

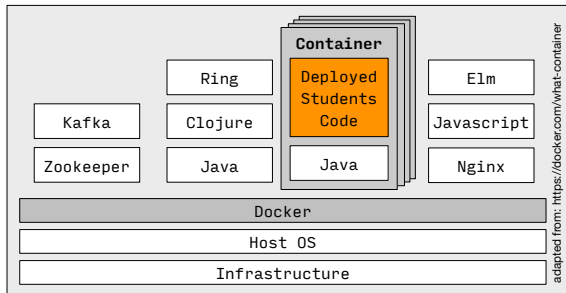
VIRTUALISIERTE ARBEITSUMGEBUNG FÜR DEN TEST VERTEILTER SYSTEME

Microservice-Architektur mit Docker, Kafka, Clojure & Elm

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GLIEDERUNG

1. Kontext
2. Docker
3. Inspiration
4. „VAR-Tool“
5. Ausblick

KONTEXT

BISHERIGER ABLAUF

ANFORDERUNGEN

ERHOFFTE VORTEILE

DOCKER

DESCRIPTION

CONTAINER

- Deskriptive & triviale Beschreibung eines Systems und dessen Bestandteile
- Trägt implizit zur Dokumentation bei

DOCKERFILE

FROM clojure

RUN mkdir -p /usr/src/app

WORKDIR /usr/src/app

COPY project.clj /usr/src/app/

RUN lein deps

COPY . /usr/src/app

RUN mv "\$(lein ring uberjar | sed -n 's/^Created \(.*standalone\.jar\)\/\1/p')"
app-standalone.jar

CMD ["java", "-jar", "app-standalone.jar"]

DOCKER-COMPOSE

- Definition von Services als Bestandteil einer App
- Dokumentation!

INSPIRATION

TMUX PANES

```

jen-mbp2idecker-var jan$ ls -la
total 64
drwxr-xr-x 13 jan staff 442 May 20 12:27 .
drwxr-xr-x 20 jan staff 688 Jun 5 21:53 ..
-rw-r--r-- 1 jan staff 8196 Jun 19 20:46 .DS_Store
drwxr-xr-x 17 jan staff 678 Jun 19 21:27 .git
-rw-r--r-- 1 jan staff 2076 Apr 10 16:47 .gitignore
-rw-r--r-- 1 jan staff 104 May 26 10:53 .gitmodules
-rw-r--r-- 1 jan staff 1075 Apr 10 16:46 LICENSE
-rw-r--r-- 1 jan staff 25 May 8 22:11 README.md
drwxr-xr-x 12 jan staff 408 Jun 19 21:27 client
-rw-r--r-- 1 jan staff 1271 May 26 10:53 docker-compose.yml
drwxr-xr-x 15 jan staff 518 May 26 10:53 docker-master
drwxr-xr-x 8 jan staff 272 Jun 19 10:41 docs
drwxr-xr-x 10 jan staff 340 May 26 10:33 kafka-websocket
jen-mbp2idecker-var jan$

| | | tokenize-arg-string.js
| | |-- node_modules
| | | | | camelcase
| | | | | index.js
| | | | | license
| | | | | package.json
| | | | | readme.md
| | | | | package.json
|-- package.json
|-- public
|-- css
| | | app.css
| | | app.css.map
| | | index.html
| | | js
| | | | | app.js
| | | | | app.js.map

1260 directories, 6762 files
jen-mbp2idecker-var jan$

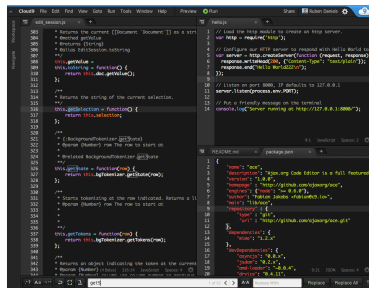
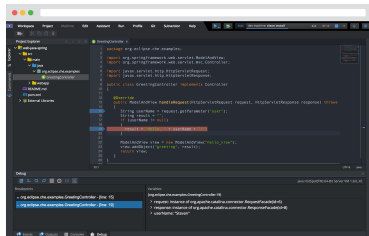
jen-mbp2idecker-var jan$

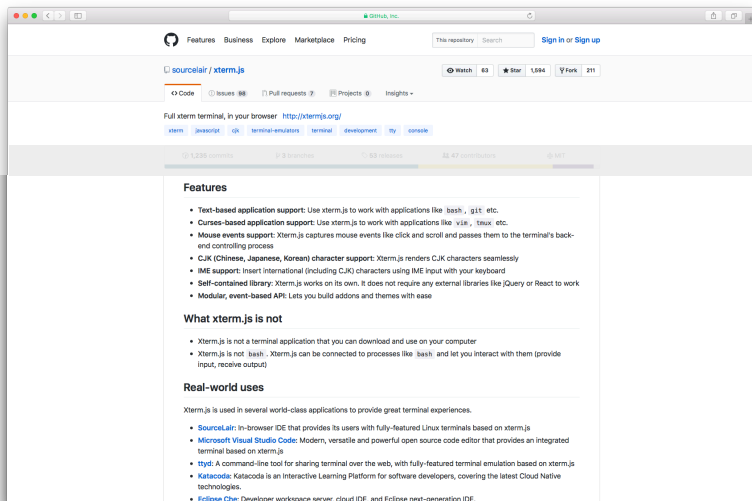
| ./bootstrap.sh && \
| make install && \
| cd .. && rm -rf kafkacat
| # && AUTO_ADDED_PACKAGES="apt-mark showauto" && \
| # apt-get remove --purge -y $BUILD_PACKAGES $AUTO_ADDED_PACKAGES && \
| # rm -rf /var/lib/apt/lists/* /tmp/* /usr/tmp/*
|
| RUN shdf -p /usr/src/app
| WORKDIR /usr/src/app
|
| # closure app
| # COPY project.clj /usr/src/app/
| # run lein deps
| # copy . /usr/src/app
| # RUN mv "lib uberjar" | sed -n 's/Created (.+standalone.jar)/\1/' app-standalone.jar
|
| # ENTRYPOINT ["kafkacat"]
| # CMD ["java", "-jar", "app-standalone.jar"]
| CMD ls -la | kafkacat -b kafka -t logSTOKEN
jen-mbp2idecker-var jan$

