deployment events

Thank You!

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`./qr-code.png`

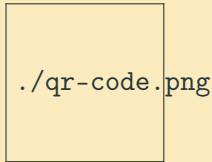
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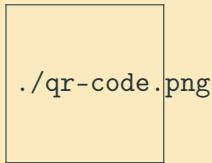
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- **Rich** metrics and analytics

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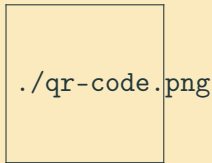
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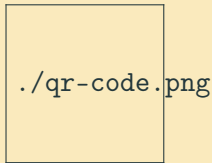
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- **Immutable** audit trail for compliance
- **Rich** metrics and analytics
- **Flexible** integration options
- **Extensible** plugin architecture
- **Open source** and community-driven

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