OFFIZIELLE DOCKER IMAGES EIN ERFAHRUNGSBERICHT

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@xeraa





Infrastructure Developer



Who uses OCKER?



Who uses

DOCKER IN PRODUCTION?



Who uses

STATEFUL DOCKER IMAGES?



Who uses OURIMAGES?



Who uses our stack with OTHER IMAGES?



Docker: the world's most heavily funded college project

Internal quote from Slack





CONTENT

"Official" Base Images Release Policy Security & Stability Customization Orchestration



DOCKER HUB



WHAT DO YOU GET? docker pull elasticsearch: X

Same for Kibana and Logstash



IT'S COMPLICATED Docker Inc Deprecated Replicated



Full Description

Supported tags and respective Dockerfile links

- 6.4.2 (6/Dockerfile)
- 5.6.12, 5.6, 5 (5/Dockerfile)
- 5.6.12-alpine, 5.6-alpine, 5-alpine (5/alpine/Dockerfile)



jethr0null commented on 5 Oct

Contributor



In the interest of providing the best and most reliable support for the official Elasticsearch Docker images, Elastic performs a rigorous set of automated and manual tests as part of the Elasticsearch release process. Beyond testing our own software, these tests have historically uncovered other items such as JVM issues and OS-dependent issues that the Elasticsearch software relied on.

In order to provide the Docker Library community with the same level of support for any Elastic images which are pulled from Docker Hub, it is necessary that these images are equivalent with those which come from the Elastic build system. This equivalence allows us to address issues in a specific version of Elasticsearch with a full understanding of exactly what exists in that version, allowing us to support and troubleshoot any issues effectively and efficiently. It also allows Elastic to respond to issues with any necessary updates rapidly, and without the risk of divergent image content.

After extensive discussions and collaboration with Docker, it has been determined that the easiest, fastest, and most stable way to accomplish this is to use the Elastic images directly rather than rely on setting up an exact replica of Elastic's build and testing systems. The code contained within this image is open (references to the code and the referenced image can be viewed within the image Dockerfile).

```
14 lines (8 sloc)
                    616 Bytes
                                                                                                        Blame
                                                                                                                History
                                                                                                  Raw
        # Elasticsearch 6.4.3
        # This image re-bundles the Docker image from the upstream provider, Elastic.
   3
        FROM docker.elastic.co/elasticsearch/elasticsearch:6.4.3@sha256:ba2d82b70025e503ded44135e2fbb79b0aefa9db17be2750d75565c28d21ea
   5
        # The upstream image was built by:
            https://github.com/elastic/elasticsearch-docker/tree/6.4.3
   8
        # For a full list of supported images and tags visit https://www.docker.elastic.co
   9
  10
  11
        # For Elasticsearch documentation visit https://www.elastic.co/guide/en/elasticsearch/reference/current/docker.html
  12
  13
        # See https://github.com/docker-library/official-images/pull/4916 for more details.
```



CUSTOM REGISTRY docker.elastic.co



I'm surprised more people don't just host their own container registries since doing that is faster than every cloud offering and docker hub

https://twitter.com/jessfraz/status/978449365261082625



OUR MOTTVATION Download statistics Speed & reliability



Docker @ Elastic

At Elastic, we care about Docker. We provide Docker images for all the products in our stack, and we consider them a first-class distribution format. We also host a dedicated Docker Registry to provide the best possible experience and the most reliable service for you.

On this page, you'll find all the resources — **docker** commands, links to product release notes, documentation and source code — for installing and using the Docker images.

Watch a presentation from our developers at the Elastic{ON} conference to get details about the background behind our Docker efforts and to see a live demo for the entire stack.



