Living in containers

On \TeX Live (and Con\TeX t) in a Docker setting

Island of \TeX
July 16, 2023

TUG 2023
Outline

- our docker images
- case #1: maths journal
- case #2: minutes of student representatives
- continuing challenges
Our Docker images

- TL releases from 2013 on
- ConTëXt LMTX separately
- continuous integration + local runs
Our Docker images

- TL releases from 2013 on
  - latest images split by schemes
  - weekly updates for latest
  - monthly updates for historic
  - doc and src tree optional

- ConTeXt LMTX separately

- continuous integration + local runs
Our Docker images

The island manages the Docker images at:

https://hub.docker.com/r/texlive/texlive

https://hub.docker.com/r/contextgarden/context
Case Study 1

Maths journal
Case Study 1: maths journal

- \(\text{\LaTeX}\)-based issues dating back to 90’s
- Issues from 2022 already not compiling anymore
- Run locally

Currently establishing compatibility policy

\textit{(each year, switch to frozen TL from year before)}
Case Study 1: maths journal

- images are easy to pull on demand:
  
  ```bash
  docker pull texlive/texlive:TL2022-historic
  ```

- easy to free space:
  
  ```bash
  docker image prune -a /docker system prune -a
  ```

- no PATH fiddling, run in any year:
  
  ```bash
  docker run -i latex -v "$PWD":/opt/doc:z -w /opt/doc texlive/texlive:TL2018-historic arara -v issue.tex
  ```
Case Study 2

Minutes of student representatives
Case Study 2: minutes of student representatives

university student representatives from Jena

weekly meetings with minutes

completely ConTExt because of limited CI resources

https://meinfsr.de
GitLab CI job configuration

```yaml
build:context:
  image: registry.gitlab.com/islandoftex/images/context:lmtx
  script:
    - find -name "*.tex" -exec context "{}" \\
  artifacts:
    name: "$CI_COMMIT_REF_NAME"
    paths:
      - ./**/*.pdf
```
GitLab CI job configuration

```yaml
build:context:
  image: registry.gitlab.com/islandoftex/images/context:lmtx
  script:
    - find -name "*.tex" -exec context "{}" \\
artifacts:
  name: "$CI_COMMIT_REF_NAME"
  paths:
    - ./**/*.
```
GitLab CI job configuration

```yaml
build:context:
  image: registry.gitlab.com/islandoftex/images/context:lmtx
script:
  - bash compile-only-needed.sh
artifacts:
  name: "$CI_COMMIT_REF_NAME"
paths:
  - ./**/*.pdf
```
Case Study 2: minutes of student representatives

**compile-only-needed.sh** – case 1: full compilation

```bash
sha=$(echo "curl last commit from GL API" | grep -o -E -m1 "sha":"([^"]*)" | head -1 | cut -c 8-47)
changed=$(git diff-tree --no-commit-id --name-only "$sha" .. "$CI_COMMIT_SHA")
compile_all=false
for file in $changed; do if [[ $file == environment/* ]]; then compile_all=true fi; done

for file in $(find . -mindepth 2 -type f -name ".*\.tex"); do cd "$(dirname "$file")" && context "$(basename "$file")" && cd "$(git rev-parse --show-toplevel)"
done
```
compile-only-needed.sh – case 2: incremental compilation

```bash
sha=$(echo "curl last commit from GL API" | grep -o -E -m1 "sha":"([^"]*)" | head -1 | cut -c 8-47)

changed=$(git diff-tree --no-commit-id --name-only "$sha" .. "$CI_COMMIT_SHA")

for file in $changed; do
cd "$(dirname "$file")" && context "$(basename "$file")" && cd "$(git rev-parse --show-toplevel)"
done
```
### Case Study 2: minutes of student representatives

<table>
<thead>
<tr>
<th>file type</th>
<th># files</th>
<th>avg. full run</th>
<th>avg. incremental</th>
</tr>
</thead>
<tbody>
<tr>
<td>ConTeXt files</td>
<td>193</td>
<td>9:43 min.</td>
<td>1 min.</td>
</tr>
<tr>
<td>\LaTeX files</td>
<td>93</td>
<td>9:33 min.</td>
<td>3 min.</td>
</tr>
</tbody>
</table>

*statistics dated 2023-05-28*
Continuing challenges

- stability of the infrastructure
  *(many thanks to Marei and Vít)*
- splitting historic images by schemes
- automate building new historic images
- multi-architecture images
- layer-friendliness
Docker (or bash) experts are invited to join our quest to solve issues or extend the images!
Visas for the island are free and easy to get!
Final remarks

The Island of \TeX is hosted at

https://gitlab.com/islandoftex

Join our community chat on Matrix at

https://matrix.to/#/#iot-community:matrix.org
Cheerio!