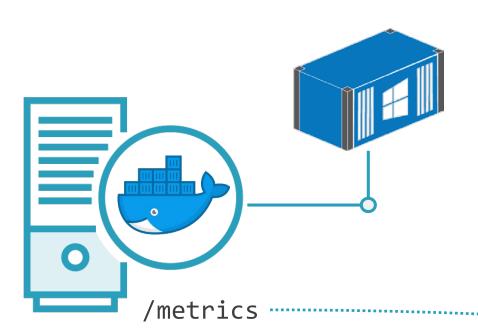
Exposing Docker Metrics to Prometheus

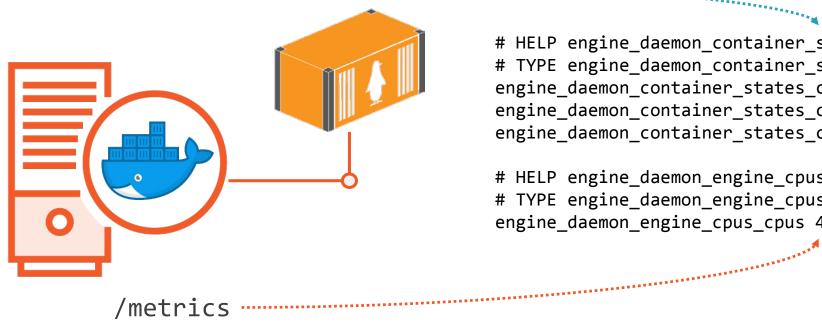


Elton Stoneman
DEVELOPER ADVOCATE

@EltonStoneman https://blog.sixeyed.com



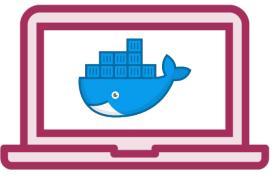




```
# HELP engine_daemon_container_states_containers
# TYPE engine_daemon_container_states_containers gauge
engine_daemon_container_states_containers{state="paused"} 0
engine_daemon_container_states_containers{state="running"} 23
engine_daemon_container_states_containers{state="stopped"} 9
```

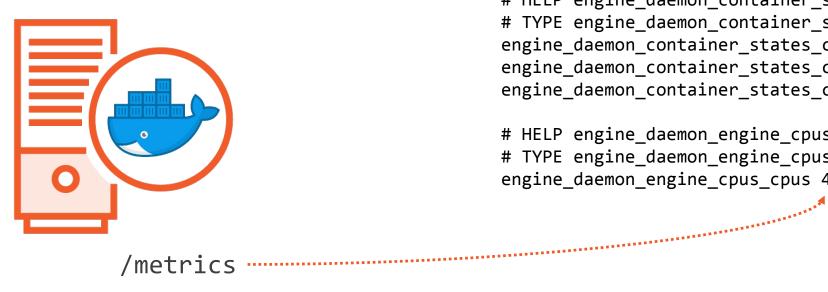
```
# HELP engine_daemon_engine_cpus_cpus The number of CPUs
# TYPE engine_daemon_engine_cpus_cpus gauge
engine_daemon_engine_cpus_cpus 4
```





/metrics





```
# HELP engine_daemon_container_states_containers
# TYPE engine_daemon_container_states_containers gauge
engine_daemon_container_states_containers{state="paused"} 0
engine_daemon_container_states_containers{state="running"} 23
engine_daemon_container_states_containers{state="stopped"} 9
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# HELP engine_daemon_engine_cpus_cpus The number of CPUs
# TYPE engine_daemon_engine_cpus_cpus gauge
engine_daemon_engine_cpus_cpus 4
```

