

PROVIDING AND SUPPORTING DOCKER IMAGES

Philipp Krenn

@xeraa



elastic

Infrastructure | Developer 🥑

Who uses
DOCKER?

Who uses

DOCKER IN PRODUCTION?

Who uses

STATEFUL DOCKER IMAGES?

Who uses
OUR IMAGES?

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

Support

Orchestration

DOCKER HUB

"OFFICIAL"

WHAT DO YOU GET?

`docker pull elasticsearch`

[Explore](#)[Help](#)[Sign up](#)[Sign in](#)

OFFICIAL REPOSITORY

elasticsearch 

Last pushed: 9 days ago

[Repo Info](#)[Tags](#)

Short Description

Elasticsearch is a powerful open source search and analytics engine that makes data easy to explore.

Docker Pull Command

```
docker pull elasticsearch
```

Full Description

DEPRECATION NOTICE

This image has been deprecated in favor of the [official elasticsearch image](#) provided and maintained by [elastic.co](#). The list of images available from Elastic can be found at [www.docker.elastic.co](#). The images found here will receive no further updates once the `6.0.0` release is available upstream. Please adjust your usage accordingly.



Elastic provides open-source support for Elasticsearch via the [elastic/elasticsearch GitHub repository](#) and the Docker image via the [elastic/elasticsearch-docker GitHub repository](#), as well as community support

[Explore](#)[Help](#)[Sign up](#)[Sign in](#)

OFFICIAL REPOSITORY

elasticsearch 

Last pushed: 9 days ago

[Repo Info](#)[Tags](#)

Short Description

Elasticsearch is a powerful open source search and analytics engine that makes data easy to explore.

Docker Pull Command



```
docker pull elasticsearch
```

Full Description

DEPRECATION NOTICE

This image has been deprecated in favor of the [official elasticsearch image](#) provided and maintained by [elastic.co](#). The list of images available from Elastic can be found at [www.docker.elastic.co](#). The images found here will receive no further updates once the `6.0.0` release is available upstream. Please adjust your usage accordingly.



Elastic provides open-source support for Elasticsearch via the [elastic/elasticsearch GitHub repository](#) and the Docker image via the [elastic/elasticsearch-docker GitHub repository](#) as well as community support

[Explore](#)[Help](#)[Sign up](#)[Sign in](#)

OFFICIAL REPOSITORY

elasticsearch 

Last pushed: 9 days ago

[Repo Info](#)[Tags](#)

Short Description

Elasticsearch is a powerful open source search and analytics engine that makes data easy to explore.

Docker Pull Command

```
docker pull elasticsearch
```

Full Description

DEPRECATION NOTICE

This image has been deprecated in favor of the [official elasticsearch image](#) provided and maintained by [elastic.co](#). The list of images available from Elastic can be found at [www.docker.elastic.co](#). The images found here will receive no further updates once the `6.0.0` release is available upstream. Please adjust your usage accordingly.



Elastic provides open-source support for Elasticsearch via the [elastic/elasticsearch GitHub repository](#) and the Docker image via the [elastic/elasticsearch-docker GitHub repository](#), as well as community support

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 MOTIVATION

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

6.2

`docker pull docker.elastic.co/elasticsearch/elasticsearch:6.2.3`

`docker pull docker.elastic.co/elasticsearch/elasticsearch-basic:6.2.3`

`docker pull docker.elastic.co/elasticsearch/elasticsearch-basic:6.2.2`

`docker pull docker.elastic.co/elasticsearch/elasticsearch-basic:6.2.1`

`docker pull docker.elastic.co/elasticsearch/elasticsearch-basic:6.2.0`

`docker pull docker.elastic.co/elasticsearch/elasticsearch-oss:6.2.3`

`docker pull docker.elastic.co/elasticsearch/elasticsearch-oss:6.2.2`

`docker pull docker.elastic.co/elasticsearch/elasticsearch-oss:6.2.1`

`docker pull docker.elastic.co/elasticsearch/elasticsearch-oss:6.2.0`

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.

