

Getting started with CI/CD using Forgejo Actions and why this is important AF*



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IT OPLEIDING IN FRANKRIJK



*: Fair warning: in this talk the F-word is frequently used — if that's emotionally challenging to you, now is a great time to leave.

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Who am I?



- Jeroen Baten
 - 62
 - Self-employed
 - So basically old as fuck
- Open Source geek sinds 1997
- Living in rural France
 - 2 hours west of Dijon
- Love to coach and teach people
 - On Linux, Odoo, other tech stuff



What is Forgejo?



- “Forgejo is a self-hosted lightweight software forge. Easy to install and low maintenance, it just does the job.”
- Similar to GitHub, GitLab
- You can use it to manage:
 - Code, Issues, PR’s, Projects, Releases, Wiki, Activity, **Actions (!)**
- Manage issues
- **Easy to install, Cross-platform, Lightweight, Open Source**

What 'it look like?



The screenshot shows the Forgejo interface for the repository `LibrePlan-Enterprise / LibrePlan-build-tester`. The repository description is "repo to test runner configurations and actions development". It has 9,767 commits, 3 branches, 0 tags, and a size of 49 MiB. The current branch is `main`. A search bar is visible with the text "Search code...". Below the search bar, a list of recent commits is shown:

| Commit Hash | Author | Message | Time |
|-------------|--------|---------------------------------------|--------------|
| a4fda6ec0f | jeroen | Update .forgejo/workflows/chatgpt.yml | 9 months ago |
| | | Update .forgejo/workflows/chatgpt.yml | 9 months ago |
| | | Update ubuntu-24.04.yml | last year |
| | | Create funding-manifest-urls | last year |
| | | Update Hibernate stack | 9 years ago |

Terms & things to know



- Server: the server (duh)
- Runner: “thing” that builds/compiles/tests software
- You can have multiple runners.
- Labels: method to separate runner types.
 - Multiple architectures: X86, Arm, Risc-V
 - Distros: Fedora, Debian, Ubuntu, or Docker
- Deliverables: Results of builds/compiles/etc.
- Forgejo Actions are “very similar” to GitHub Actions

Installing Forgejo server



- Don't read this. This is just to show: it's boring, predictable, and scriptable.
- Create a virtual machine with Debian 13.
- # apt install wget git git-lfs
- # wget
<https://codeberg.org/forgejo/forgejo/releases/download/v14.0.1/forgejo-14.0.1-linux-amd64>
- # chmod +x forgejo-14.0.1-linux-amd64
- # cp forgejo-x.y.z-linux-amd64 /usr/local/bin/forgejo
- # chmod 755 /usr/local/bin/forgejo
- # /usr/sbin/adduser --system --shell /bin/bash --gecos 'Git Version Control' --group --disabled-password --home /home/git git
- # mkdir /var/lib/forgejo
- # chown git:git /var/lib/forgejo && sudo chmod 750 /var/lib/forgejo
- # mkdir /etc/forgejo
- # chown root:git /etc/forgejo && sudo chmod 770 /etc/forgejo
- # wget -O /etc/systemd/system/forgejo.service
<https://codeberg.org/forgejo/forgejo/raw/branch/forgejo/contrib/systemd/forgejo.service>
- # systemctl daemon-reload
- # systemctl enable forgejo.service
- # systemctl start forgejo.service

Installing Forgejo runner



- **Don't read this. This is just to show: it's boring, predictable, and scriptable.**
- Create another virtual machine with Debian 13 or use the same the Forgejo server is running.
- `# apt install curl jq gpg wget`
- `# export RUNNER_VERSION=$(curl -X 'GET' https://data.forgejo.org/api/v1/repos/forgejo/runner/releases/latest | jq .name -r | cut -c 2-)`
- `# echo $RUNNER_VERSION`
- `# wget -O forgejo-runner https://code.forgejo.org/forgejo/runner/releases/download/v${RUNNER_VERSION}/forgejo-runner-${RUNNER_VERSION}-linux-amd64`
- `# chmod +x forgejo-runner`
- `# wget -O forgejo-runner.asc https://code.forgejo.org/forgejo/runner/releases/download/v${RUNNER_VERSION}/forgejo-runner-${RUNNER_VERSION}-linux-amd64.asc`
- `# gpg --keyserver hkps://keys.openpgp.org --recv EB114F5E6C0DC2BCDD183550A4B61A2DC5923710`
- `# chmod +x forgejo-runner`
- `# wget -O forgejo-runner.asc https://code.forgejo.org/forgejo/runner/releases/download/v${RUNNER_VERSION}/forgejo-runner-${RUNNER_VERSION}-linux-amd64.asc`
- `# gpg --keyserver hkps://keys.openpgp.org --recv EB114F5E6C0DC2BCDD183550A4B61A2DC5923710`
- `# gpg --verify forgejo-runner.asc forgejo-runner`
- `# cp forgejo-runner /usr/local/bin/forgejo-runner`
- `# forgejo-runner -v`

