GitLab CI / CD / DevOps / Auto DevOps / ...

Kamil Trzciński, Staff Developer

@ayufanpl

CERN
GitLab CI? or CD?? or Auto DevOps???
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<td>Cycle Analytics</td>
<td>Issue Trackers</td>
<td>Source Code Management</td>
<td>Continuous Integration (CI)</td>
<td>Container Registry</td>
<td>Continuous Delivery (CD)</td>
<td>Auto DevOps</td>
<td>Metrics</td>
<td>SAST</td>
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<td>DevOps Score</td>
<td>Issue Boards</td>
<td>Code Review</td>
<td>Unit Testing</td>
<td>Maven Packages Repository</td>
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<td>Kubernetes Configuration</td>
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<td>Audit Management</td>
<td>Service Desk</td>
<td>Wiki</td>
<td>Integration Testing</td>
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<td>Dependency Scanning</td>
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*New*
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<td>Container Scanning</td>
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<td>Performance Testing</td>
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<td>License Management</td>
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Recent features
Auto DevOps (11.0)

https://docs.gitlab.com/ee/topics/autodevops/
Security Dashboard (11.1)
Security Reports (11.1)

- Dependency scanning detected 4 vulnerabilities
- Container scanning detected 1 vulnerability
- DAST detected 1 vulnerability

Pipeline Jobs 5 Security report 67

- SAST detected 61 vulnerabilities
- Dependency scanning detected 4 vulnerabilities
- Container scanning detected 1 vulnerability

Unapproved vulnerabilities (red) can be marked as approved. Learn more about whitelisting
Kaniko support (11.2)

build:
  stage: build
image:
    name: gcr.io/kaniko-project/executor:debug
    entrypoint: [""]
script:
  - 'mkdir -p /root/.docker'
  - echo ... > /root/.docker/config.json
  - /kaniko/executor \
    --context "$CI_PROJECT_DIR" \
    --dockerfile "$CI_PROJECT_DIR/Dockerfile" \
    --destination "$CI_REGISTRY_IMAGE:$CI_COMMIT_TAG"

https://docs.gitlab.com/ee/ci/docker/using_grammar.html
JUnit (11.2)

https://docs.gitlab.com/ee/ci/junit/testreports.html
JUnit (11.2)

rspec:
  script:
    - rspec spec/lib/ --format RspecJUnitFormatter --out rspec.xml
artifacts:
  reports:
    junit: rspec.xml

https://docs.gitlab.com/ee/ci/junittestreports.html
Maven Packages (11.3)

1.5-SNAPSHOT

<table>
<thead>
<tr>
<th>Package information</th>
<th>Maven Metadata</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Group ID</td>
</tr>
<tr>
<td>com/mycompany/app/my-app</td>
<td>com.mycompany.app</td>
</tr>
<tr>
<td>Version</td>
<td>Artifact ID</td>
</tr>
<tr>
<td>1.5-SNAPSHOT</td>
<td>my-app</td>
</tr>
<tr>
<td>Created on</td>
<td>Version</td>
</tr>
<tr>
<td>Sep 14, 2018 7:43am</td>
<td>1.5-SNAPSHOT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Size</th>
<th>Created</th>
</tr>
</thead>
<tbody>
<tr>
<td>maven-metadata.xml</td>
<td>767 Bytes</td>
<td>20 hours ago</td>
</tr>
<tr>
<td>my-app-1.5-20180914.074901-1.pom</td>
<td>1.4 KB</td>
<td>20 hours ago</td>
</tr>
<tr>
<td>my-app-1.5-20180914.074901-1.jar</td>
<td>2.4 KB</td>
<td>20 hours ago</td>
</tr>
</tbody>
</table>

https://docs.gitlab.com/ee/user/project/packages/maven_repository.html
Interactive Web Terminal (11.3)

