CONTAINERS: PARTS AND LABOUR

DANIEL MAHER, DATADOG

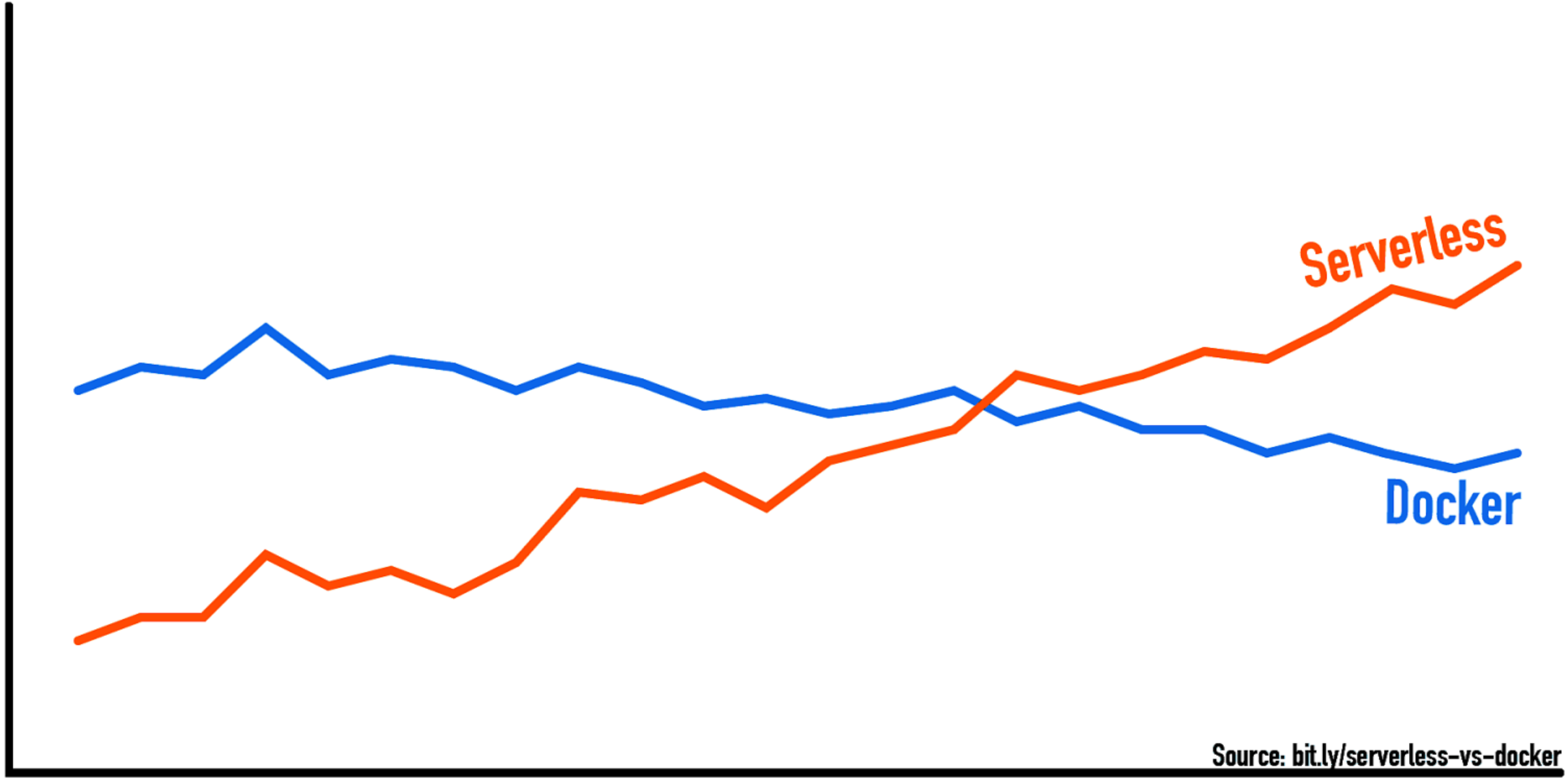
@phrawzty

DOCKER DOCKER DOCKER

CONTAINERS: PARTS AND LABOUR

DANIEL MAHER, DATADOG

@phrawzty



Source: bit.ly/serverless-vs-docker

IS THE DOCKER FAD OVER?







DANIEL MAHER

DOCS & TALKS
DEVOPSDAYS GLOBAL
GREAT OUTDOORS
GOURMAND
SUITS FOR NO REASON

@phrawzty

DATADOG

SAAS-BASED MONITORING

TRILLIONS OF POINTS/DAY

WE'RE HIRING:
www.datadoghq.com/careers

@datadoghq



Docker support #844

Merged **remh** merged 14 commits into `DataDog:master` from `steeve:master` on Mar 8, 2014

Conversation 23 | Commits 14 | Files changed 2



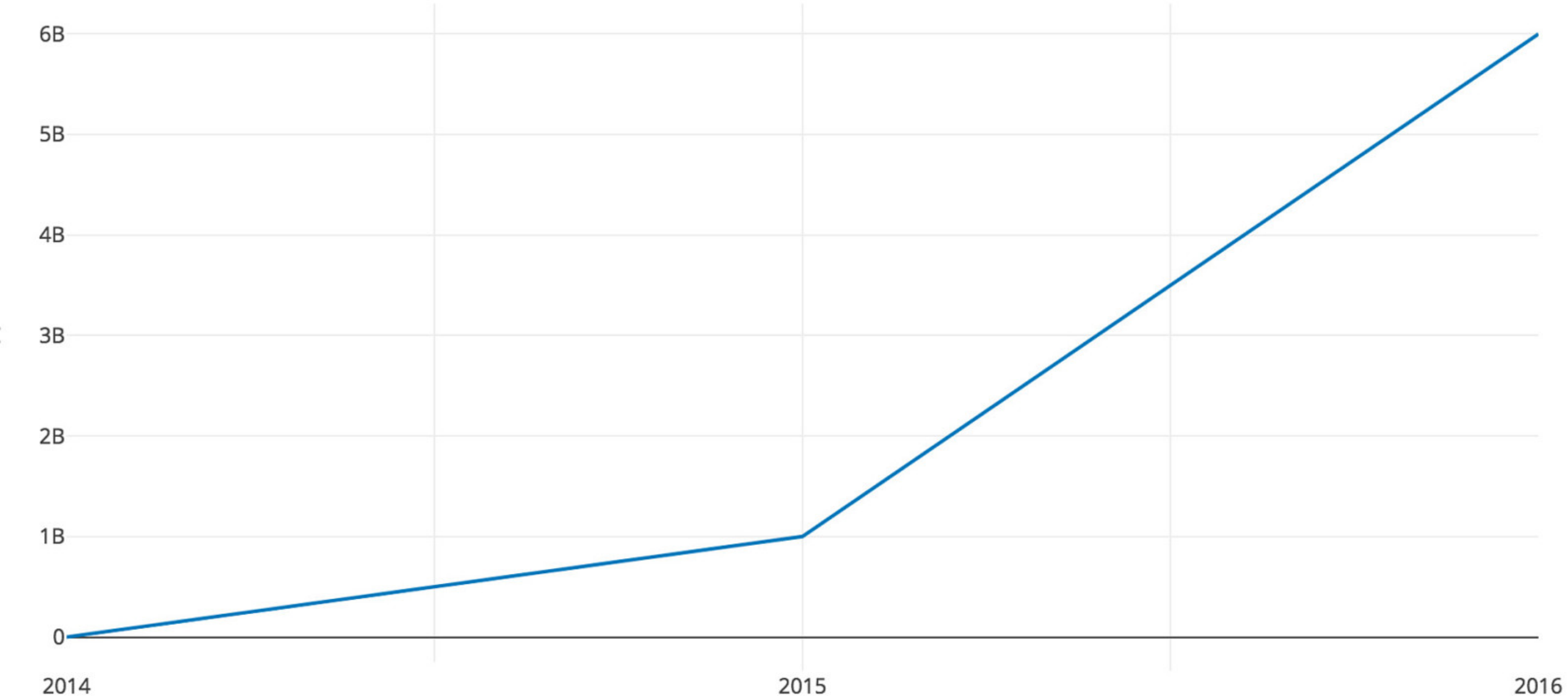
steeve commented on Feb 25, 2014

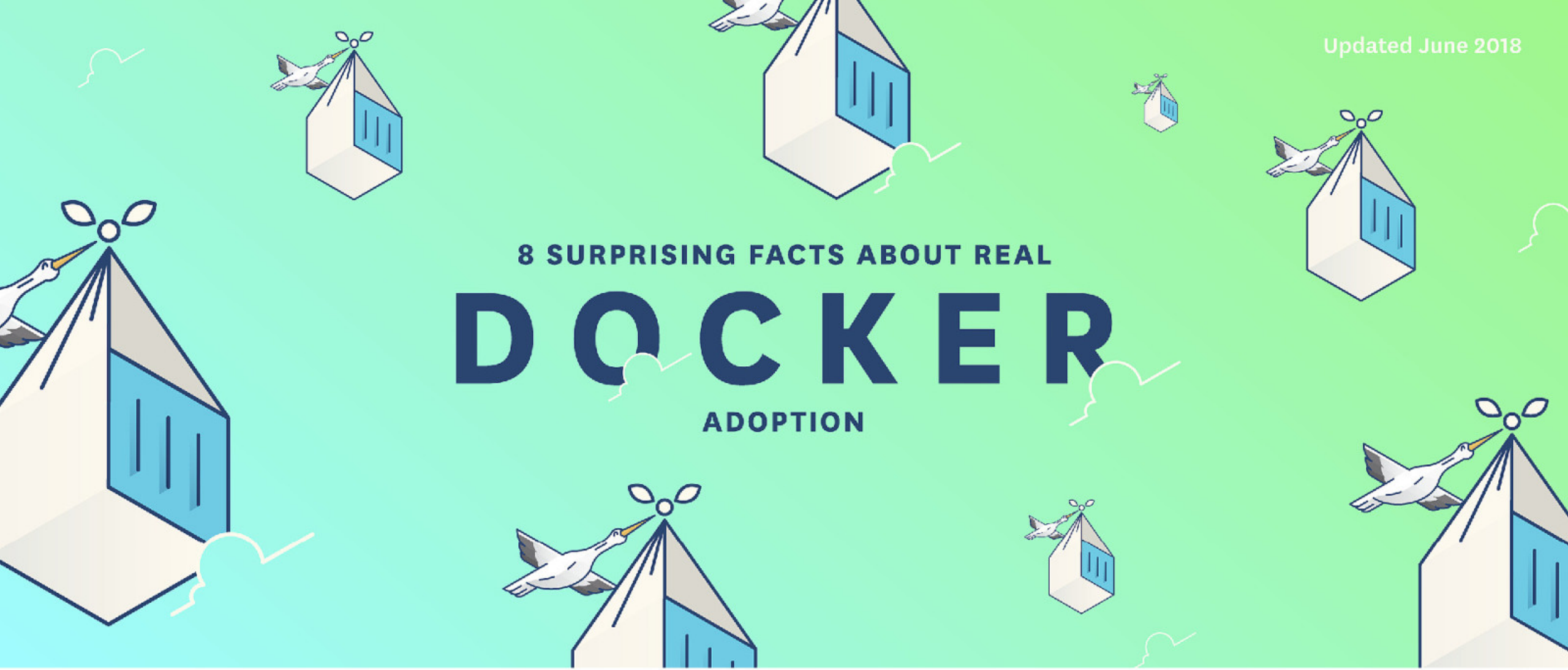
This PR enables instrumentation on Docker (LXC/cgroups) containers for:

- Memory
- CPU
- Disk

It uses the native Unix socket to communicate with `dockerd`, and thus doesn't need any

Docker Adoption - Docker pulls?





https://www.datadoghq.com/docker-adoption/

Docker Adoption

Dabbler: used Docker during a given month, but hadn't reached significant use as defined by Adopter.