Docker metrics

Containers
Swarm nodes
Image builds



```
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# TYPE engine_daemon_container_states_containers gauge
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engine_daemon_container_states_containers{state="running"} 23
engine_daemon_container_states_containers{state="stopped"} 9

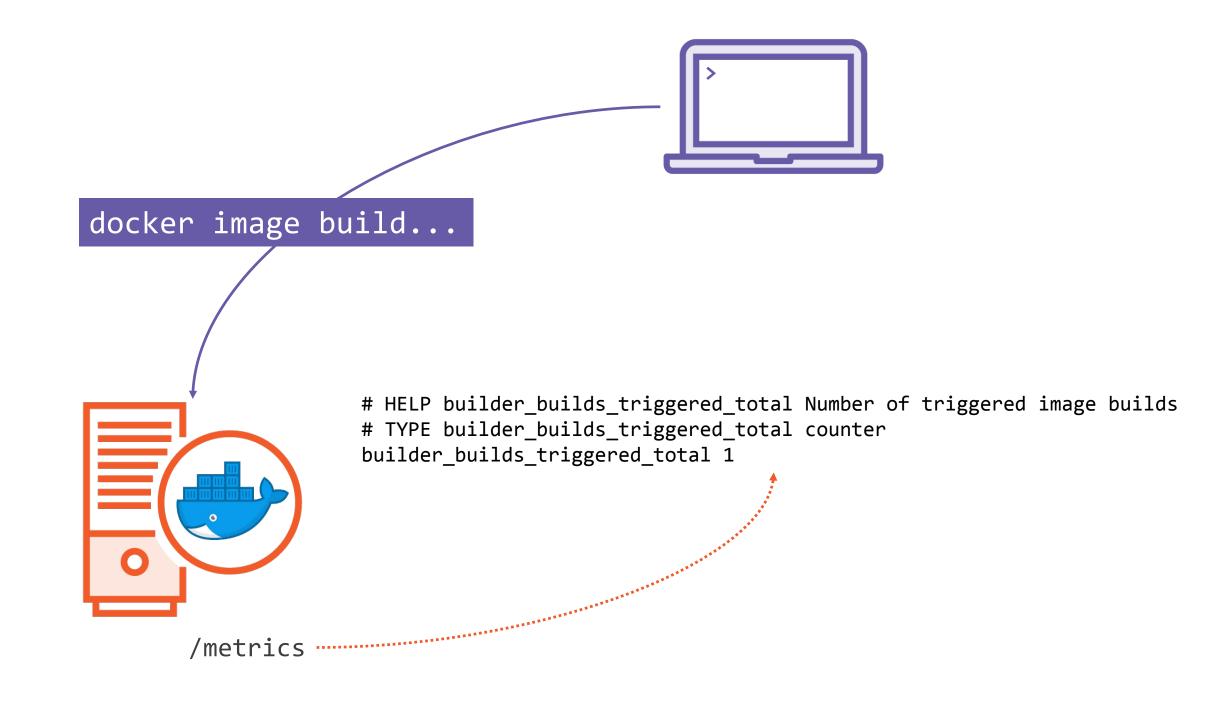
# HELP engine_daemon_engine_cpus_cpus The number of CPUs
# TYPE engine_daemon_engine_cpus_cpus gauge
engine_daemon_engine_cpus_cpus 4
```