Limited to Kubernetes and Shell
https://docs.gitlab.com/ee/administration/integration/terminal.html
Protected Environments (11.3)

https://docs.gitlab.com/ee/ci/environments/protected_environments.html
Upcoming features
Feature Flags (11.4)

Provides Unleash-compatible interface
https://gitlab.com/gitlab-org/gitlab-ee/issues/779
func init() {
    unleash.Initialize(
        unleashWithURL("https://gitlab.com/api/v4/feature_flags/unleash/14"),
        unleashWithInstanceId("29QmjsW6KngPR5JNPWx"),
        unleashWithAppName("production"))
}

func helloServer(w http.ResponseWriter, req *http.Request) {
    if unleash.IsEnabled("my_feature_name") {
        io.WriteString(w, "Feature enabled\n")
    } else {
        io.WriteString(w, "hello, world!\n")
    }
}
Kubernetes RBAC (11.4)

Support for Role-based access control
Auto DevOps RBAC (11.4)

RBAC will limit Kubernetes API access only to given namespace.

https://gitlab.com/gitlab-org/gitlab-ce/merge_requests/21867
Web Terminal (11.4)

1. Support for **Docker** executor,

2. **docker exec** run strategy for Runner (stretch).

https://gitlab.com/gitlab-org/gitlab-runner/issues/3467
Run jobs on changed files (11.4)

docker_build:
  only:
    changes:
    - Dockerfile
    - assets/*

The new branches workflow not yet supported:
we need Pipeline for Merge Requests
Delayed jobs (11.4)

rollout 10%:
  script: ...
  when: delayed
  start_in: 20 minutes

Ideal use-case Incremental Rollouts
https://gitlab.com/gitlab-org/gitlab-ce/issues/51352
Group Security Dashboards (11.4)

https://gitlab.com/gitlab-org/gitlab-ee/issues/6709
Merge Trains (11.5?)

https://gitlab.com/gitlab-org/gitlab-ee/issues/7380
Serverless (11.5?)

<table>
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<th>Component</th>
<th>Description</th>
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<tr>
<td>GitLab Runner</td>
<td>GitLab Runner connects to this project’s repository and executes CI/CD jobs, pushing results back and deploying, applications to production.</td>
</tr>
<tr>
<td>JupyterHub</td>
<td>JupyterHub, a multi-user Hub, spawns, manages, and proxies multiple instances of the single-user Jupyter notebook server. JupyterHub can be used to serve notebooks to a class of students, a corporate data science group, or a scientific research group.</td>
</tr>
<tr>
<td>Knative</td>
<td>A Knative build extends Kubernetes and utilizes existing Kubernetes primitives to provide you with the ability to run on-cluster container builds from source. For example, you can write a build that uses Kubernetes-native resources to obtain your source code from a repository, build it into container a image, and then run that image.</td>
</tr>
</tbody>
</table>

https://gitlab.com/gitlab-org/gitlab-ce/issues/43959
Knative (11.5?)

1. **Scale to zero**, request-driven compute model,

2. Cloud-native source to container orchestration (uses **kaniko**),

3. Universal subscription, delivery and management of **events**,

4. GitLab will add abstraction to provide **FaaS** (functions-as-a-service).

**Auto DevOps** on Knative? or **Auto Serverless**?
Direct acyclic graphs (??)

https://gitlab.com/gitlab-org/gitlab-ce/issues/47063
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<td>Requirements Management</td>
<td>Value Stream Management</td>
<td>System Testing</td>
<td>NPM Registry</td>
<td>Feature flags</td>
<td>Serverless</td>
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<td>Binary authorization</td>
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<td>Error Tracking</td>
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<td>Product Design Management</td>
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<td>Rubygems Registry</td>
<td>Runbooks</td>
<td>Incident Management</td>
<td>Chaos Engineering</td>
<td>Service Status Page</td>
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<td>Interactive Application Security Testing (IAST)</td>
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<td>Web Application Firewall (WAF)</td>
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<td>Runtime Application Self-Protection (RASP)</td>
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Thanks!

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