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Adopter: the average number of containers running during the month was at least 50% the number of distinct hosts run, or there were at least as many distinct containers as distinct hosts run during the month.

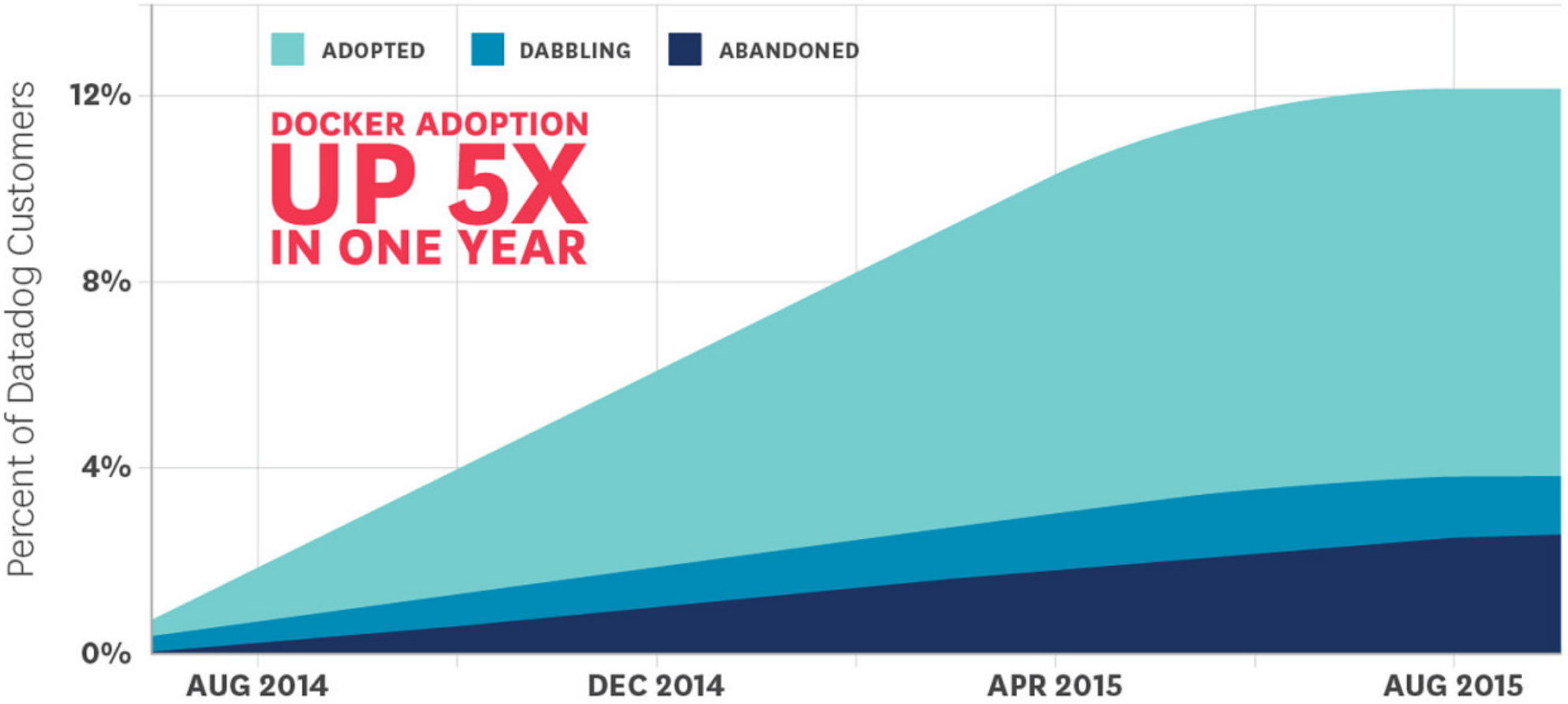
Docker Adoption

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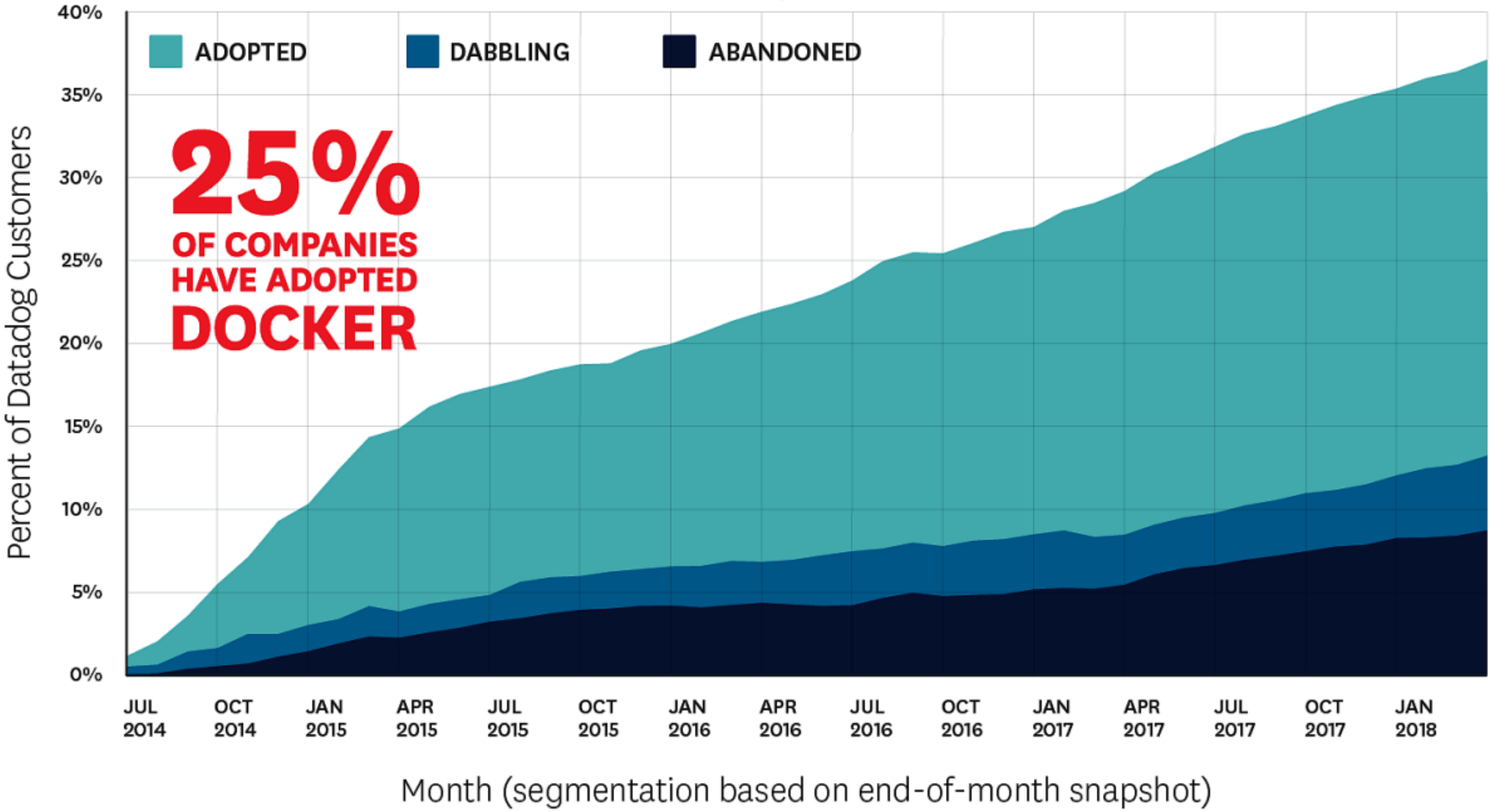
Abandoner: a currently active company that used Docker in the past, but hasn't used it at all in the last month.

