



OCTOBER 28, 2021

Open Source CI/CD Components for GitHub Actions



Lothar Schulz



lotharschulz.info

github.com/lotharschulz

speakerdeck.com/lothar


[@lothar_schulz](https://twitter.com/lothar_schulz)

lnkd.in/in/lotharschulz



What are GitHub Actions?

With GitHub Actions, workflows and steps are just code in a repository, so you can create, share, reuse, and fork your software development practices.




Deploy to Amazon ECS

Deploy a container to an Amazon ECS service powered by AWS Fargate or Amazon EC2.

Set up this workflow

```
# Build a docker container and
# push it to ECR so that it can
# be deployed to ECS.
```

actions/starter-workflows




Build and Deploy to GKE

Build a docker container, publish it to Google Container Registry, and deploy to GKE.

Set up this workflow

```
# Set up docker to authenticate
# via gcloud command-line tool.
gcloud auth configure-docker
```

actions/starter-workflows



Deploy Node.js to Azure Web App

Build a Node.js project and deploy it to an Azure Web App.

Set up this workflow

```
# Build and test the project, then
# deploy to Azure Web App.
npm install
```

actions/starter-workflows

Open Source

```
# Upgrade brew
brew upgrade

# find the CLI Tools update
echo "find CLI tools update"
PROD=$(softwareupdate -l | grep "\*.+Command Line" | head -n 1 | cut -d ':' -f 2)
# install it
if [[ ! -x "$PROD" ]]; then
    softwareupdate -i "$PROD" --verbose
fi
```

LotharSchulz.info

Community Resources

GitHub Tools and Management

- [Declaratively setup GitHub Labels](#)
- [Action to sync GitHub labels in the declarative way](#)
- [Add releases to GitHub](#)
- [Publish a docker image to Dockerhub](#)
- [Create an issue using content from a file](#)
- [Publish GitHub Releases with Assets](#)
- [GitHub Project Automation+ - Automate GitHub Project cards with any webhook event.](#)
- [Run GitHub Actions Locally with a web interface](#)
- [Run GitHub Actions Locally in Terminal](#)
- [Build and Publish Android debug APK](#)
- [Generate sequential build numbers for GitHub Actions](#)
- [Push Git changes to GitHub repository without authentication difficulties](#)
- [Generate release notes based on your events](#)
- [Create a GitHub wiki page based on the provided markdown file](#)
- [Label your Pull Requests auto-magically \(using committed files\)](#)
- [Add Label to your Pull Requests based on the author team name](#)
- [Manually trigger your GitHub Actions from a UI](#)
- [Get a list of file changes with PR/Push](#)
- [Use private actions in any workflow](#)
- [Label Your Issues Using the Issue's Contents](#)
- [Rollback a GitHub Release](#)
- [Lock Closed Issues and Pull Requests after a Period of Inactivity](#)
- [Get Commit Difference Count Between Two Branches](#)

Collection of Actions

- [Use HashiCorp's Terraform](#)
- [GitHub Actions for Yarn 1](#)
- [GitHub Actions for Yarn 2](#)
- [GitHub Actions for Golang](#)
- [GitHub Actions for R and accompanying #rstats package](#)
- [GitHub Actions for WordPress](#)
- [GitHub Actions for Composer](#)
- [GitHub Actions for Flutter](#)
- [GitHub Actions for PHP](#)

github.com/sdras/awesome-actions#community-resources

Actions Internal Marketplace



[Actions Internal Marketplace blog post](#)

[Actions Marketplace repository](#)

Found 6 actions: Search:

Repository: [rajbos-actions/trx-parser](#)

Action: trx-parser

Author: Nasir Amin

Description:

An action to parse trx reports from a given path and use GitHub status check api to fail PRs

Repository: [rajbos-actions/sonarcloud-github-action](#)

Action: SonarCloud Scan

Author: Not set

Description:

Scan your code with SonarCloud to detect bugs, vulnerabilities and code smells in more than 25 programming languages.