Installing Forgejo runner (continued)



- Don't read this. This is just to show: it's boring, predictable, and scriptable.
- `# /usr/sbin/useradd --create-home runner`
- Optionally (strongly advised) install Docker or Podman
 - `# /usr/sbin/usermod -aG docker runner`
 - `# DOCKER_HOST=unix://${XDG_RUNTIME_DIR}/podman/podman.sock ./forgejo-runner daemon`
- `# wget -O /etc/systemd/system/forgejo-runner.service https://code.forgejo.org/forgejo/runner/src/branch/main/contrib/forgejo-runner.service`
- `# systemctl daemon-reload`
- `# systemctl status forgejo-runner`
- `# systemctl enable forgejo-runner`
- `# /usr/local/bin/forgejo-runner -v`

Connect runner to server

Step 1



- Generate connection token on server

The screenshot shows the GitHub Actions 'Manage runners' interface. On the left is a sidebar with 'User settings' and a list of options: Profile, Account, Appearance, Security, Applications, SSH / GPG keys, and Actions (with a dropdown arrow). The main area is titled 'Manage runners (Total: 5)' and includes a 'Create new runner' button. Below the title is a search bar. A table lists five runners with columns for Status, ID, Name, Version, Type, Labels, and Age. A modal window is open over the table, displaying 'How to start a runner' and a 'REGISTRATION TOKEN' field with the value 'xKFzrQC1IJ5h7FJQOPyQilT5\''. Below the token is a 'Reset registration token' section with a table showing two previous tokens: 'ubuntu-22.04' (8 months ago) and 'rockylinux-9.5' (9 months ago).

| Status | ID | Name | Version | Type | Labels | Age |
|---------|----|----------|---------|--------|--------|--------------|
| Offline | 6 | runner-5 | v6.3.1 | Global | docker | |
| Offline | 8 | runner-6 | v6.3.1 | Global | docker | |
| Offline | 4 | runner-4 | v6.3.1 | Global | docker | 8 months ago |
| Offline | 3 | runner-3 | v6.3.1 | Global | docker | 8 months ago |
| Offline | 10 | runner-7 | v6.3.1 | Global | docker | 9 months ago |

Connect runner to server

Step 2



```
$ forgejo-runner register
INFO Registering runner, arch=arm64, os=linux, version=v9.0.3.
WARN Runner in user-mode.
INFO Enter the Forgejo instance URL (for example,
https://next.forgejo.org/):
https://code.forgejo.org/
INFO Enter the runner token:
6om01axzegBu98YCpsFtda4Go2DuJe7BEepzz2F3HY
INFO Enter the runner name (if set empty, use hostname: runner-
host):
my-forgejo-runner
INFO Enter the runner labels, leave blank to use the default
labels (comma-separated, for example,
ubuntu-20.04:docker://node:20-bookworm,ubuntu-18.04:docker://node
:20-bookworm):
INFO Registering runner, name=my-forgejo-runner,
instance=https://code.forgejo.org/,
labels=[docker:docker://node:20-bookworm].
DEBU Successfully pinged the Forgejo instance server
INFO Runner registered successfully.
```



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What to do in your repo

- I created the repo: <http://server:3000/jeroen/cfgmngmtcamp.git>
- I had to change the IP address on my laptop
 - On the server the "ROOT_URL" setting in /etc/forgejo/app.ini
 - On the runner "address" setting in /home/runner/.runner
- And did a git clone to: /home/jeroen/src/cfgmngmtcamp
- Create in your repo an actions workflow directory:
.forgejo/workflows/
- Edit .forgejo/workflows/demo.yaml, and add the following code (remove all the < - texts):

on: [push] < - when to run

jobs:

Test: < - name of first job

runs-on: docker < - label of runner you want

steps:

- run: echo All good!

Examples of steps

- Start with a workflow debugging
- Install needed packages:
- Checkout your code:
- Use the git id when later uploading deliverables:



```
steps:
  # Define job-id
  - name: Debug info
    run: |
      cat <<'EOF'
      ${ toJSON(forgejo) }
      EOF
```

```
- name: install needed software
  run: |
    apt-get update
    apt-get install -y nodejs git sed
```

```
- name: Checkout code
  uses: actions/checkout@v3
  with:
    fetch-tags: true # Also get the tags!!!
    fetch-depth: 0
```

```
# This is only possible AFTER the checkout step.
- name: actions prep test to prove it works.
  id: artifact-upload-prep
  run: echo "artifact-id=$(git rev-parse --short=10 HEAD)" >> "$GITHUB_OUTPUT"
```

Some easy steps



- name: Populate database with database layout of last release.