```

CLOUD-IDES

- Cloud 9
- Source Lair
- Eclipse Che
- ...





The screenshot shows a web browser window with several tabs. The active tab is a terminal window titled 'localhost:7681'. Inside the terminal, the htop utility is running, displaying system statistics and a process list. The statistics show 2 tasks, 0 threads, and 1 running process. The load average is 0.00, 0.03, 0.00. The uptime is 1 day, 02:23:47. The memory usage is 550M/1.95G, and the swap usage is 3.37M/3.91G. The process list shows two processes: PID 1 (root, /bin/bash) and PID 420 (root, htop). Below the process list, the command '\$ ttyd docker run -it --rm ubuntu htop' is entered at the prompt. At the bottom of the terminal window, there is a status bar with function key shortcuts: F1 Help, F2 Setup, F3 Search, F4 Filter, F5 Tree, F6 SortBy, F7 Nice, F8 Vnice, F9 Kill, and F10 Quit.

```

1 [          0.0%] Tasks: 2, 0 thr; 1 running
2 [          0.0%] Load average: 0.00 0.03 0.00
3 [          0.0%] Uptime: 1 day, 02:23:47
4 [          0.7%]
Mem[|||||||550M/1.95G]
Swp[|||||3.37M/3.91G]

  PID USER   PRI  NI  VIRT   RES   SHR  S  CPU% MEM%   TIME+  Command
  ---
    1 root     20    0 18240  3320  2836  S   0.0   0.2   0:00.05 /bin/bash
  420 root     20    0 22992  3364  2792  R   0.0   0.2   0:00.00 htop

$ ttyd docker run -it --rm ubuntu htop

F1 Help  F2 Setup  F3 Search  F4 Filter  F5 Tree  F6 SortBy  F7 Nice  F8 Vnice  F9 Kill  F10 Quit

```


„VAR-TOOL“

Experimente

Java RMI Chat

Excercise

Excercise

Excercise

Excercise

Excercise

Excercise

Excercise

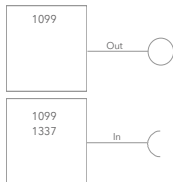
ChatServer



Container-Einstellungen

Dieser Container enthält bereits Dateien. 📁

Ports



Main Class

Argumente

ChatClient



```
Exception in thread "main" java.io.FileNotFoundException: Could
not locate var_server/core__init.class or var_server/core.clj on
classpath. Please check that namespaces with dashes use
underscores in the Clojure file name., compiling:(var_server/
core_test.clj:1:1)
```

```
at clojure.lang.Compiler.load(Compiler.java:7391)
at clojure.lang.RT.loadResourceScript(RT.java:372)
at clojure.lang.RT.loadResourceScript(RT.java:363)
at clojure.lang.RT.load(RT.java:453)
at clojure.lang.RT.load(RT.java:419)
at clojure.core$load$fn__5677.invoke(core.clj:5893)
at clojure.core$load.invokeStatic(core.clj:5892)
at clojure.core$load.doInvoke(core.clj:5876)
at clojure.lang.RestFn.invoke(RestFn.java:408)
at clojure.core$load_one.invokeStatic(core.clj:5697)
```

Container 3



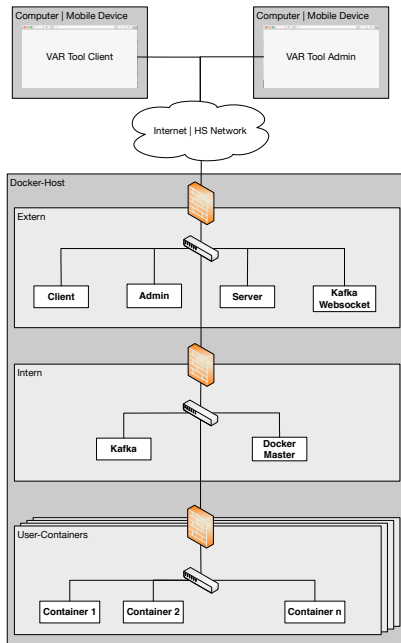
Datei hochladen.