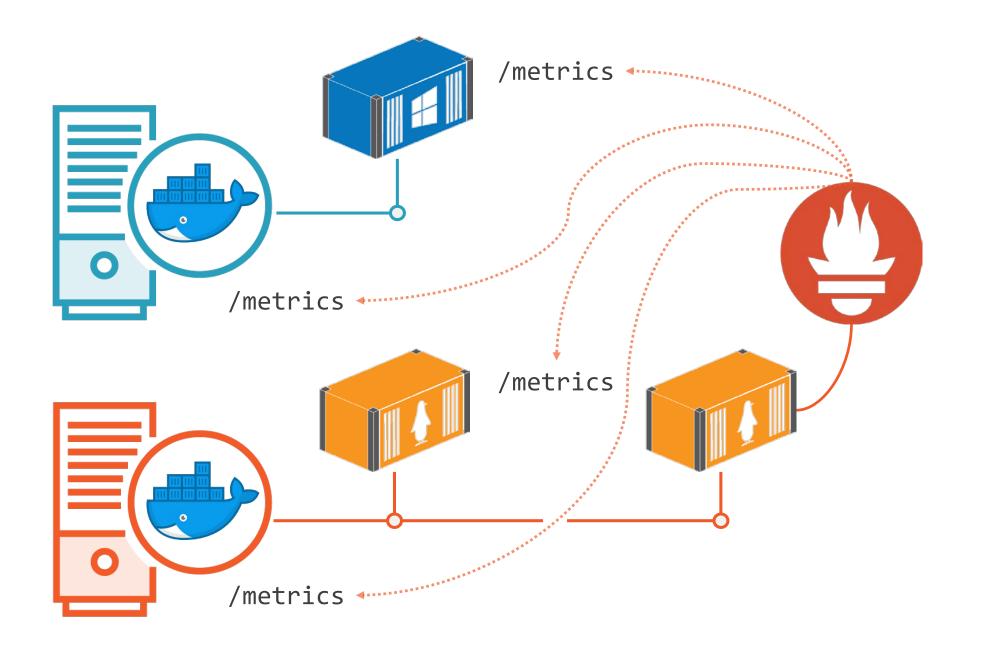
Module Overview

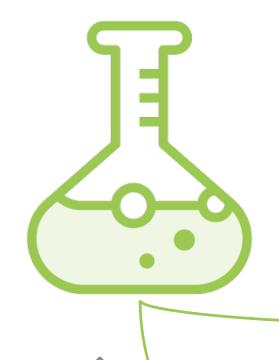


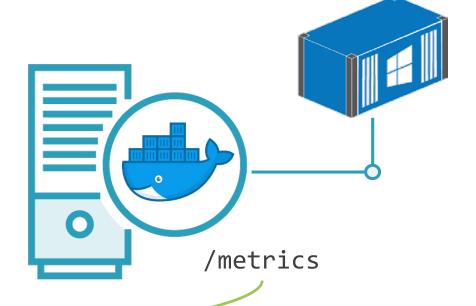
Exposing Docker Metrics

- Enabling Docker engine metrics
 - Mac & Windows
 - Ubuntu Server & Windows Server
- Understanding engine metrics
- Scraping and querying in Prometheus







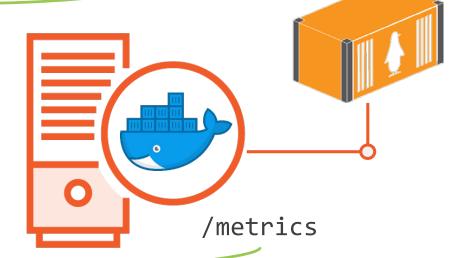


Experimental mode

Details may change

Opt-in features

Safe for production

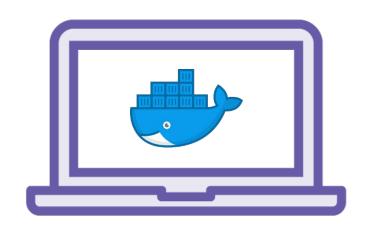


Demo



Enabling and Using Metrics in Docker Desktop

- Enabling metrics in Mac & Windows
- Viewing the metrics API
- Understanding Docker metrics
 - Engine details
 - Image builds
 - Containers





"experimental" : true



"metrics-addr" : "0.0.0.0:50501"