shell: bash

run: |

```
    echo "Populate database with database layout of $  
{{ vars.full_last_release }}"
```

```
    cat scripts/database/install.sql | some-command
```

Using PostgreSQL docker image



```
# Wait for PostgreSQL to be ready
- name: Wait for PostgreSQL to be ready
  shell: bash
  env:
    PGPASSWORD: libreplan
  run: |
    for i in {1..30}; do
      psql -h postgres -U libreplan -d libreplandev -c 'select 1' && break
      sleep 2
    done
```

```
name: Generate PostgreSQL database upgrade script.

on:
  workflow_dispatch:

jobs:
  build:

    runs-on: docker
    container:
      image: ubuntu:24.04

    services:
      postgres:
        image: postgres:16.0
        env:
          POSTGRES_USER: libreplan
          POSTGRES_PASSWORD: libreplan
          POSTGRES_DB: libreplandev
        ports:
          - 5432:5432
        options: >-
          --health-cmd pg_isready
          --health-interval 10s
          --health-timeout 5s
          --health-retries 5

    steps:
```



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Next steps

- Change the when2start/“on” condition:
- Run when the commit tag starts with a “v”:
- Or: do not run unless manually started:

```
on:  
  workflow_dispatch:
```

This workflow has a workflow_dispatch event trigger.

Run workflow ▾

```
push:  
  tags:  
    - "v*"
```

```
jobs:
```



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Deliverables

- Where to put the compile results?
- On build level

```
# Upload the result
- name: Upload NEWS.rst
  uses: actions/upload-artifact@v3
  with:
    name: NEWS.rst
    path: NEWS.rst
    compression-level: 0 # no compression
    retention-days: 3
```

- On repo level
- (you need an upload to

```
# Also store as a release.
- uses: actions/forgejo-release@v2.7.3
  with:
    direction: upload
    url: http://10.1.1.158:3000
    repo: jeroen/libreplan
    token: ${{ secrets.WRITE_TOKEN_TO_MYREPO }}
    tag: v2025
    release-dir: dist/release
    release-notes: "No RELEASE NOTES"
    verbose: true
```

Fancy stuff in steps

- Define variables before manual build:

```
on:  
  workflow_dispatch:  
    inputs:  
      create-release:  
        description: 'Create a release from this build?'  
        default: false  
        type: boolean
```

This workflow has a workflow_dispatch event trigger.

Run workflow ▾

Use workflow from

 main ▾

Create a release from this build?

Run workflow

Where to find, copy/paste?

- <https://codeberg.org/kwoot/cfgmgmtcamp-forgejo-talk>



Time for some fucking politics



- I will (desperately) try to not make this too politic.
- Why is the next part important as fuck?
- Well...
- Bigtech (the techbros) really wants to rule the fucking world.
- AI says one thing and does something else: Extracting books from production language models
(<https://arxiv.org/pdf/2601.02671v1>)

Rob Gongrijp quote



- Of “we don’t trust voting computers” fame
- “People that complain about Europe not making enough of a fist towards the U.S. while not understanding that Europe needs a massive program, right now, to become U.S.-cloud-independent A.S.A.P. are dangerously stupid.

YES, I KNOW IT WILL BE DIFFICULT, BUT THE ALTERNATIVE SUCKS MUCH HARDER.”

A word about GitHub



- Software Freedom Conservancy
- GitHub has distorted Git
 - Creating add-on features that change a distributed, egalitarian, and FOSS system
 - Into a centralized, proprietary site
 - Controlled by a single, for-profit company: Microsoft.
 - Sucking the FOSS work into AI systems.
- Tried to let you pay for self-hosted runners
- Please read <https://sfconservancy.org/GiveUpGitHub/>

And the law?



- International Criminal Court issues an arrest warrant for Netanyahu and Gallant, both suspected of war crimes
- The US president sees a fellow attacked and orders Microsoft to stop allowing the ICC the use of their software.
- This was watered down to only the prosecutor Karim Khan.

Politics shmoltics...



- Microsoft: “we never stopped our services to the ICC”
- Well, true, they didn’t anything. That was the work of their (Dutch) reselling partner organization.
- Who (spontaneously?) cut off one ICC user.

Effect of all this



- The recent European awakening
- Tusk: Why (the fuck) do 450 MP (Million People) look to a country with 350 MP to protect them from a country of 150 MP?
- At the moment everybody in Europe is talking about digital autonomy.
- Nobody wants to be truly dependent on the wimps of another country
- Fuck that!

Back to our subject



- Majority of repos online are on GitHub and GitLab
- But there is also Forgejo.
- Managed by the Codeberg Foundation.
- Which has 1410 members in total.
 - 926 members with active voting rights
 - 477 supporting members
 - 7 honorary members.
 - 1342 are private members
 - 68 are corporate members.