Docker Adoption Behavior

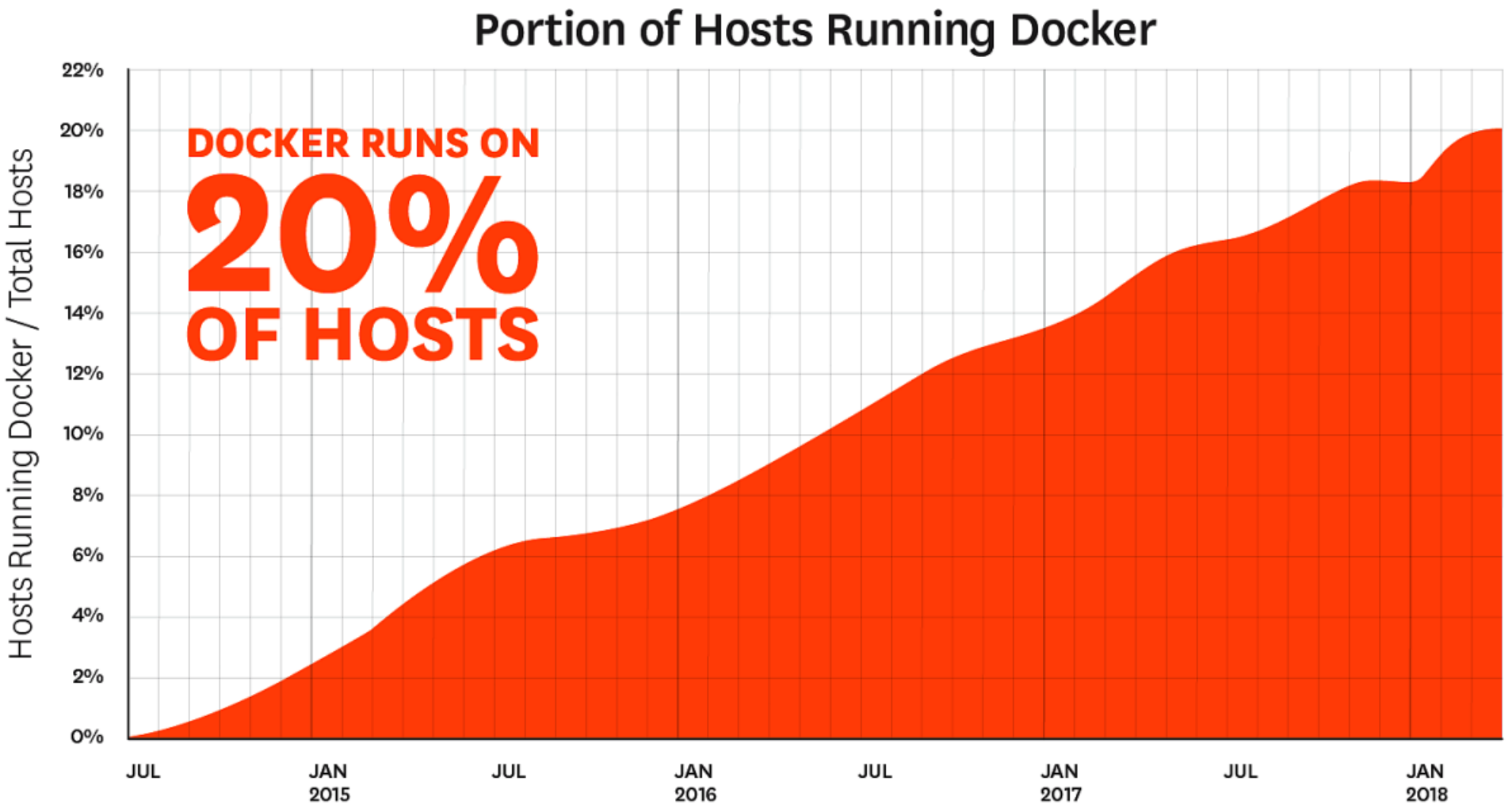


Source: Datadog

Docker Adoption Behavior



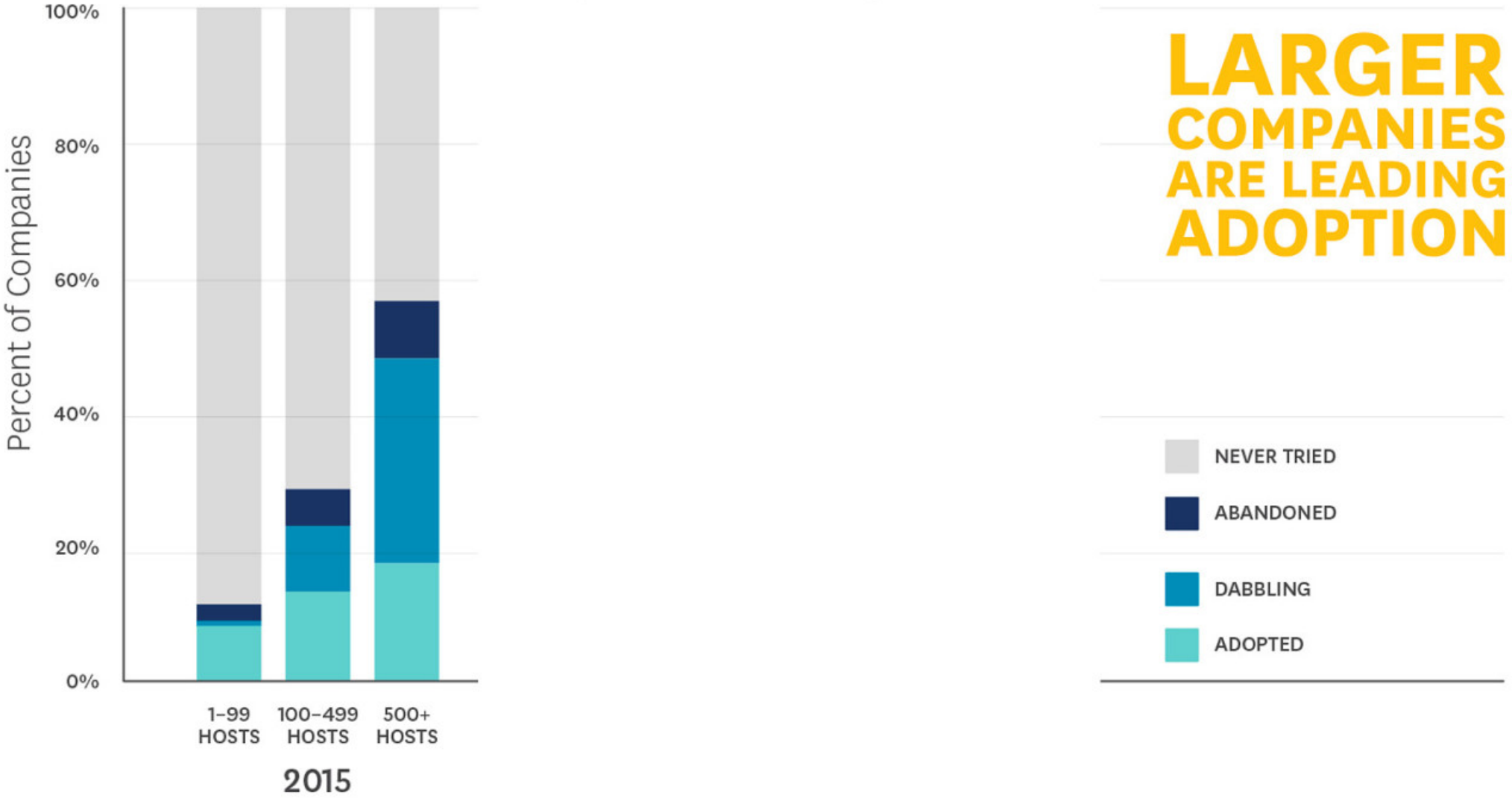
Source: Datadog



Source: Datadog

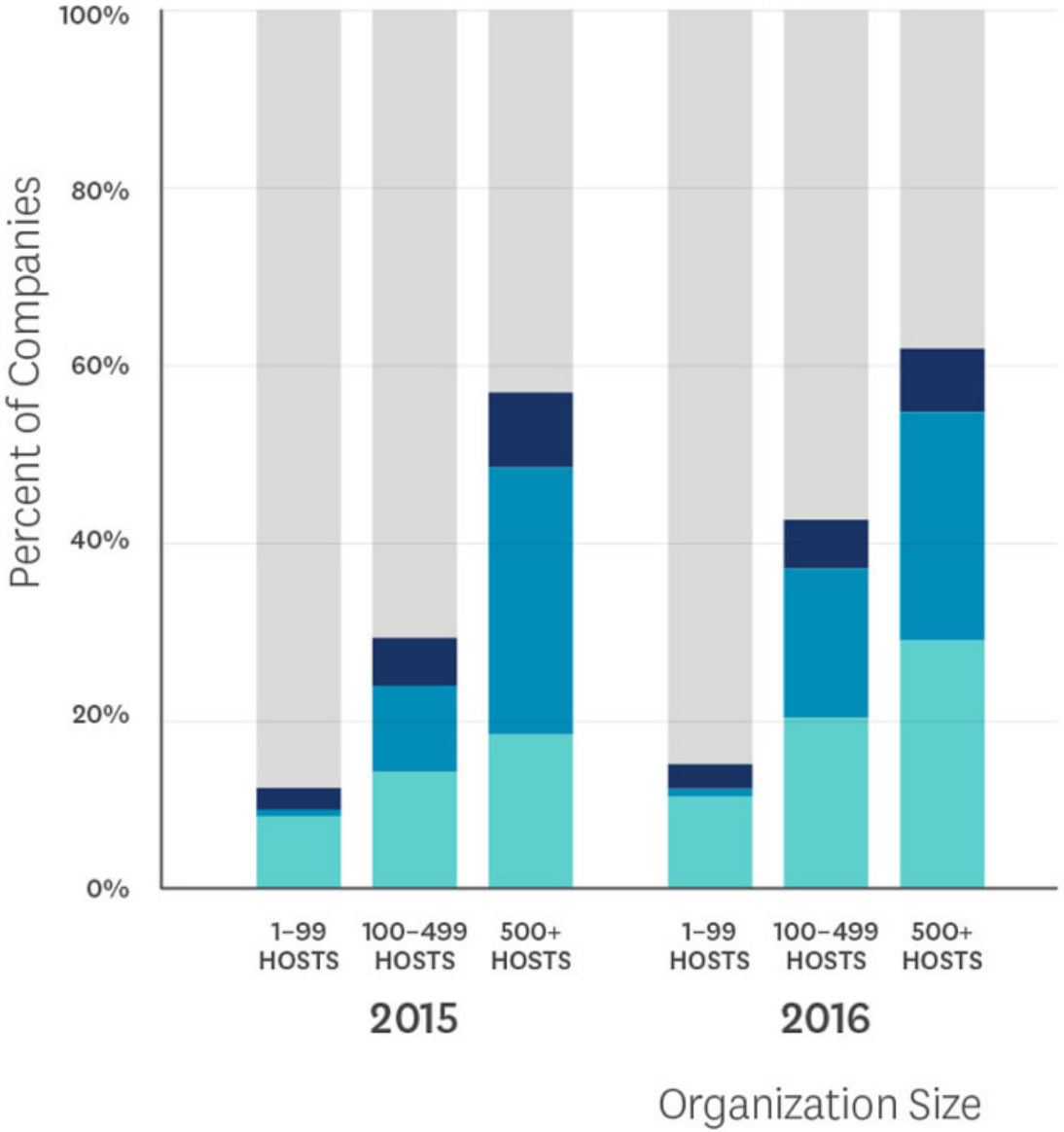
WHO'S ADOPTING DOCKER?