Elasticsearch o

- 6.4 docker pull docker.elastic.co/elasticsearch/elasticsearch:6.4.3 > %
- docker pull docker.elastic.co/elasticsearch/elasticsearch:6.3.2 >
- 6.2 docker pull docker.elastic.co/elasticsearch/elasticsearch:6.2.4 > %
- 6.1 docker pull docker.elastic.co/elasticsearch/elasticsearch:6.1.4 > %
- docker pull docker.elastic.co/elasticsearch/elasticsearch:6.0.1 > %
- docker pull docker.elastic.co/elasticsearch/elasticsearch:5.6.13 🔎 🦠 🖹
- docker pull docker.elastic.co/elasticsearch/elasticsearch:5.5.3 > %

Docker @ Elastic

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https://www.docker.elastic.co

Elasticsearch o

- 6.4 docker pull docker.elastic.co/elasticsearch/elasticsearch:6.4.3 >
- docker pull docker.elastic.co/elasticsearch/elasticsearch:6.3.2 >
- 6.2 docker pull docker.elastic.co/elasticsearch/elasticsearch:6.2.4 🔎 🗞 🖹
- docker pull docker.elastic.co/elasticsearch/elasticsearch:6.1.4 > %
- 5.6 docker pull docker.elastic.co/elasticsearch/elasticsearch:5.6.13 🔎 🗞 🖹
- docker pull docker.elastic.co/elasticsearch/elasticsearch:5.5.3 >

PROBLEMS

Some broken tooling like automated builds, Kitematic,...