<https://www.docker.elastic.co>



Elasticsearch 

6.2 

```
docker pull docker.elastic.co/elasticsearch/elasticsearch:6.2.3
```

```
docker pull docker.elastic.co/elasticsearch/elasticsearch-basic:6.2.3
```

```
docker pull docker.elastic.co/elasticsearch/elasticsearch-basic:6.2.2
```

```
docker pull docker.elastic.co/elasticsearch/elasticsearch-basic:6.2.1
```

```
docker pull docker.elastic.co/elasticsearch/elasticsearch-basic:6.2.0
```

```
docker pull docker.elastic.co/elasticsearch/elasticsearch-oss:6.2.3
```

```
docker pull docker.elastic.co/elasticsearch/elasticsearch-oss:6.2.2
```

```
docker pull docker.elastic.co/elasticsearch/elasticsearch-oss:6.2.1
```

```
docker pull docker.elastic.co/elasticsearch/elasticsearch-oss:6.2.0
```

PROBLEMS

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

China

IPv6

PUBLIC REPOSITORY

elastic/elasticsearch

Last pushed: 22 days ago

- Repo Info
- Tags
- Collaborators
- Webhooks
- Settings

Short Description



The Elasticsearch docker images maintained by Elastic!

Full Description



Default flavor of the docker image for Elasticsearch, created by Elastic.
Details can be found at: <https://www.elastic.co/guide/en/elasticsearch/reference/current/docker.html> and <https://www.docker.elastic.co>

Docker Pull Command



```
docker pull elastic/elasticsearch
```

Owner



elastic



Search

Dashboard

Explore

Organizations

Create



xeraa

PUBLIC REPOSITORY

elastic/elasticsearch ☆

Last pushed: 22 days ago

Repo Info

Tags

Collaborators

Webhooks

Settings

Short Description

The Elasticsearch docker images maintained by Elastic!

Full Description

Default flavor of the docker image for Elasticsearch, created by Elastic.

Details can be found at: <https://www.elastic.co/guide/en/elasticsearch/reference/current/docker.html> and

<https://www.docker.elastic.co>

Docker Pull Command

```
docker pull elastic/elasticsearch
```

Owner



elastic

https://hub.docker.com/r/elastic/elasticsearch/kibana/*beat/logstash/apm-server/

QUICK QUIZ

Our image or not?


```
docker pull logstash:alpine
```

```
docker pull elastic/elasticsearch
```

docker pull kibana

```
docker pull docker.elastic.co/beats/filebeat:6.2.3
```

BASE IMAGES

Elasticsearch

ALPINE

Kibana Beats Logstash

UBUNTU

Common base image in 5.4+

CENTOS 7

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

```
FROM centos:7
LABEL maintainer "Elastic Docker Team <docker@elastic.co>"

ENV ELASTIC_CONTAINER true
ENV PATH /usr/share/elasticsearch/bin:$PATH
ENV JAVA_HOME /usr/lib/jvm/jre-1.8.0-openjdk

RUN yum update -y && \
    yum install -y nc java-1.8.0-openjdk-headless unzip wget which && \
    yum clean all
```

Upside

SIMILAR SETUP

SHARED LAYERS

JVM IMAGES LARGISH ANYWAY



jarpy commented on 31 Mar • edited

Owner



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/cgi/musl/commit/src/misc/mntent.c?id=05973dc3bbc1aca9b3c8347de6879ed72147ab3b>