Docker Adoption Status by Infrastructure Size



Source: Datadog

Docker Adoption Status by Infrastructure Size

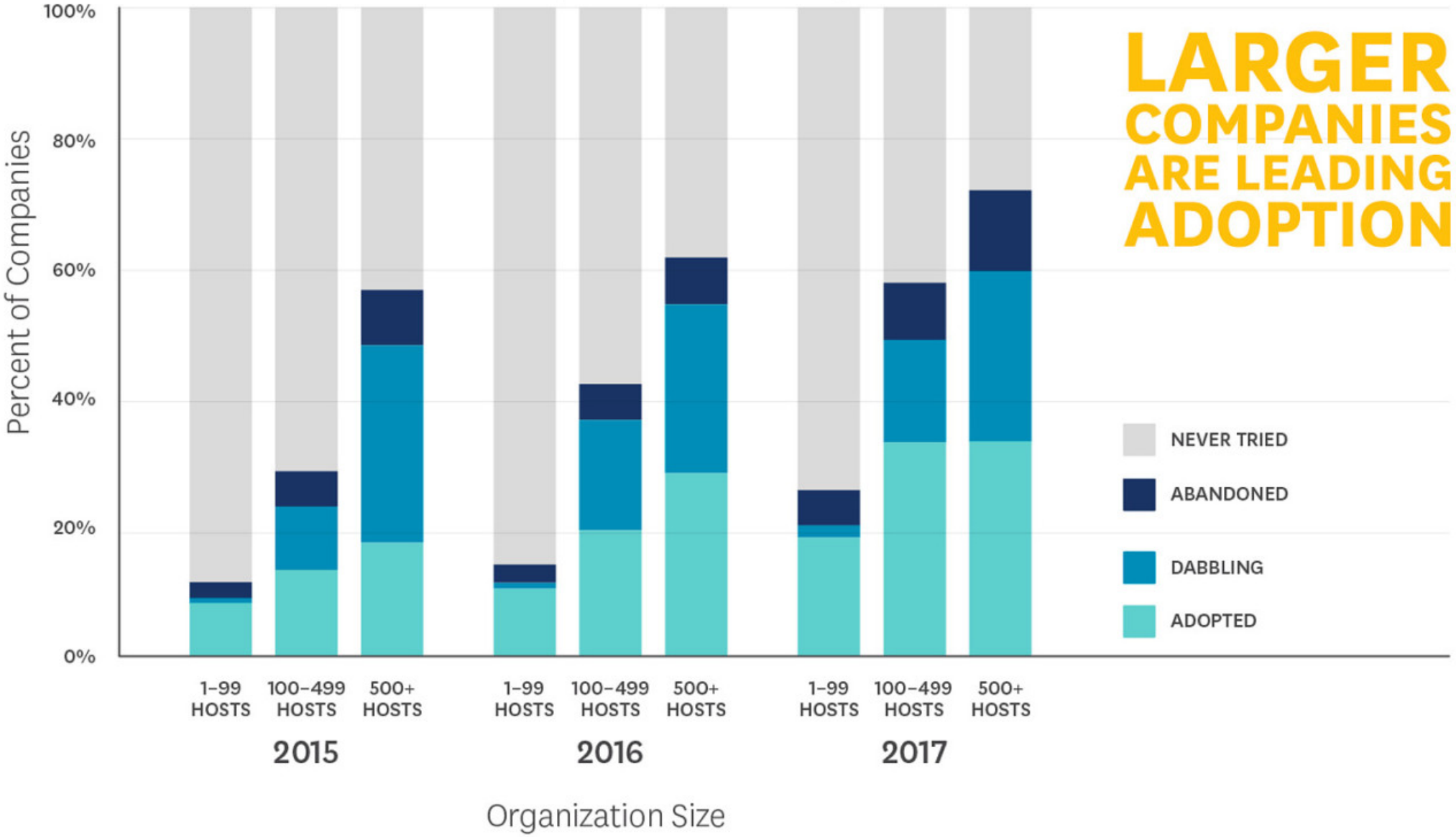


LARGER COMPANIES ARE LEADING ADOPTION

- NEVER TRIED
- ABANDONED
- DABBLING
- ADOPTED

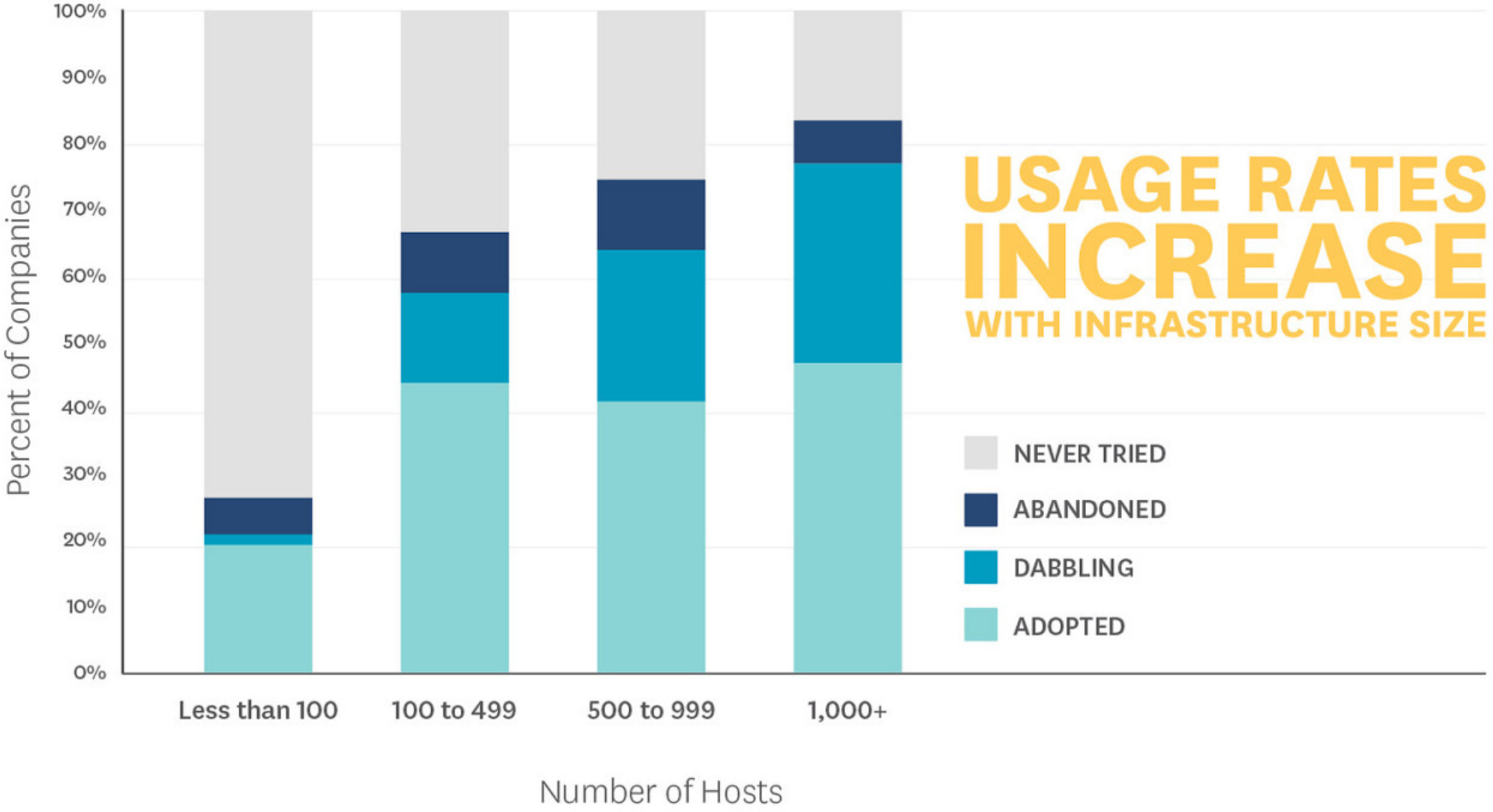
Source: Datadog

Docker Adoption Status by Infrastructure Size

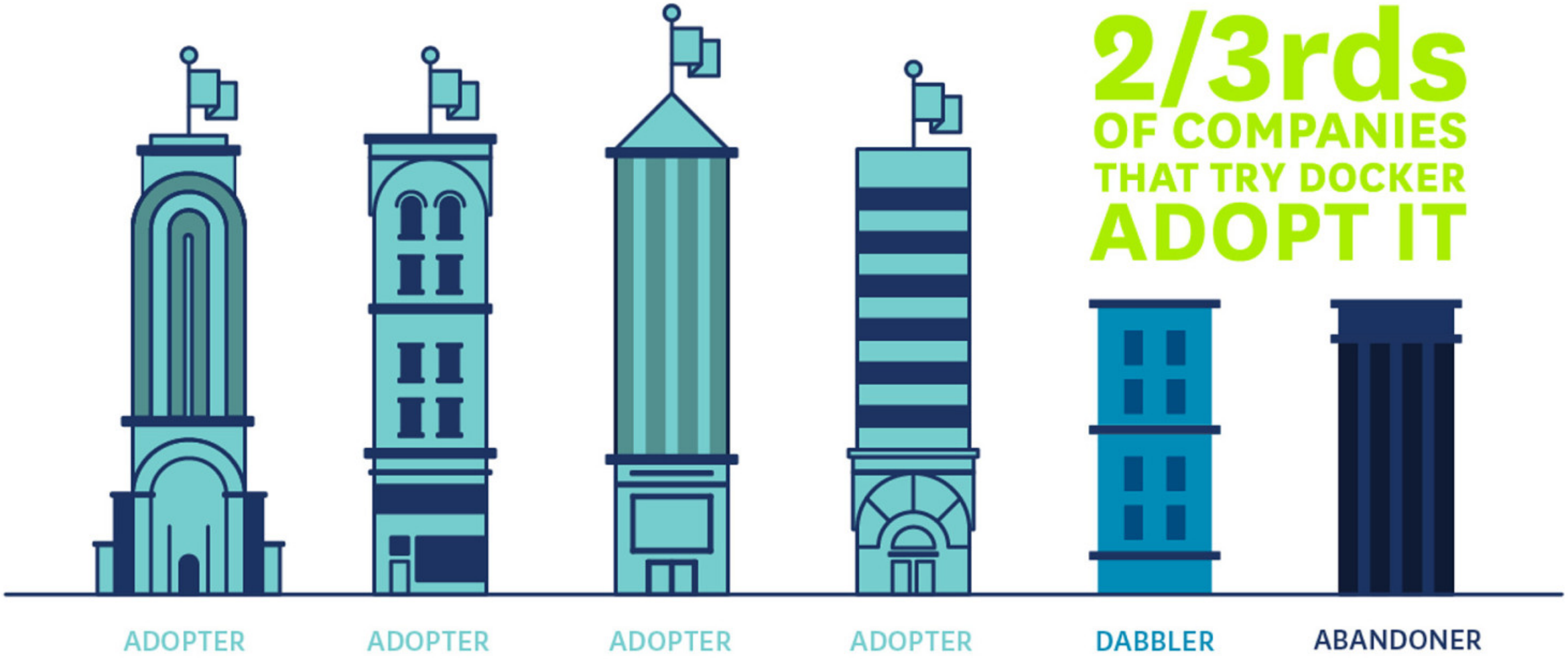


Source: Datadog

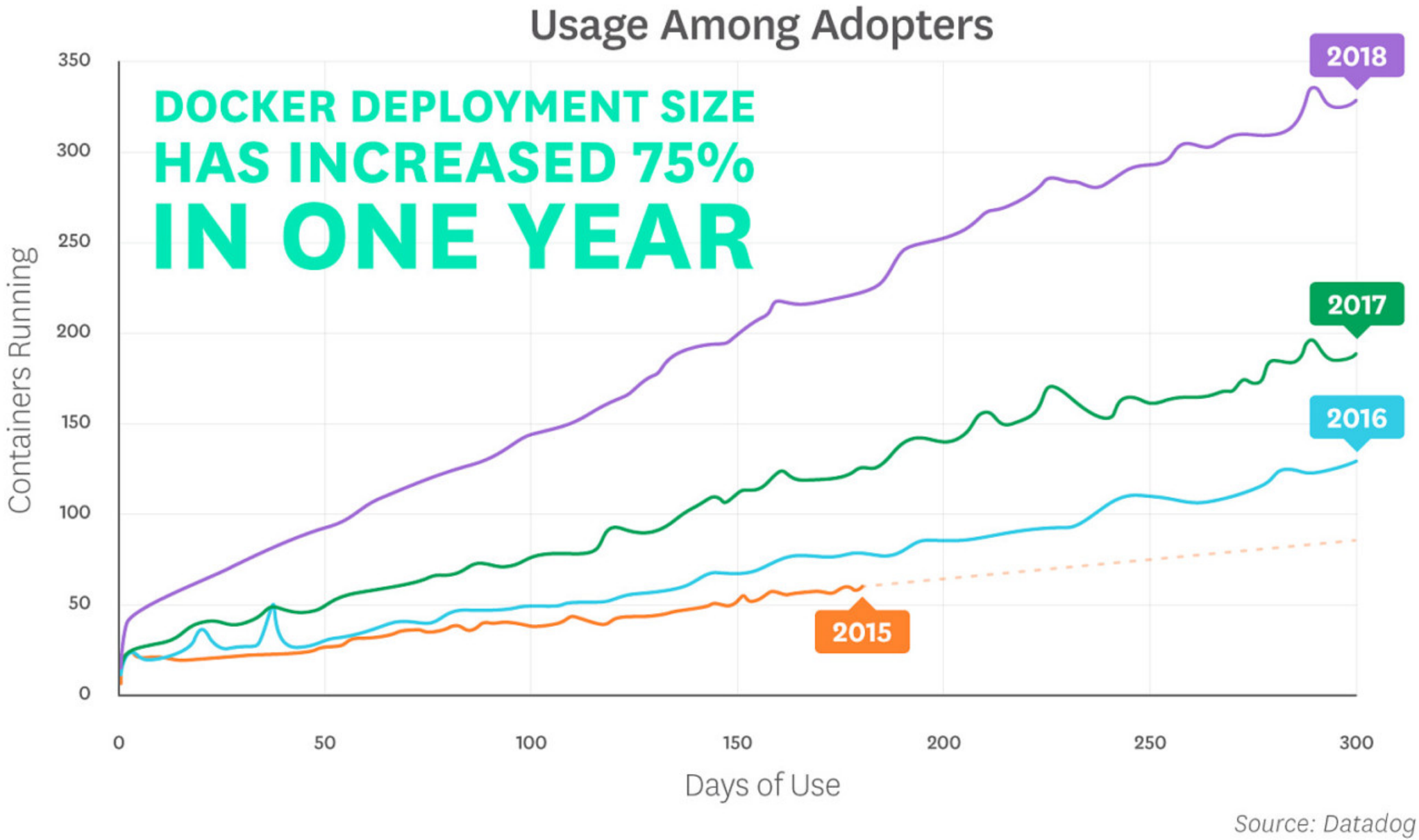
Docker Adoption Status by Infrastructure Size