China

IPv6



8

10K+

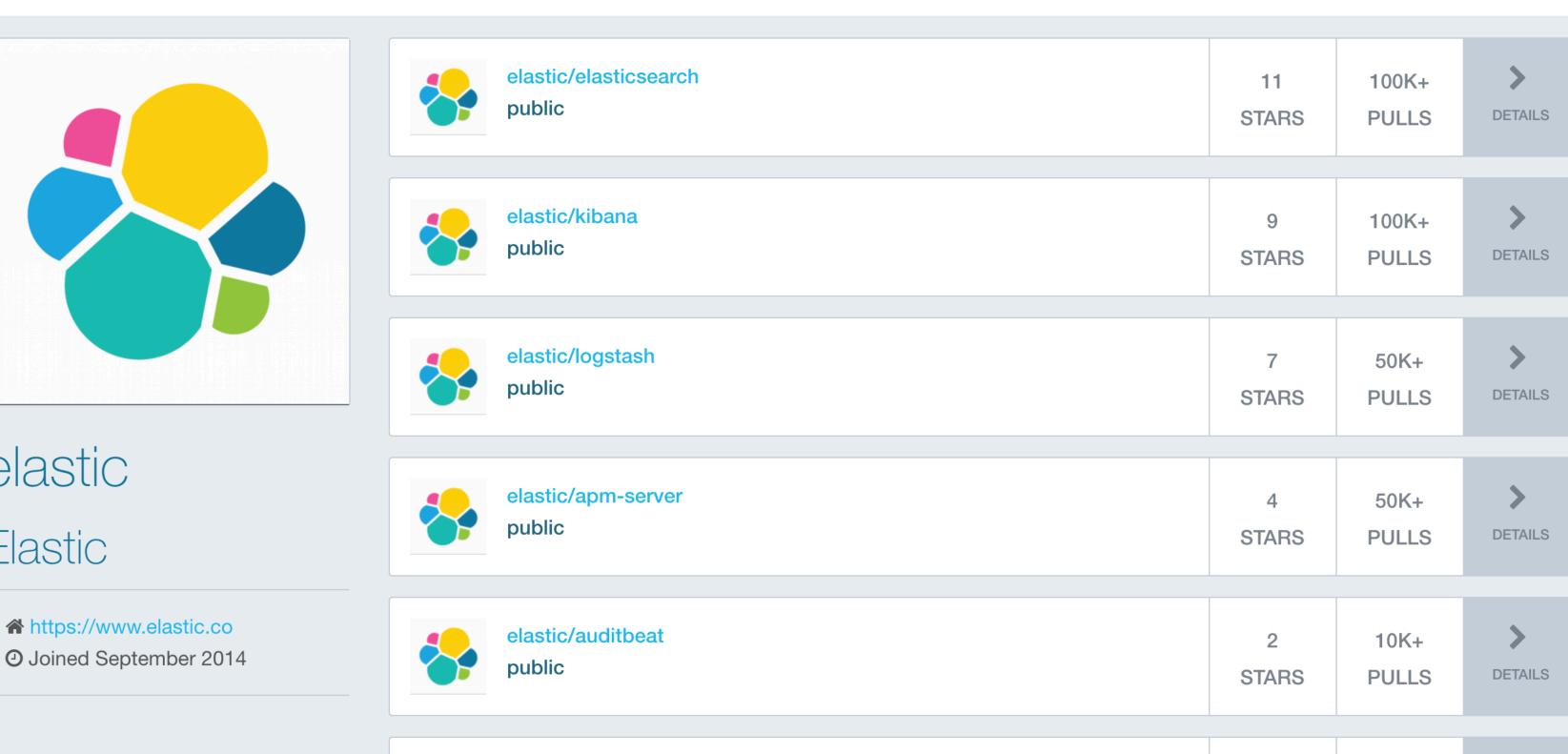


Q Search



elastic

Elastic

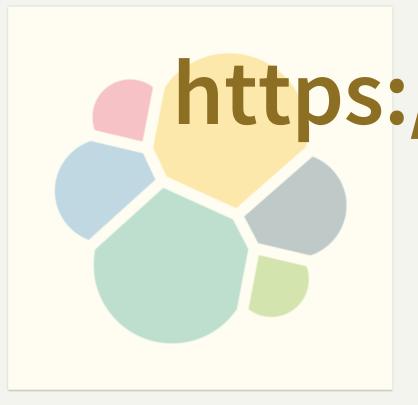


elastic/filebeat

10K+



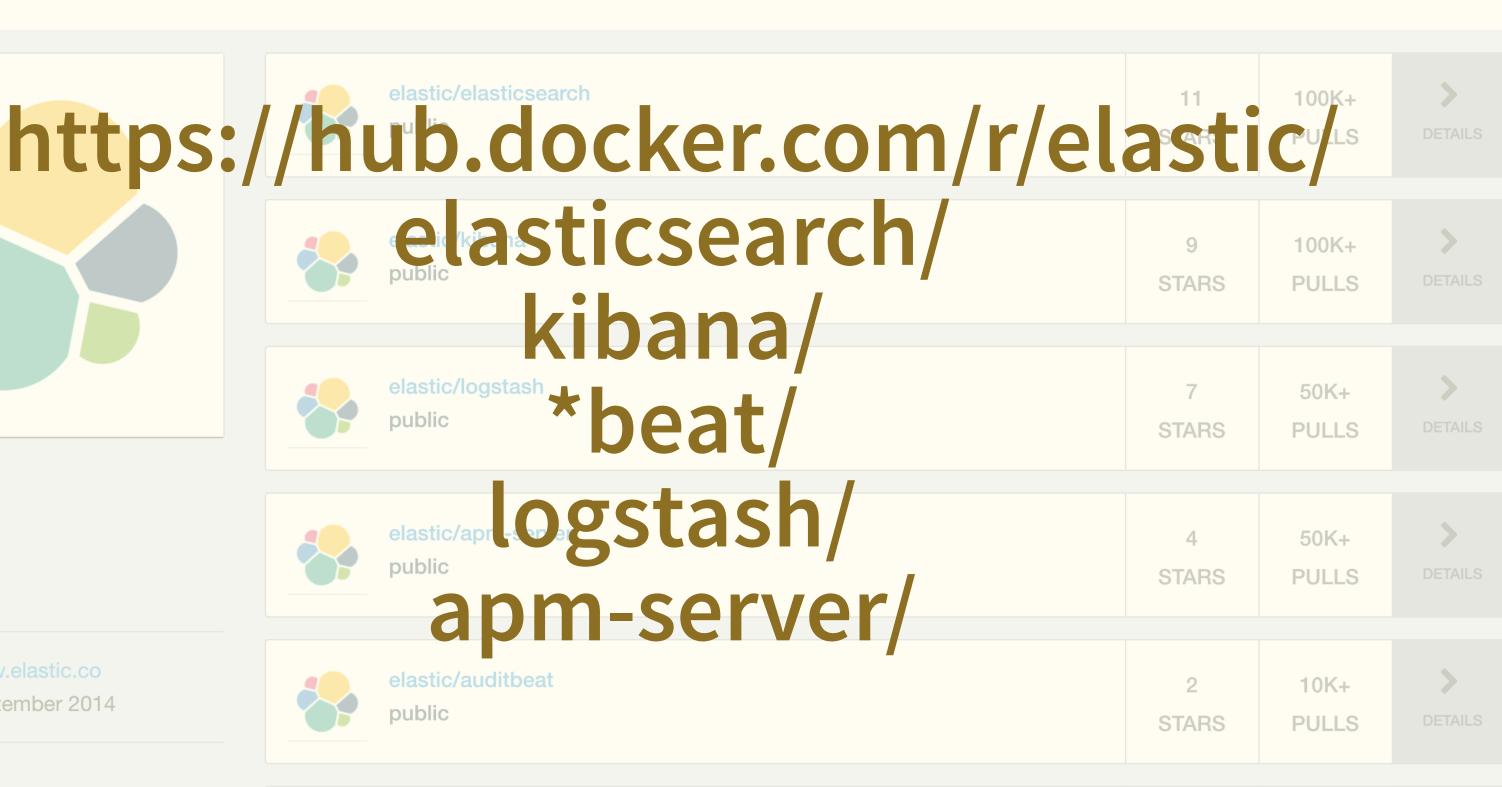
Q Search





Elastic

- ★ https://www.elastic.co
- ② Joined September 2014



elastic/filebeat

BASE IMAGES



Elasticsearch ALPINE



Kibana Beats Logstash UBUNTU



Common base image in 5.4+ (ENTOS)



https://github.com/elastic/elasticsearch-docker/blob/master/templates/Dockerfile.j2



Upside SIMILAR SETUP SHARED LAYERS JVM LARGE ANYWAY





jarpy commented on 31 Mar • edited







Actually, my money is on the native call to getmntent(3).

Oh look! What's the chances we don't have this patch in our musl libc?

https://git.musl-libc.org/cgit/musl/commit/src/misc/mntent.c? id=05973dc3bbc1aca9b3c8347de6879ed72147ab3b



jarpy added the bug label on 31 Mar



jarpy commented on 31 Mar









And I'm a bit late in saying this, but thank you for the excellent reproduction steps. They were extremely useful once we (kinda by accident) found the right environment to run them in.

Downside STZE



```
$ docker images
REPOSITORY
                                                TAG
                                                       IMAGE ID
                                                                      SIZE
docker.elastic.co/kibana/kibana
                                                       fcc1f039f61c
                                                                      727MB
                                                6.5.0
docker.elastic.co/elasticsearch/elasticsearch
                                                       ff171d17e77c
                                                6.5.0
                                                                      774MB
docker.elastic.co/beats/filebeat
                                                       aee067f4a241
                                                                      299MB
                                                6.5.0
docker.elastic.co/kibana/kibana
                                                       327c6538ba4c