Engine

Builds

Containers

Docker Metrics

Engine

CPU count

Memory size

CPU architecture

Operating system

Docker version

Builds

Triggered count

Cancelled count

Failure count

- syntax error

- empty Dockerfile
 - command error

Containers

Container count

- by state

Action duration

- create & start

Healthchecks

- fired & failed







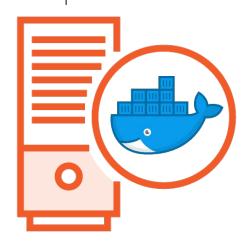


Swarm

Engine

Builds

Containers









Manager

Worker

Worker

Worker

Demo



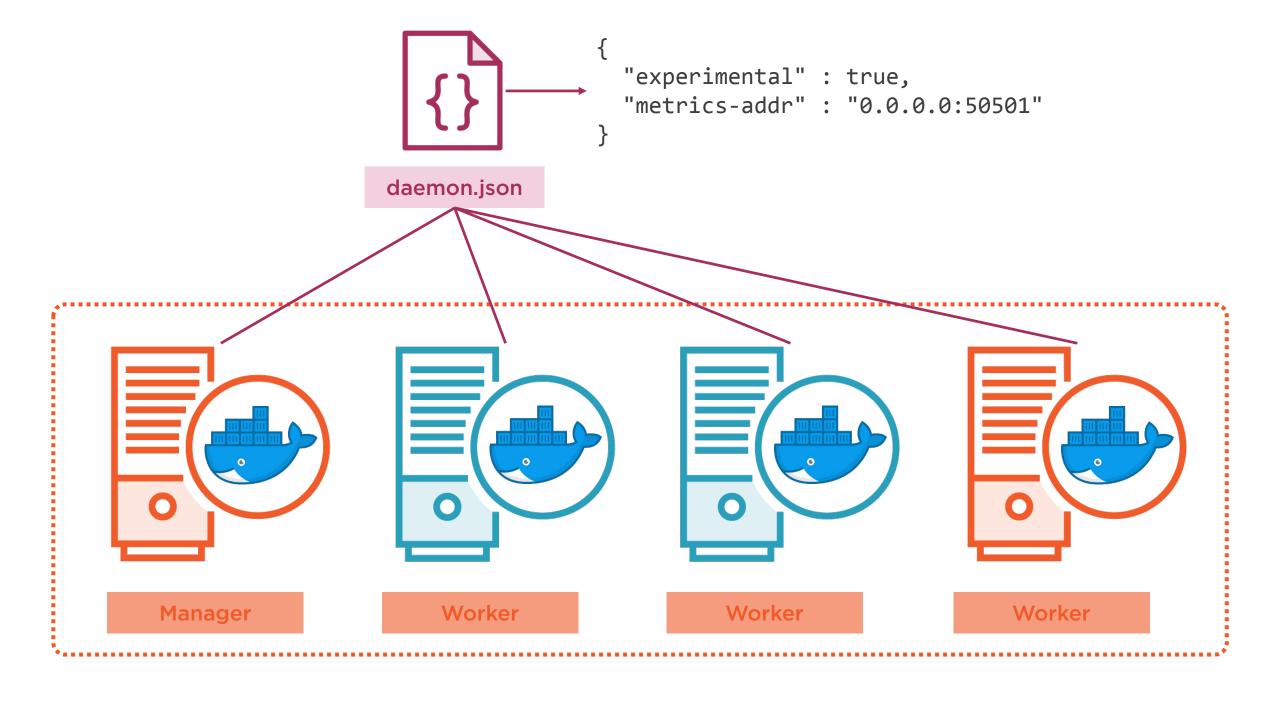
Enabling and Using Metrics in Docker Swarm

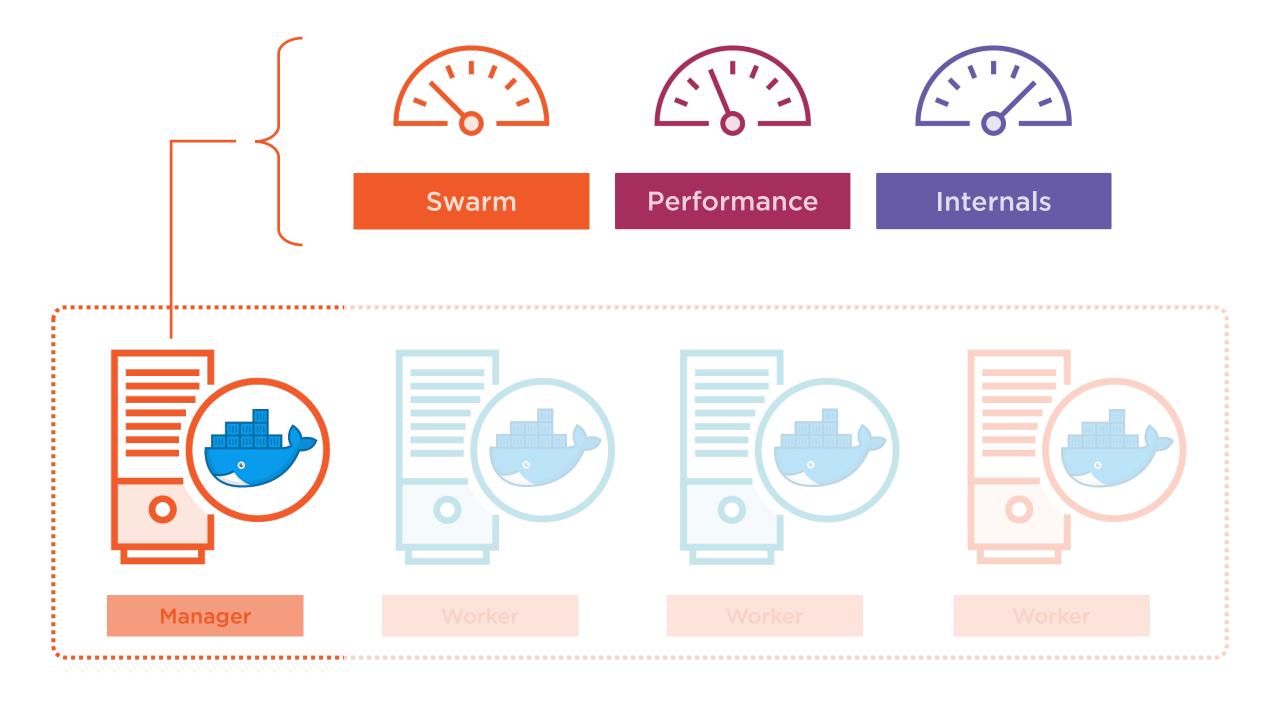
- Enabling metrics in Linux & Windows
- Understanding Docker metrics
 - Engine metrics
 - Swarm metrics

```
"experimental" : true,
"metrics-addr" : "0.0.0.0:50501"
}
```