Source: Datadog

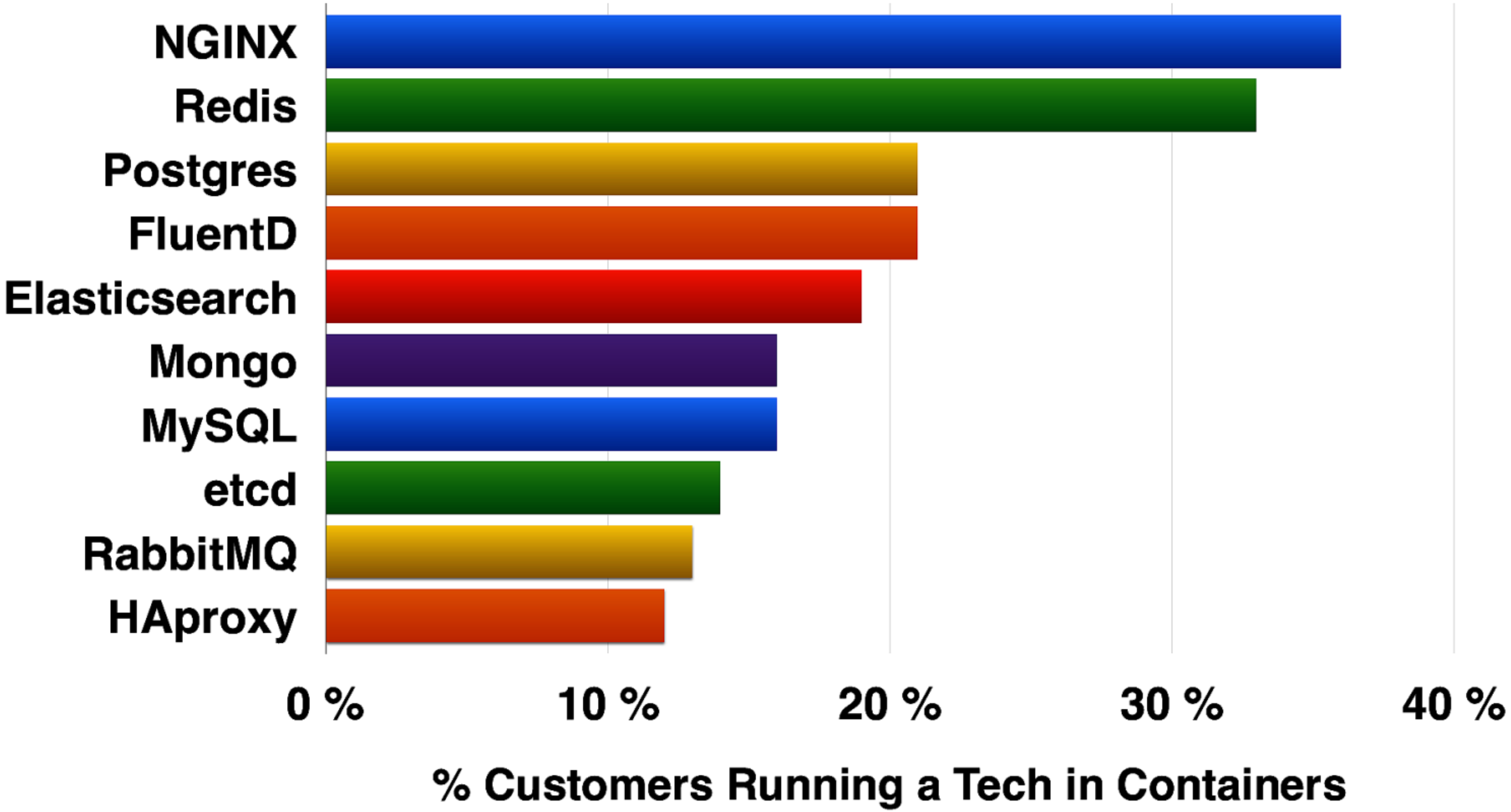


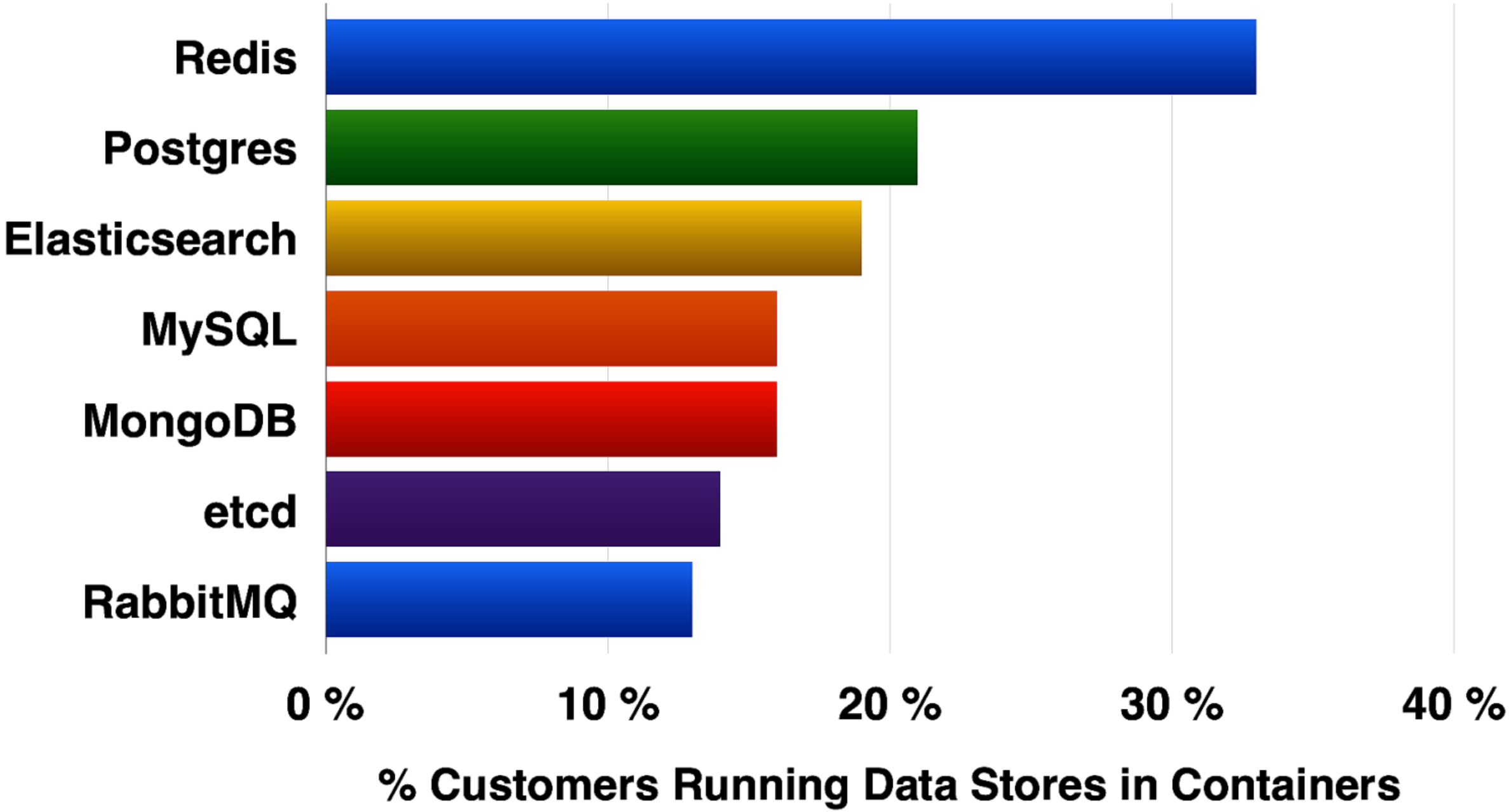
Source: Datadog



Source: Datadog

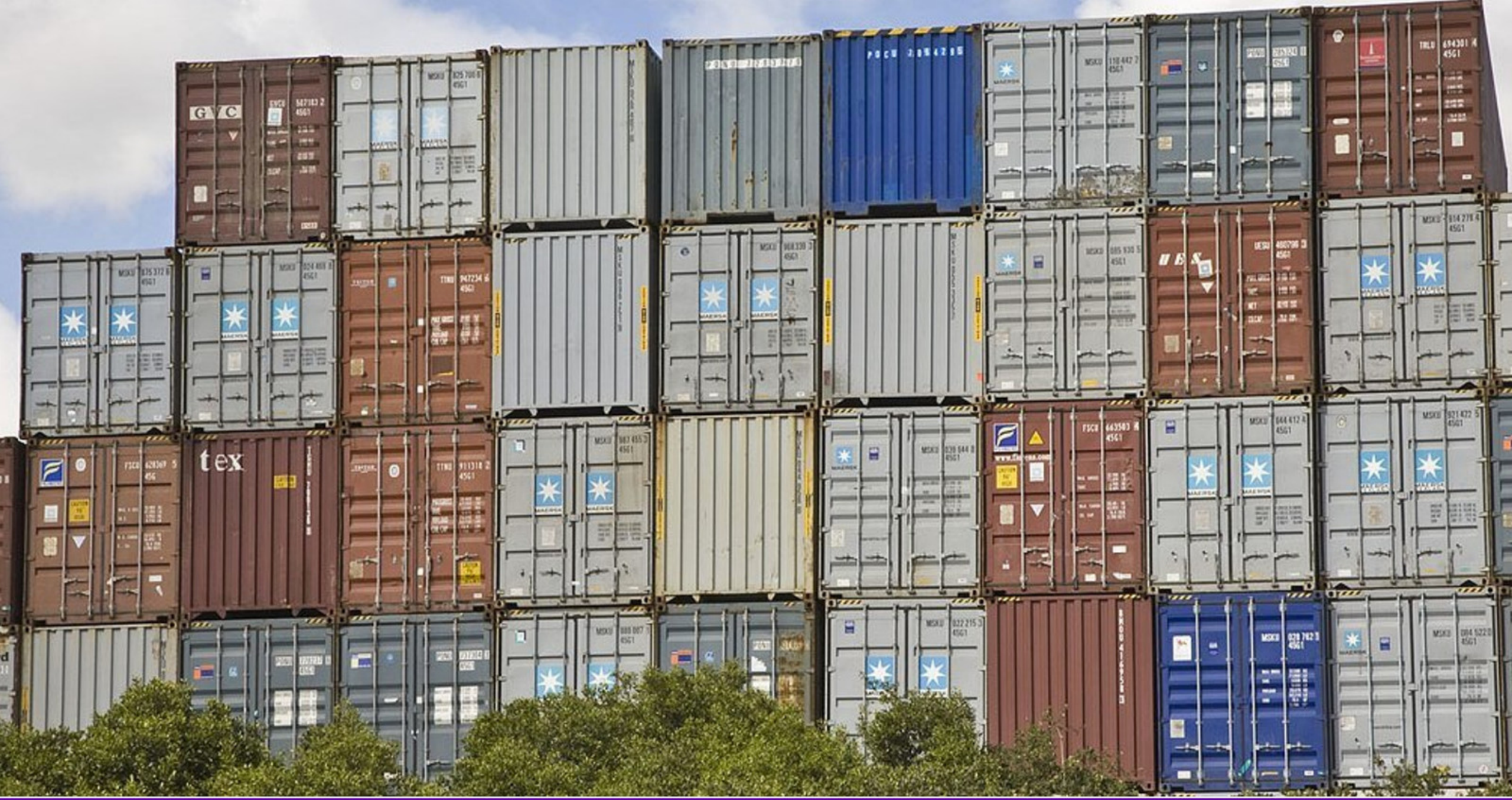
WHAT'S RUNNING?