                                                6.2.4
                                                                      933MB
docker.elastic.co/elasticsearch/elasticsearch
                                                6.2.4
                                                       7cb69da7148d
                                                                      515MB
docker.elastic.co/beats/filebeat
                                                       26a00abcde82
                                                                      319MB
                                                6.2.4
docker.elastic.co/kibana/kibana
                                                       59fcc69d2cc6
                                                5.6.13
                                                                      653MB
docker.elastic.co/elasticsearch/elasticsearch
                                                5.6.13
                                                       21673573a265
                                                                      525MB
docker.elastic.co/beats/filebeat
                                                       2aec30f6b3fc
                                                                      284MB
                                                5.6.13
docker.elastic.co/kibana/kibana
                                                       ffe778f7e489
                                                                      679MB
                                                5.3.3
docker.elastic.co/elasticsearch/elasticsearch
                                                       5857f98b5920
                                                5.3.3
                                                                      165MB
docker.elastic.co/beats/filebeat
                                                       c01be8a8f630
                                                5.3.3
                                                                      232MB
```



	5.3	5.6	6.2	6.5
ES	165MB	525MB	515MB	774MB
Kibana	679MB	653MB	933MB	727MB
Filebeat	232MB	284MB	319MB	299MB



Does it matter? STATEFUL VS STATELESS



What to TNCLUDE?