jarpy added the **bug** label on 31 Mar



jarpy commented on 31 Mar

Owner



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

SIZE

```
$ docker images
```

REPOSITORY	TAG	IMAGE ID	SIZE
docker.elastic.co/kibana/kibana	6.3.0	128b6bfb9645	729MB
docker.elastic.co/elasticsearch/elasticsearch	6.3.0	7e188ef97fe0	783MB
docker.elastic.co/beats/filebeat	6.3.0	f90fd7f32529	318MB
docker.elastic.co/kibana/kibana	6.2.4	327c6538ba4c	933MB
docker.elastic.co/elasticsearch/elasticsearch	6.2.4	7cb69da7148d	515MB
docker.elastic.co/beats/filebeat	6.2.4	26a00abcde82	319MB
docker.elastic.co/kibana/kibana	5.6.7	0f8347a118b3	697MB
docker.elastic.co/elasticsearch/elasticsearch	5.6.7	f9bc1b5416b9	574MB
docker.elastic.co/beats/filebeat	5.6.7	02648e71cced	334MB
docker.elastic.co/kibana/kibana	5.3.3	ffe778f7e489	679MB
docker.elastic.co/elasticsearch/elasticsearch	5.3.3	5857f98b5920	165MB
docker.elastic.co/beats/filebeat	5.3.3	c01be8a8f630	232MB

	5.3	5.6	6.2	6.3
ES	165MB	574MB	515MB	783MB
Kibana	679MB	697MB	933MB	729MB
Filebeat	232MB	334MB	319MB	318MB

Does it matter?

STATEFUL VS STATELESS

What to
INCLUDE?

Single image for 5.x

PLATINUM TRIAL

Three flavors 6.0 to 6.2

BASIC^{*}, OSS, PLATINUM TRIAL

^{*} Default



Graph Reporting
Machine Learning
Canvas
SQL Monitoring CSV

X-PACK

PAID

FREE

OPEN

Search Engine Data Collection
Agents Dashboard Visualizations
Ingestions Enrichment
Edge Collection Distributed

OSS

Two flavors 6.3+

BASIC / PLATINUM TRIAL^{*}, OSS

783MB vs 673MB

^{*} Default



FUTURE

Multiple JDK VERSIONS?

6.2: OpenJDK 8

6.3 BC: OpenJDK 10.0.1

Multiple BASE IMAGES?

WINDOWS?!

RELEASE POLICY

No :latest



ZOMBIES

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

5 AND 5 . 6?

WHAT'S IN A TAG?

<code>docker.elastic.co/elasticsearch/elasticsearch</code>	5.3.3	5857f98b5920	4 months ago
<code>docker.elastic.co/beats/filebeat</code>	5.3.3	c01be8a8f630	5 months ago
<code>docker.elastic.co/kibana/kibana</code>	5.3.3	ffe778f7e489	5 months ago

Currently OVERWRITE TAG

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

Run Elasticsearch as
root

A background image showing numerous cockroaches of various sizes and colors (brown, black, and orange-banded) crawling on a light-colored wooden surface. The image is slightly blurred and has a warm, yellowish tint.

COCKROACHES

claims that disappear for a while when
proved wrong, but just keep on coming
back

MODE

Production: Clusterable

Development: Local network

"Docker" mode

`discovery.type=single-node`

BOOTSTRAP CHECKS
are here to stay

6.0+ no more

DEFAULT CREDENTIALS

6.0+ X-Pack non-trial requires
CERTIFICATES

SUPPORT

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

[https://www.elastic.co/guide/en/elasticsearch/reference/current/
docker.html](https://www.elastic.co/guide/en/elasticsearch/reference/current/docker.html)



bluepuma77 commented on 4 Mar



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/elasticsearch:5.2.2  
# 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/elasticsearch  
# breaks
```

I prefer simple fire & forget docker containers which don't need any permissions before, and replicate that behaviour in new e

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




DON'T MUTATE
the bind mounted local directory



ZOMBIES

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

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](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
```

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.

ORCHESTRATION

Who uses KUBERNETES?

Who uses
SWARM?

Who uses
MESOS?

Who uses
NOMAD?

NO ORCHESTRATION
yet

TESTING

images for orchestration

Kubernetes 1.8 allows dots in env vars

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

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>

Kubernetes makes it easier to deploy
stateful services not manage them.

Stateful services must meet
Kubernetes half way and manage their
own cluster membership, failover, and
replication. CockroachDB and Consul
are two great examples, but far from
perfect.

<https://twitter.com/kelseyhightower/status/963415653930553345>



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>



<https://www.meetup.com/Elasticsearch-Berlin/>

Thursday June 14, 19:00
Springer Nature



QUESTIONS & DISCUSSION

Philipp Krenn

@xeraa