Repository: [rajbos-actions/webapps-deploy](#)

Action: Azure WebApp

Author: Not set

Description:

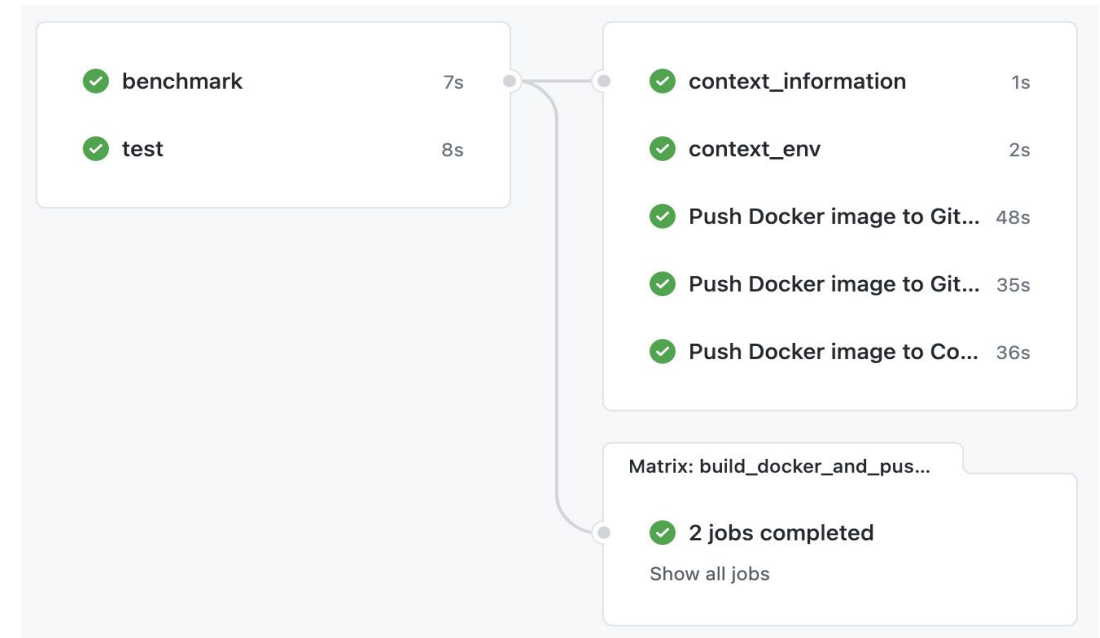
Deploy Web Apps/Containerized Web Apps to Azure. github.com/Azure/Actions

How To

Jobs

Jobs can run at the same time in parallel or be dependent on the status of a previous job and run sequentially.

```
build-and-dockerhub-push-if-linux:
  needs: [benchmark, test]
```



Matrix

```
strategy:
  fail-fast: false
  matrix:
    os: [macOS-10.14,
ubuntu-18.04]
    goos: [linux, darwin]
  exclude:
    - os: macOS-10.14
      goos: linux
    - os: ubuntu-18.04
      goos: darwin
  runs-on: ${{ matrix.os }}
```

Fail fast or slow

```
strategy:
  fail-fast: false
  matrix:
    os: [macOS-10.14,
ubuntu-18.04]
    goos: [linux, darwin]
  exclude:
    - os: macOS-10.14
      goos: linux
    - os: ubuntu-18.04
      goos: darwin
  runs-on: ${{ matrix.os }}
```

Excludes

```
strategy:
  fail-fast: false
  matrix:
    os: [macOS-10.14,
ubuntu-18.04]
    goos: [linux, darwin]
  exclude:
    - os: macOS-10.14
      goos: linux
    - os: ubuntu-18.04
      goos: darwin
  runs-on: ${{ matrix.os }}
```

```
exclude:
  - os: macOS-10.14
    goos: linux
  - os: ubuntu-18.04
    goos: darwin
```

Includes

```
strategy:
  fail-fast: false
  matrix:
    os: [macOS-10.14,
ubuntu-18.04]
    goos: [linux, darwin]
  exclude:
    - os: macOS-10.14
      goos: linux
    - os: ubuntu-18.04
      goos: darwin
  runs-on: ${{ matrix.os }}
```

```
exclude:
  - os: macOS-10.14
    goos: linux
  - os: ubuntu-18.04
    goos: darwin

include:
  - os: macOS-10.14
    goos: darwin
  - os: ubuntu-18.04
    goos: linux
```



Build only what you need

```
task testMatrix {
    project.afterEvaluate {
        def checkTasks = subprojects.collect {
            it.tasks.findByName("check")
        }.findAll { it != null }
        dependsOn(checkTasks)
        doLast {
            def checkTaskPaths = checkTasks
                .collect { it.path }
            println(JsonOutput.toJson(checkTaskPaths))
        }
    }
}
```

<https://github.com/testcontainers/testcontainers-java/blob/master/gradle/ci-support.gradle#L4-L18>
faster parallel github builds

Build only what you need

```
TASKS=$(./gradlew --no-daemon --parallel -q testMatrix)
echo $TASKS
echo "::set-output name=matrix::{\"gradle_args\":$TASKS}"
```

<https://github.com/testcontainers/testcontainers-java/blob/master/gradle/ci-support.gradle#L4-L18>
[faster parallel github builds](#)

Security

...

```
run: echo ${ github.event.issue.title }
```

...

```
env:
```

```
  TITLE: ${ github.event.issue.title }
```

```
run: echo "$TITLE"
```

...