Single image for 5.x PLATINUM TRIAL



Three flavors 6.0 to 6.2 BASIC*, OSS, PLATINUM TRIAL

* Default



Two flavors 6.3+ BASIC / PLATINUM TRIAL*, OSS

* Default



FUTURE



Multiple BASE IMAGES?



WINDOWS?!



RELEASE POLICY



M:latest



ZOMBIES

ideas that should have been killed by evidence, but keep shambling along



6 AND 6 - 4!



WHAT'S IN A TAG?

```
docker.elastic.co/elasticsearch/elasticsearch5.3.35857f98b59204 months agodocker.elastic.co/beats/filebeat5.3.3c01be8a8f6305 months agodocker.elastic.co/kibana/kibana5.3.3ffe778f7e4895 months ago
```



Currently OVERWRITETAG



LABEL SCHEMA

```
LABEL org.label-schema.schema-version="1.0" \
  org.label-schema.vendor="Elastic" \
  org.label-schema.name="elasticsearch" \
  org.label-schema.version="{{ elastic_version }}" \
  org.label-schema.url="https://www.elastic.co/products/elasticsearch" \
  org.label-schema.vcs-url="https://github.com/elastic/elasticsearch-docker" \
  {% if image_flavor == 'oss' -%}
  license="Apache-2.0"
  {% else -%}
  license="Elastic License"
  {% endif -%}
```



Base image & JVM direct dependencies



Future ADD IMAGE VERSION?



SECURITY & STABILITY



Run Elasticsearch as root





MODE

Production: Clusterable

Development: Local network



"Docker" mode discovery.type=single-node



BOOTSTRAP CHECKS are here to stay



6.0+ no more DEFAULT CREDENTIALS



6.x Security non-trial requires (ERTIFICATE)



The container runs Elasticsearch as user elasticsearch using uid:gid 1000:1000.

https://www.elastic.co/guide/en/elasticsearch/reference/current/docker.html









Bug description

Starting elasticsearch: 5.2.2 results in Failed to created node environment. This has been covered in #21, the recommendation was to set user permissions on the host system.

```
docker run --rm -v /tmp/elastic:/usr/share/elasticsearch/data docker.elastic.co/elasticsear
# breaks
```

I prefer simple fire & forget docker containers which don't need any preparation on the host system. Would it be an option to check the Elasticsearch image from Docker, that runs fine, without setting any permissions before, and replicate that behaviour in new elasticsearch-docker?

```
docker run --rm -v /tmp/elastic:/usr/share/elasticsearch/data elasticsearch:5.2.2
# runs
```

```
docker run --rm -v /tmp/elastic:/usr/share/elasticsearc
# breaks
```

I prefer simple fire & forget docker containers which don't nee

```
docker run --rm -v /tmp/elastic:/usr/share/elasticsearc
# runs
```



DON'T MUTATE the bind mounted local directory



THOSE WHO DO NOT UNDERSTAND UNIX ARE CONDEMNED TO REINVENT IT, POORLY.

Henry Spencer



Docker default value? LimitNOFILE & LimitNPROC



infinity

https://github.com/moby/moby/commit/8db61095a3d0bcb0733580734ba5d54bc27a614d (July 2016)



TEST

```
$ docker run --rm centos:7 /bin/bash -c \
   'ulimit -Hn && ulimit -Sn && ulimit -Hu && ulimit -Su'
1048576
1048576
unlimited
unlimited
```



Limit for virtual memory? vm.max_map_count



TEST

```
$ docker run --rm centos:7 /bin/bash -c \
    'sysctl vm.max_map_count'
vm.max_map_count = 262144
```

Must be set on the host



Combine two new systems to get CHAOS & DESPAIR



Docker is a LEAKY ABSTRACTION





jarpy commented on 31 Mar

Owner







This reproduces for me on Docker for Windows version 17.03.0-ce-win1, (run from Powershell).

It does not reproduce on Docker for Linux version 17.03.0-ce.