NGINX
Redis
Postgres
FluentD
Elasticsearch
Mongo
MySQL
etcd
RabbitMQ
HAproxy
0 %
10 %
20 %
30 %
40 %
% Customers Running a Tech in Containers

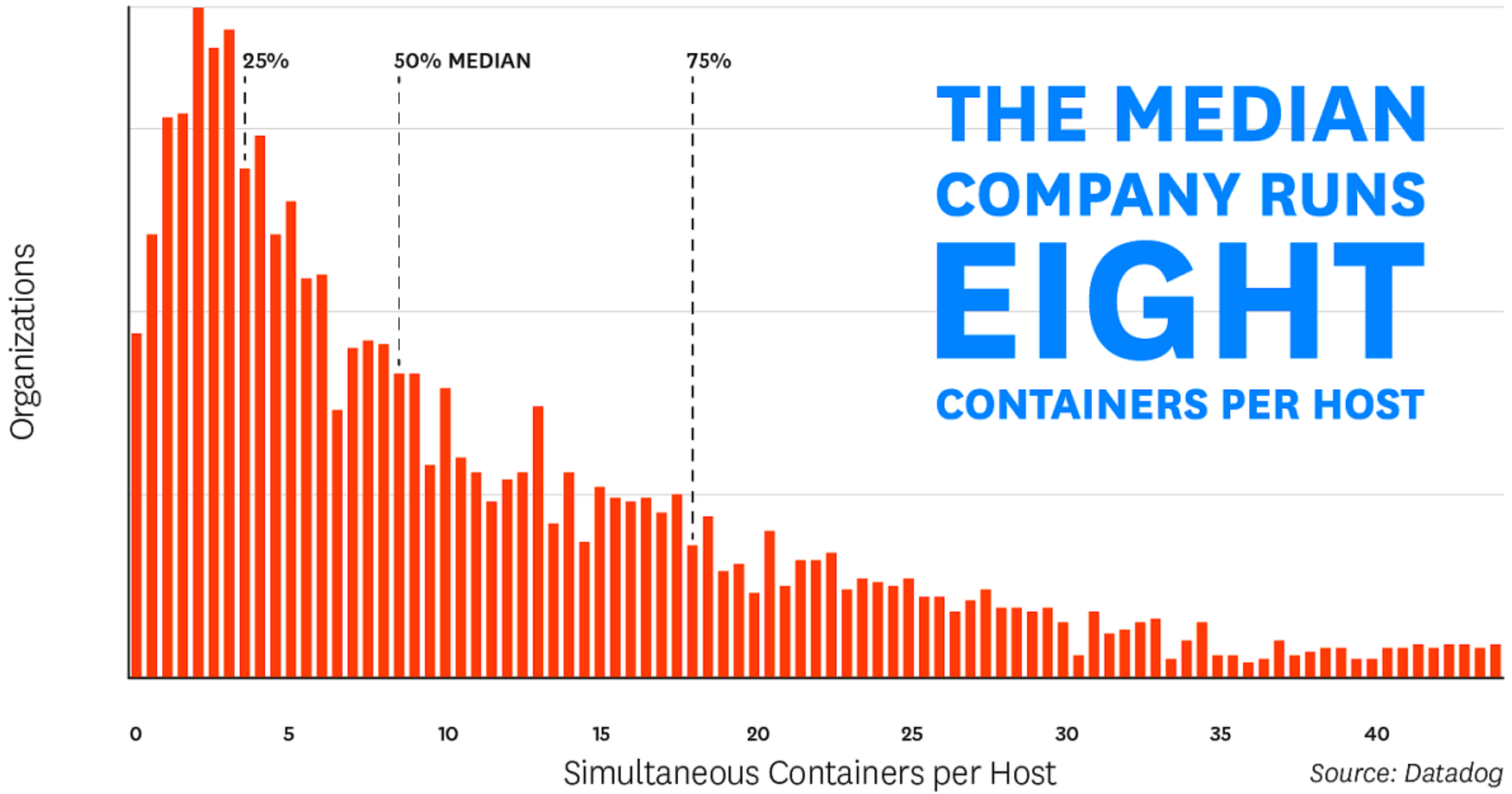

Redis
Postgres
Elasticsearch
MySQL
MongoDB
etcd
RabbitMQ
0 %
10 %
20 %
30 %
40 %
% Customers Running Data Stores in Containers

HOW DENSELY PACKED?