<https://securitylab.github.com/research/github-actions-untrusted-input/>

<https://blog.ryotak.me/post/github-actions-supplychain/>

Code



lotharschulz / hello-github-actions
Unwatch 1 Star 0 Fork 4

Code Issues 0 Pull requests 2 Actions Projects 0 Wiki Security Insights Settings

hello github actions
Edit

Manage topics

207 commits 7 branches 0 packages 0 releases 1 contributor

Branch: master New pull request
Create new file Upload files Find file Clone or download

lotharschulz doc:
Latest commit 0ac892f on 30 Dec 2019

.github	go with the exclude block	7 months ago
action	drop own docker cli action	11 months ago
.gitignore	make targets	11 months ago
CONTRIBUTING.md	doc:	3 months ago
Dockerfile	make targets	11 months ago
Makefile	linux and darwin traget os	7 months ago
README.md	docs:	4 months ago
build_test_benchmark_docker_build_push_and_shaking_finger...	actions screenshot	11 months ago
hello_test.go	unfail tests	11 months ago
hello_world.go	main comment	11 months ago
screenshot2019-08-23--12.17.35.png	v2 screenshot	7 months ago

README.md

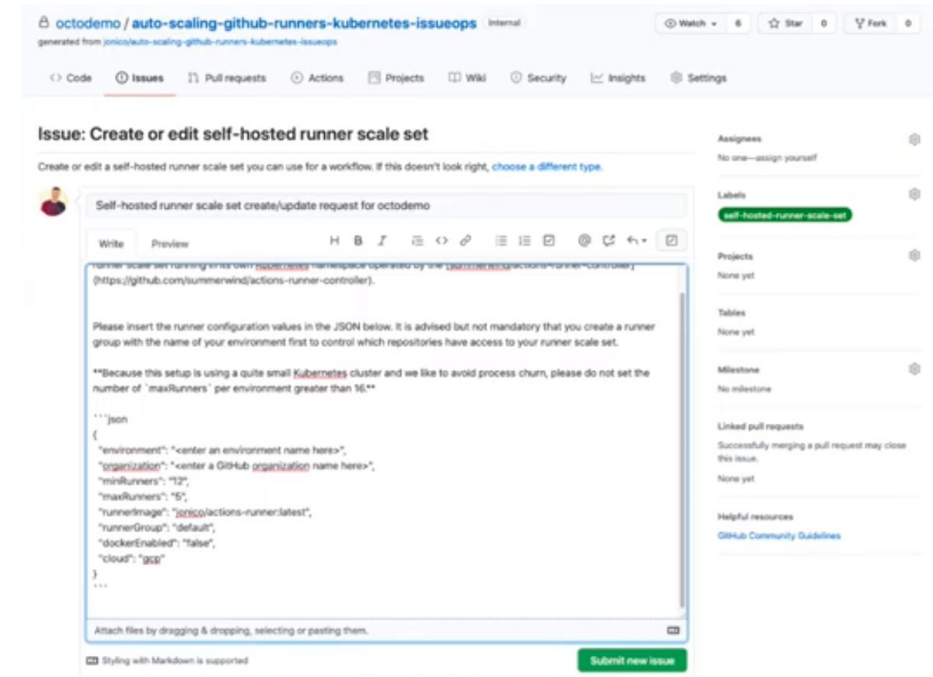
GitHub Actions

Self Hosted & Awesome Runners



<https://github.com/ionico/awesome-runners>
lotharschulz.info/2019/12/09/github-action-self-hosted-runners-on-aws-incl-spot-instances

Issue Ops



<https://github.com/jonico/auto-scaling-github-runners-ec2-issueops>

<https://github.com/jonico/auto-scaling-github-runners-kubernetes-issueops>

There is more

Core concepts

Encrypted secrets

Reusing workflows & composite actions

There is more

Contexts available on run time

Triggered by own events

Package manager and gh docker registry integrated

There is more

Run github actions locally

Organization Workflows

first-issue-greeter & github-workflow-sync

Alternatives



Migration from GitHub Actions

Open

to GitLab CI/CD

Migrating from GitLab CI/CD to

GitHub Actions

GitLab CI/CD <-> GitHub Actions