Interesting. I think the Docker VM, as used by OSX and Windows is introducing the problem.



CUSTOMIZATION



FEATURE REQUEST

```
if [ -f /custom/user_init.sh ]
then
. /custom/user_init.sh
fi
```

Or customization through environment variables



No RUNTIME MUTATION



DOCKERFILE

```
ARG ELASTIC_VERSION
FROM docker.elastic.co/elasticsearch/elasticsearch:${ELASTIC_VERSION}

RUN bin/elasticsearch-plugin install analysis-phonetic --batch

ARG ELASTIC_VERSION
RUN bin/elasticsearch-plugin install \
    https://github.com/spinscale/elasticsearch-ingest-langdetect/releases/download/
    ${ELASTIC_VERSION}.1/ingest-langdetect-${ELASTIC_VERSION}.1.zip --batch
```



GENERATE KEYSTORE

```
$ docker run -p 9200:9200 -p 9300:9300 -e "discovery.type=single-node" \
 -v /Users/philipp/Desktop/demo/config/:/usr/share/elasticsearch/config/ \
 -it docker.elastic.co/elasticsearch/elasticsearch:6.4.3 /bin/bash
[root@1006ed50b646 elasticsearch]# ./bin/elasticsearch-keystore create
Created elasticsearch keystore in /usr/share/elasticsearch/config
[root@1006ed50b646 elasticsearch]# ./bin/elasticsearch-keystore add test
Enter value for test:
[root@1006ed50b646 elasticsearch]# exit
exit
$ cat config/elasticsearch.keystore
??lelasticsearch.keystore?@g?o!?$?K?Lf?w?VAEŠHm?[?a6?B??? y?,!B}??Ħ?@?AU=?C?:?o?
?W?O8?}U?;p?τ???cQ????7?JY? 2A?:???ZUY??2V?9?ສ??(??0?q\
```



MOUNT KEYSTORE (DOCKER COMPOSE)



ORCHESTRATION



Who uses KUBERNETES?



Who uses SWARM!



Who uses MESOS?





NO ORCHESTRATION yet



Kubernetes 1.8 allows dots in env vars

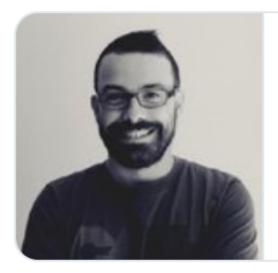
https://github.com/kubernetes/kubernetes/issues/2707