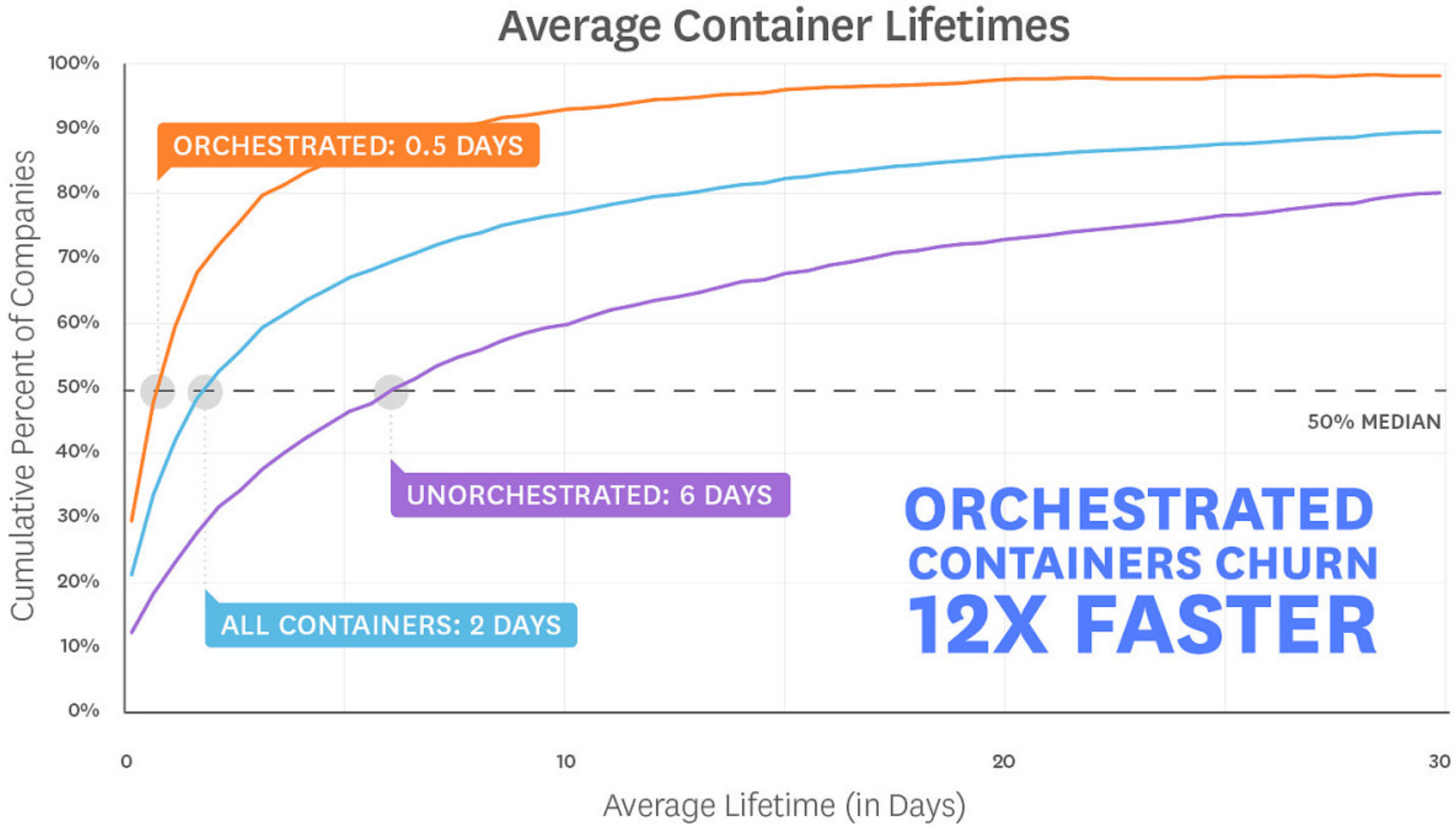

9968127
GRACO
Pack 'n Play



Container Density per Host

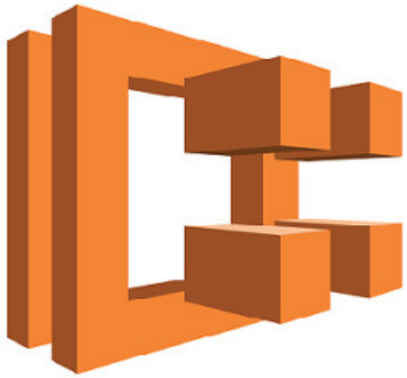


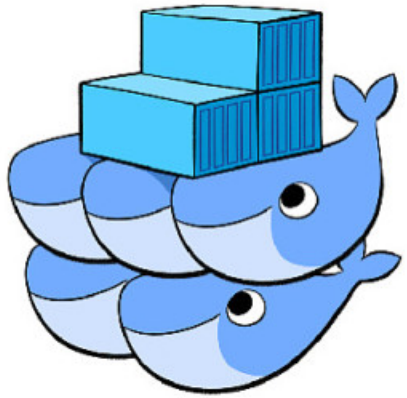
Source: Datadog



Source: Datadog

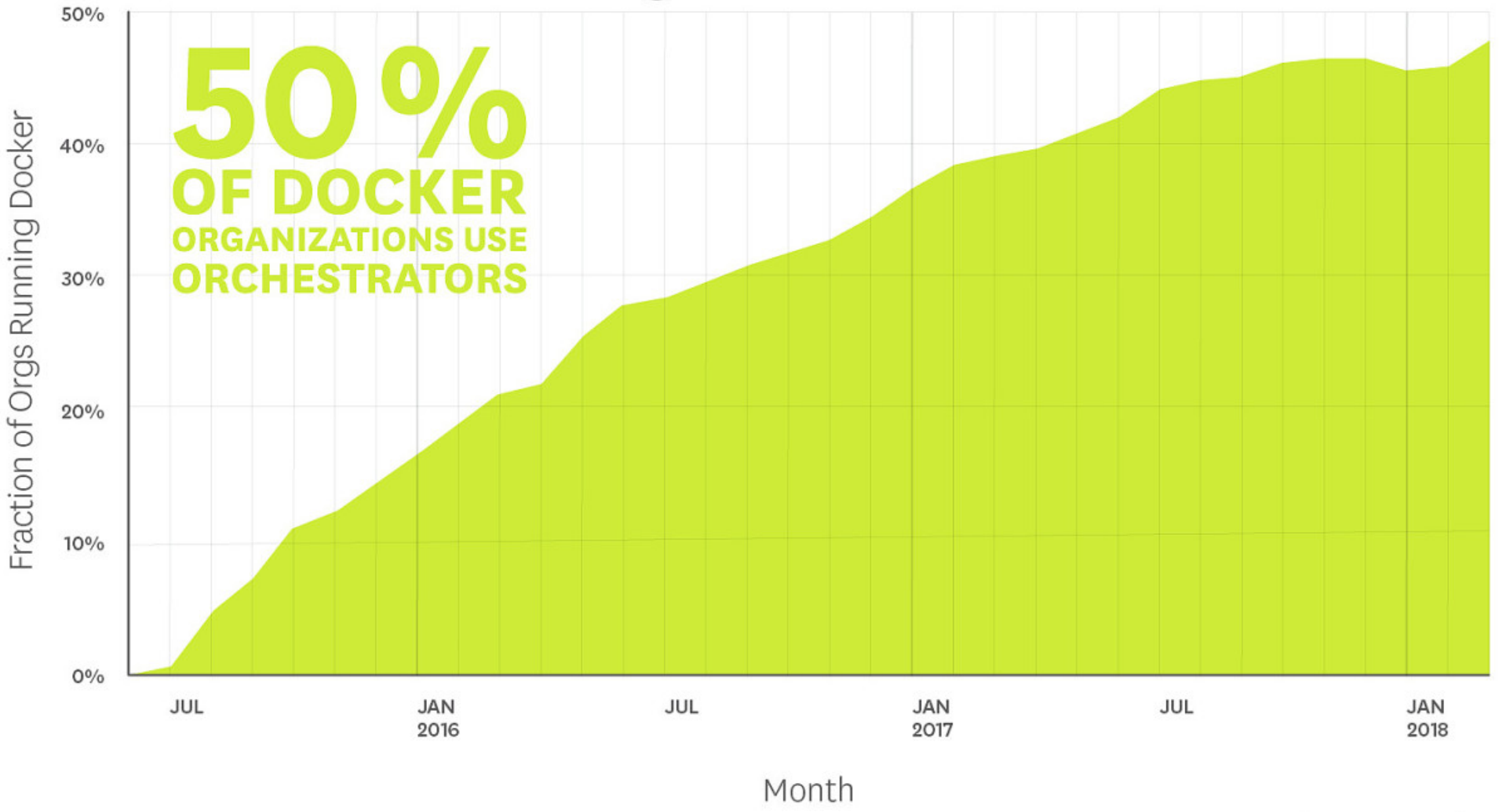
ENTER THE ORCHESTRATORS



ORCHESTRATORTION IS NORMAL

Usage of Orchestrators



Source: Datadog

CONTAINERS INCREASE COMPLEXITY

HOW DO WE MONITOR THEM?

Alcohol:
The cause of, and solution to, all of life's problems.

HOMER SIMPSON

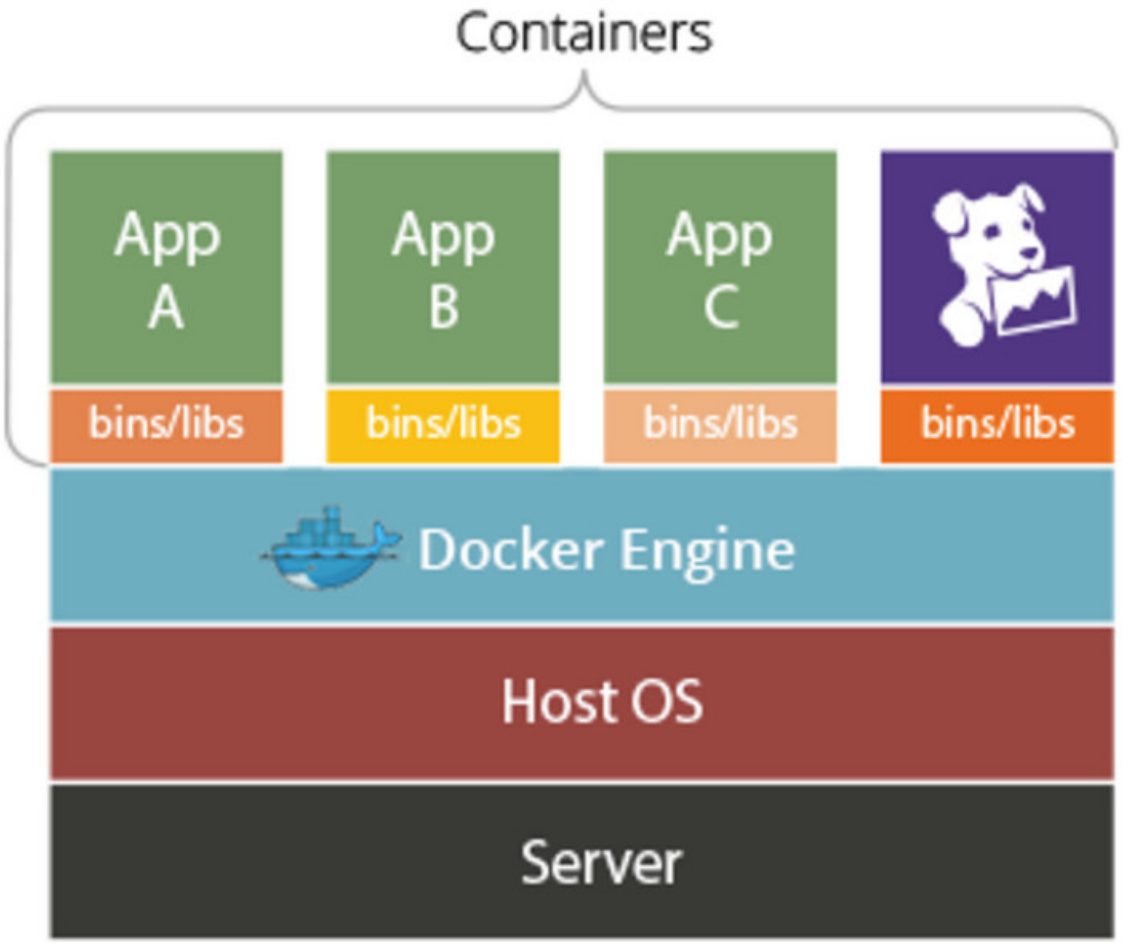
~~Alcohol~~ CONTAINERS

The cause of, and solution to, all of life's problems.

HOMER SIMPSON



Side Car Containers



AS COMPLEXITY INCREASES

FUNDAMENTALS BECOME MORE IMPORTANT

4 QUALITIES OF GOOD METRICS

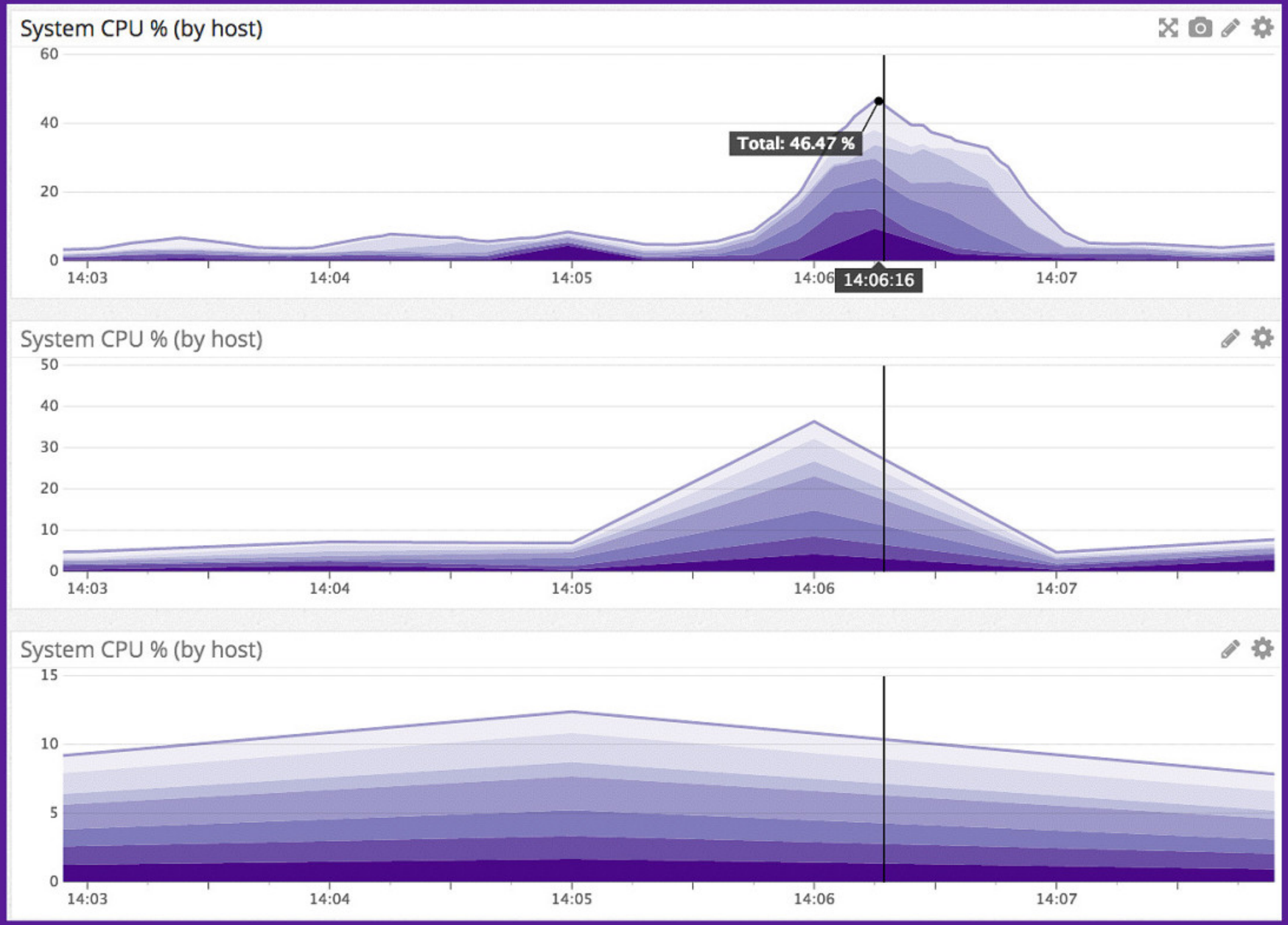
NOT ALL METRICS ARE EQUAL


1. MUST BE WELL UNDERSTOOD



2. SUFFICIENT GRANULARITY

RANK	PARTICIPANT	RESULT
G	Anthony ERVIN USA	21.40
S	Florent MANAUDOU FRA	21.41
B	Nathan ADRIAN USA	21.49
4.	Ben PROUD GBR	21.68
5.	Andrii GOVOROV UKR	21.74
6.	Bruno FRATUS BRA	21.79
6.	Bradley Edward TANDY RSA	21.79
8.	Simonas BILIS LTU	22.08