Repos vs paying members



- Number of repos (2 weeks ago): 379210
- User accounts: 250730 of which about 50% spam
- So, about 125000 valid users, on average with 2 repos.
- **All paid for by 1410 persons at € 25 per year (organizations pay € 100).**
- If you have limited financial means, it's € 12.

Main message



- If you use Codeberg.org:
 - become a fucking member!
- Or...
- “What do I do next Monday morning?”
 - spin up Forgejo
 - mirror one repo
 - move one workflow
 - switch/keep GitHub read-only
 - And then become a member

Comparing GH vs Forgejo



| Aspect | GitHub Actions | Forgejo Actions |
|-----------------|----------------|-----------------|
| Hosting | Centralized | Self-hosted |
| Runner control | Limited | Full |
| Jurisdiction | US | Yours |
| Lock-in | High | Low |
| Cost trajectory | Upwards | Predictable |

For whom and who not?



- Forgejo Actions is perfect if:
 - you care about autonomy
 - you self-host already
 - you like GH Actions compatibility
- Probably not for you if:
 - you want zero ops
 - you don't care about lock-in
 - SaaS is your religion

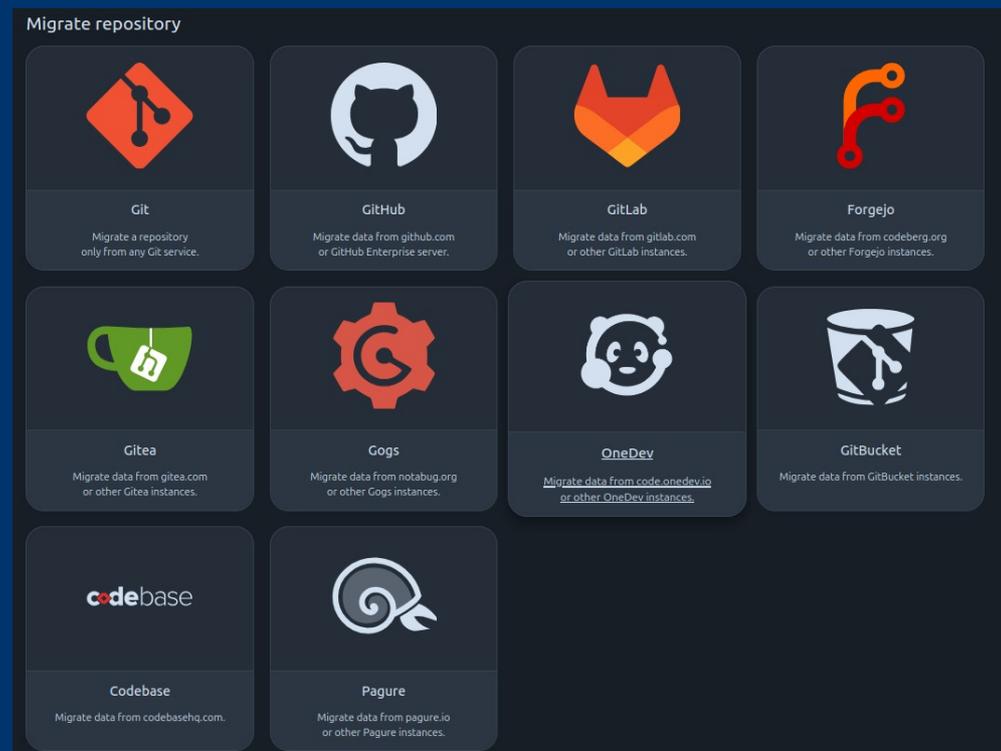
Why is this all important AF?



- So, why is this all important as fuck
- Currently the European IT industry is hugely dependent on the US
- At some point in time they may also come for you
- We can have our own silicon valley
- We have good people...
- We have the tools...
- We have the will...
- We only need to
 - get to work

Is this hard?

- The good news first: a git repo contains everything!
- Not like CVS/Subversion
- Forgejo can migrate from a lot of systems!



To finish



- Forgejo Actions is not about ideology.
- It's about keeping your CI/CD:
 - boring,
 - predictable,
 - and yours.

Thank you for your attention



Questions for me?: jeroen@jeroenbaten.nl

Sources of information



- Installing Forgejo server:
<https://forgejo.org/docs/next/admin/installation/binary/>
- Installing Forgejo runner:
<https://forgejo.org/docs/next/admin/actions/runner-installation/>
- Software Freedom Conservancy: <https://sfconservancy.org/GiveUpGitHub/>
- GitHub self-hosted runners:
https://www.reddit.com/r/theprimeagen/comments/1potabf/microsoft_to_start_charging_for_selfhosted_github/
- <https://www.binnenlandsbestuur.nl/digitaal/wake-up-call-microsoft-sluit-e-mail-icc-zonder-pardon-af>