Container 4

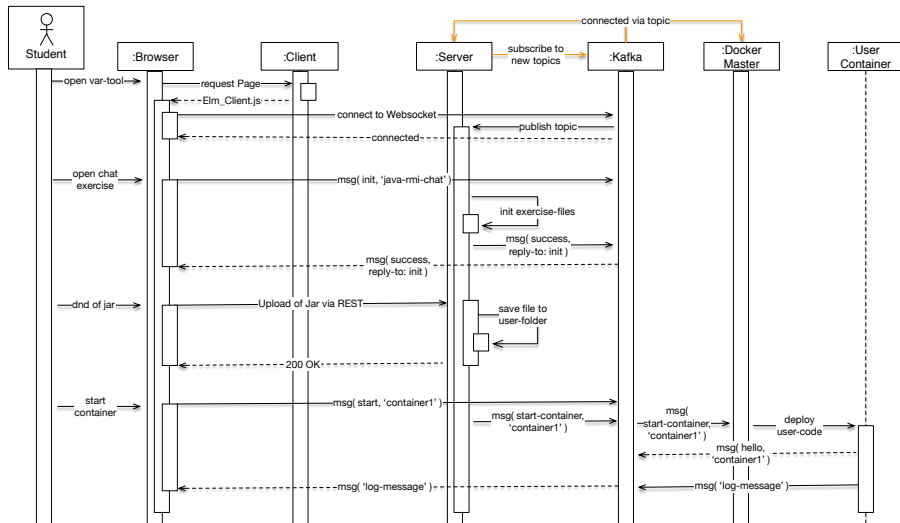


Datei wird hochgeladen.

NETWORK

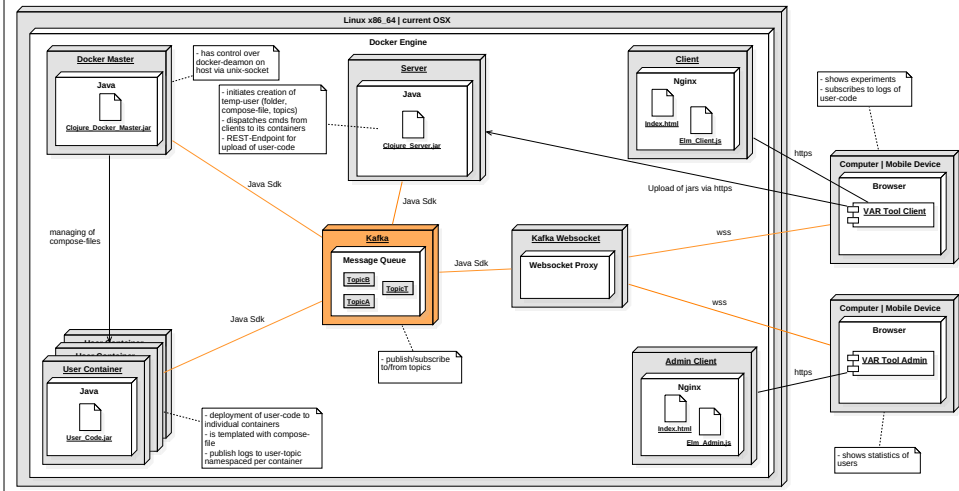


SEQUENCE



DEPLOYMENT

package VAR-Tool Deployment



COMPOSE-FILE

```
# TODO networks
version: '3'
services:
  server:
    build: ./server
    container_name: server
    ports:
      - "8080:3000"

  client:
    build: ./client
    container_name: client
    ports:
      - "80:80"

  docker-master:
    build: ./docker-master
    container_name: docker-master
    volumes:
      - /var/run/docker.sock:/var/run/docker.sock
      - /var/data/users:/var/data/users/
    environment:
      - "TOKEN=ZYX321"

  kafka:
    image: spotify/kafka
    ports:
      - "9092:9092"
      # and zookeeper
      - "2181:2181"
    environment:
      - "ADVERTISED_PORT=9092"

  kafka-websocket:
    build: ./kafka-websocket
    container_name: kafka-websocket
    ports:
      - "7080:7080"
```

AUSBLICK

AUSBLICK & FAZIT

- EFP: VAR-Tool, Bewertung & Feedback
- Thesis
- Veröffentlichung?

- Sehr spannend
- Viel Raum für weitere (studentische) Arbeiten
- Erstrebenswerte Aufgabe der Fakultät

FIN

Danke für die Aufmerksamkeit. – Fragen?