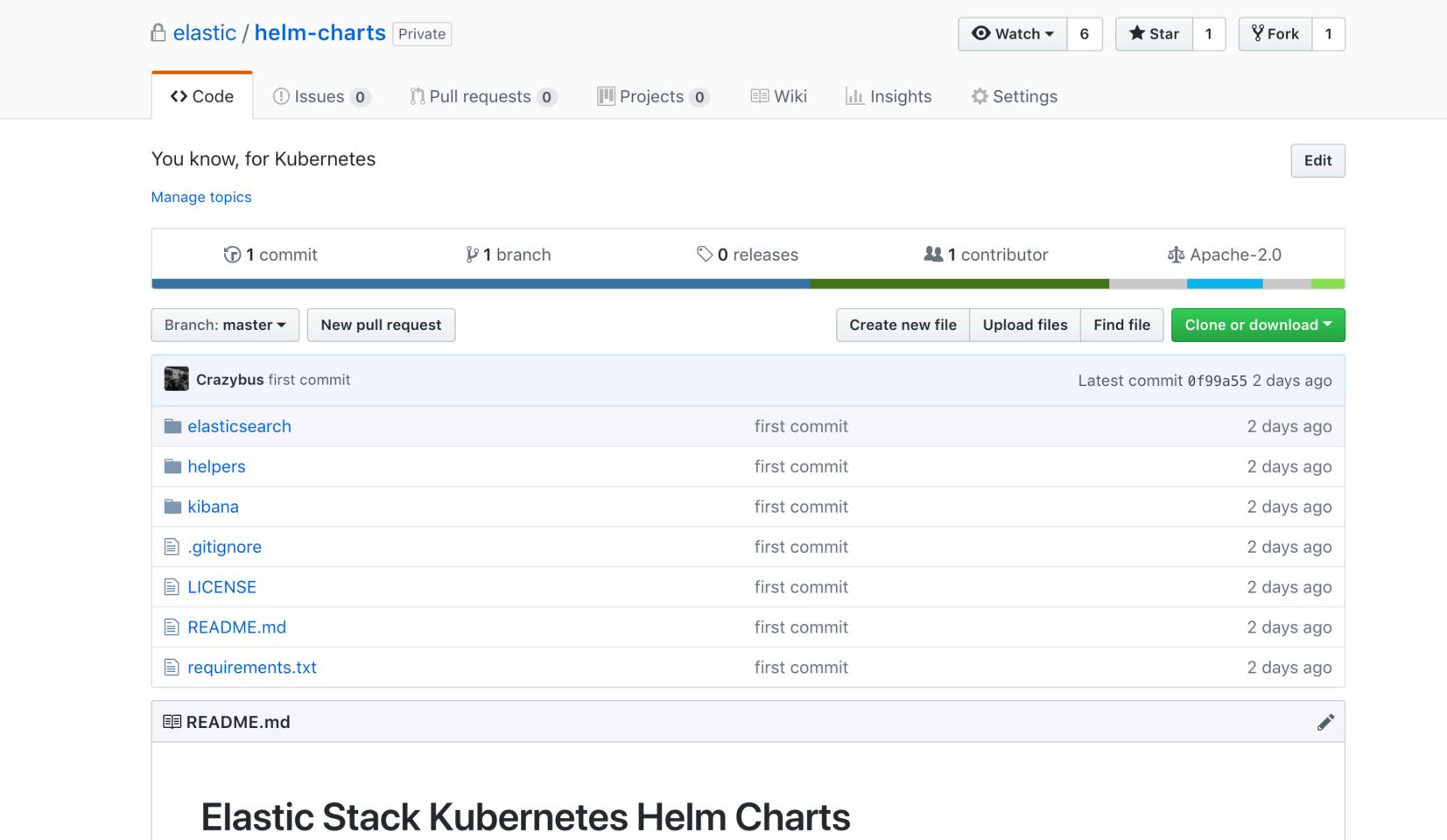
today, i decided to end my commitment to maintaining github.com/pires/kubernet it's been 3 years since i last used Elasticsearch and other projects need all the attention i can give them. it was a great run, thank you ALL.



pires/kubernetes-elasticsearch-cluster

Elasticsearch cluster on top of Kubernetes made easy. - pires/kubernetes-elasticsearch-cluster

github.com



Kubernetes has made huge improvements in the ability to run stateful workloads including databases and message queues, but I still prefer not to run them on Kubernetes.

https://twitter.com/kelseyhightower/status/963413508300812295





elastic cloud enterprise



CONCLUSION



"DOCKER IS DISRUPTING THE INDUSTRY"



"CAN I RUN ELASTICSEARCH ON DOCKER?"



"SHOULD I RUN ELASTICSEARCH ON DOCKER?"



Even when stateful services do the right things managing state is still hard. Mixing stateful and stateless applications on the same cluster elevates the complexity of the entire cluster. Cluster security and upgrades become much harder.

https://twitter.com/kelseyhightower/status/963417215608369153



QUICKQUIZ What do you get?



docker pull elastic/elasticsearch



\$ docker pull elastic/elasticsearch

Using default tag: latest Error response from daemon: manifest for elastic/elasticsearch:latest not found



docker pull logstash:alpine



docker pull metricbeat:6.4.3



\$ docker pull metricbeat:6.4.3

Error response from daemon: pull access denied for metricbeat, repository does not exist or may require 'docker login'



docker pull elastic/metricbeat:6.4.3



docker pull docker.elastic.co/apm/apm-server:6.4.3



"AGGREGIERTE LOGGING-PATTERNS"

Tomorrow 15:45 @ Gustav Mahler II



QUESTIONS & DISCUSSION

Philipp Krenn

@xeraa