Docker Engine Configuration

- Linux /etc/docker/daemon.json
- Windows C:\ProgramData\docker\config\daemon.json





Docker Swarm Metrics

Internals

Performance

Swarm

Go runtime

- Docker engine

HTTP server

Docker APIetcd

- cluster storage

Node status

Transaction duration *

Container scheduling *

Node details

Config count *

Secret count *

Service count *

Demo



Scraping Docker Metrics

- Configuring Prometheus
- Scraping workers & managers
- Querying Docker metrics with PromQL

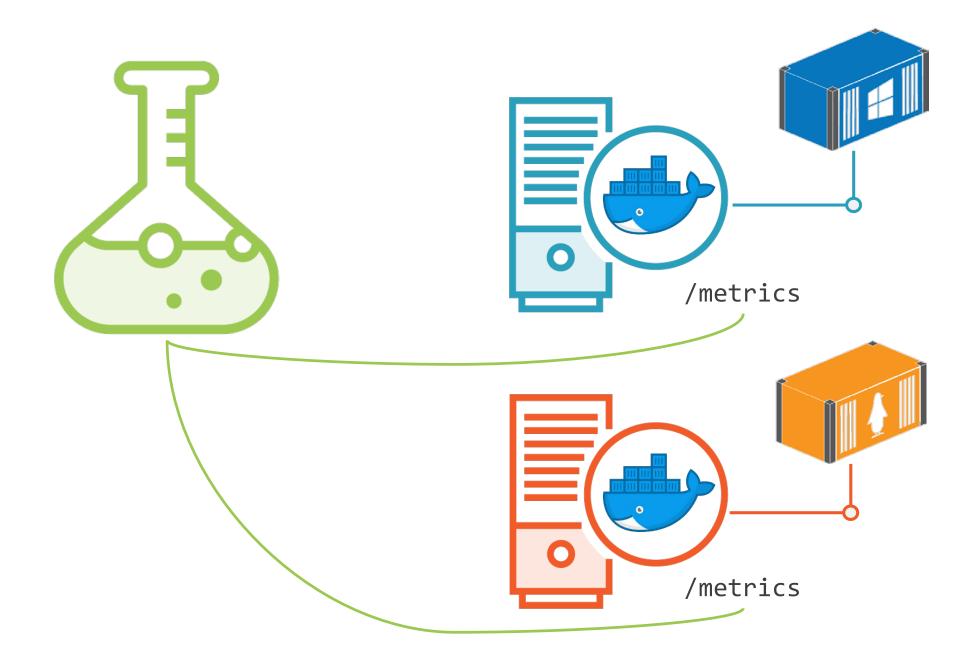
Docker metrics

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engine_daemon_container_states_containers{state="stopped"} 9

# HELP engine_daemon_engine_cpus_cpus The number of CPUs
# TYPE engine_daemon_engine_cpus_cpus gauge
engine_daemon_engine_cpus_cpus 4
```



Module Overview



Exposing Docker Metrics

- Enabling Docker engine metrics
 - Mac & Windows
 - Ubuntu Server & Windows Server
- Understanding engine metrics
- Understanding Swarm metrics
- Scraping and querying in Prometheus

Coming Next



Building Dashboards with Grafana

- Running & configuring Grafana
- Building dashboards
- Packaging Grafana images