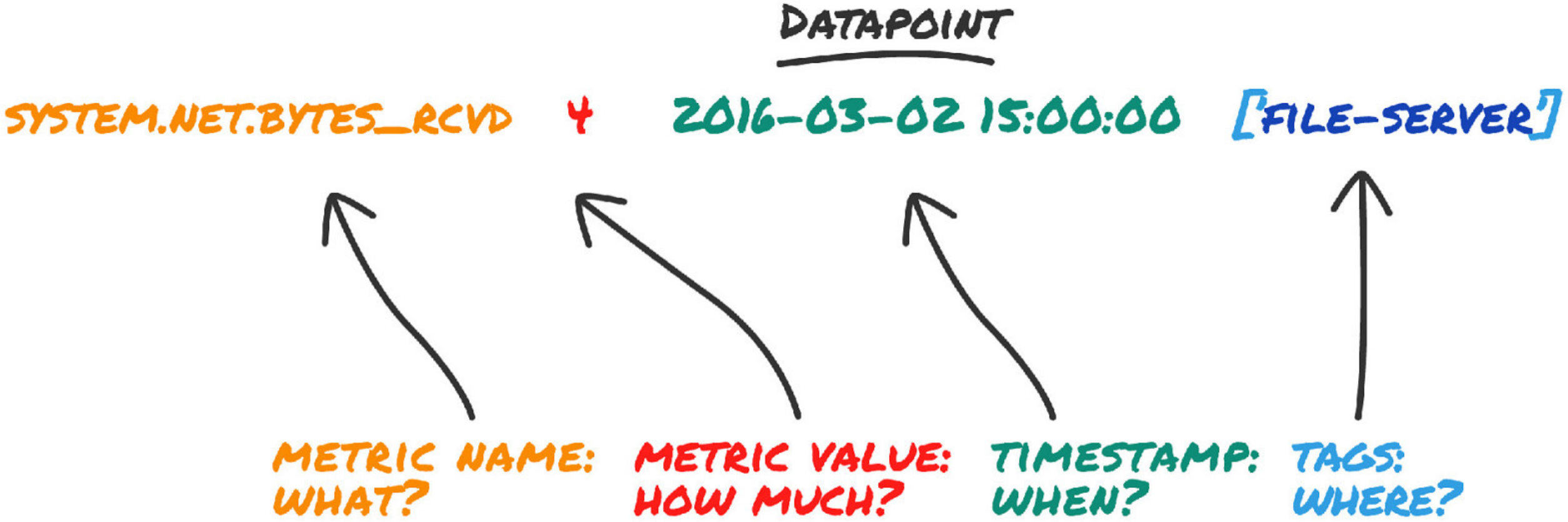
1 second
Peak 46%

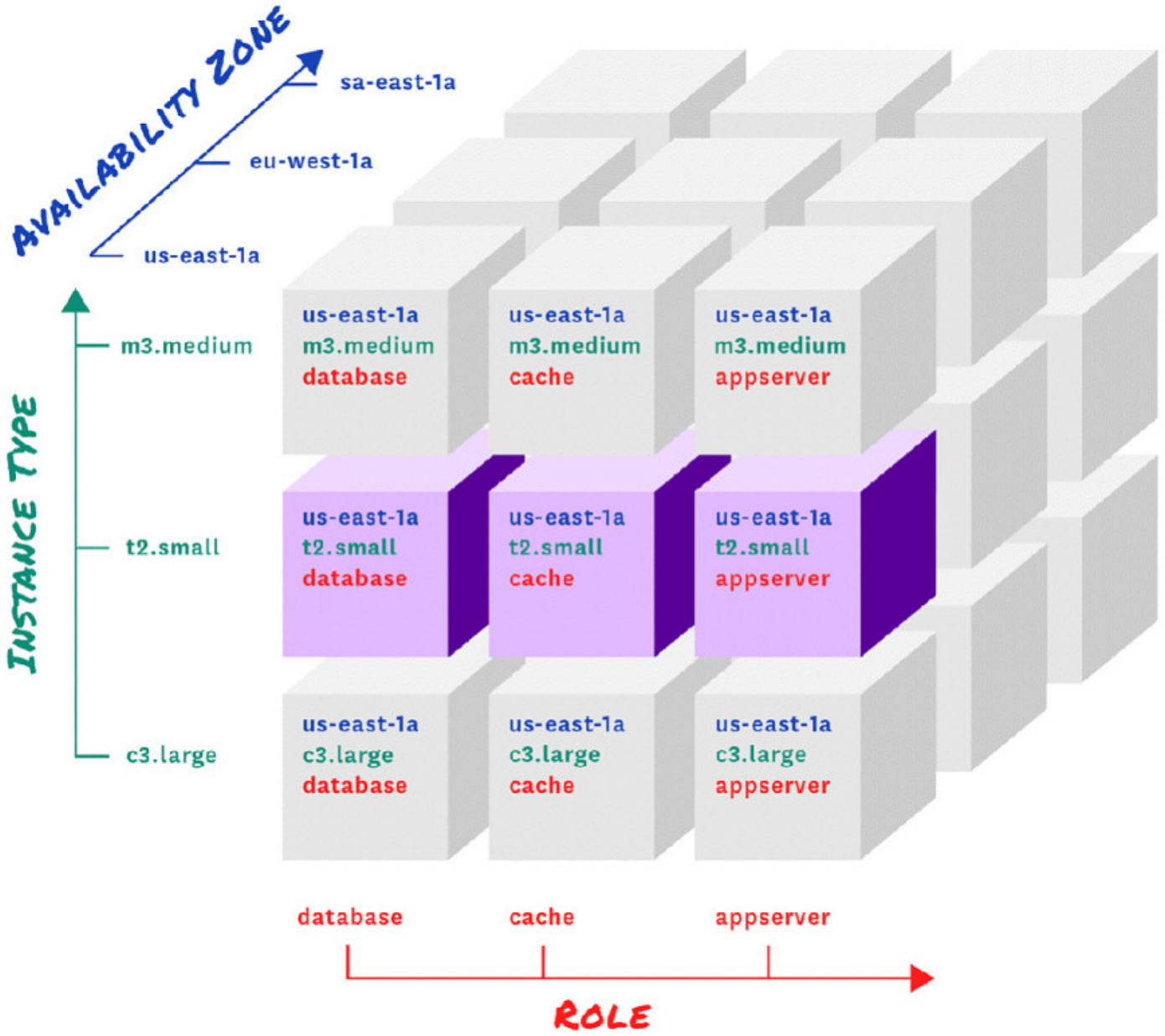
1 minute
Peak 36%

5 minutes
Peak 12%



3. TAGGED & FILTERABLE


DATAPOINT
SYSTEM.NET.BYTES_RCVD
4
2016-03-02 15:00:00
['FILE-SERVER']
METRIC NAME: WHAT?
METRIC VALUE: HOW MUCH?
TIMESTAMP: WHEN?
TAGS: WHERE?

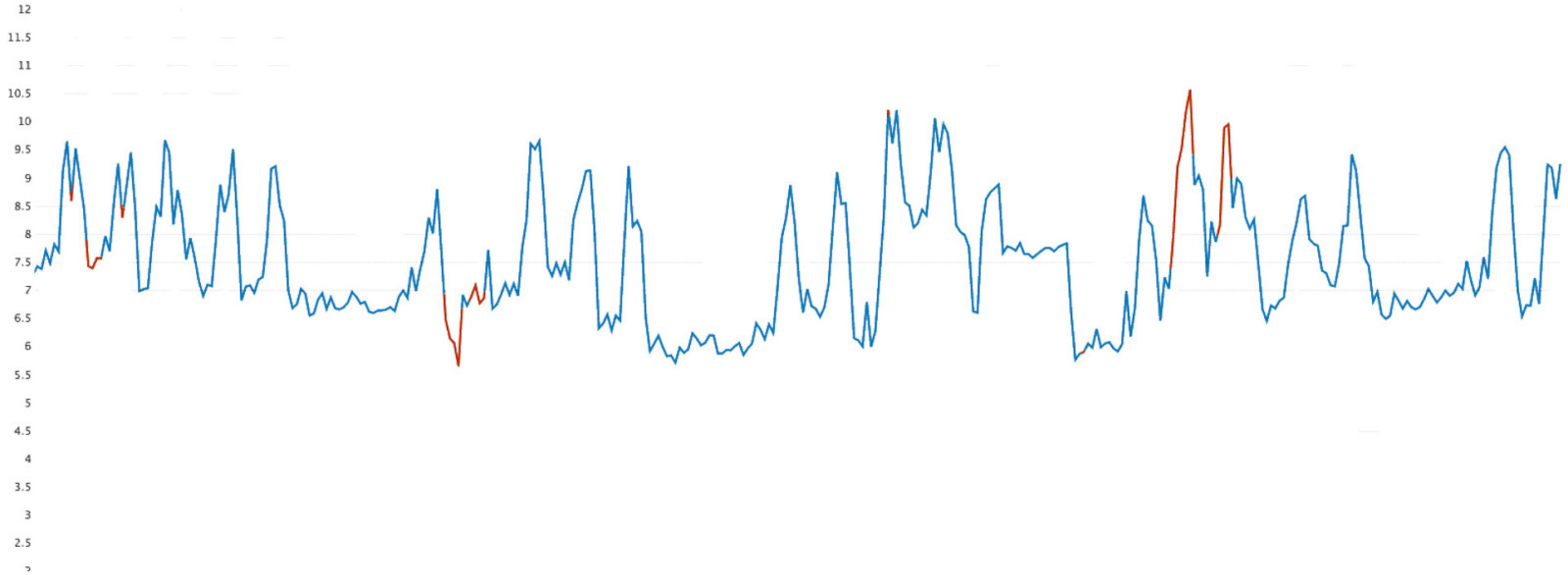

AVAILABILITY ZONE
sa-east-1a
eu-west-1a
us-east-1a
INSTANCE TYPE
m3.medium
t2.small
c3.large
us-east-1a m3.medium database
us-east-1a m3.medium cache
us-east-1a m3.medium appserver
us-east-1a t2.small database
us-east-1a t2.small cache
us-east-1a t2.small appserver
us-east-1a c3.large database
us-east-1a c3.large cache
us-east-1a c3.large appserver
database
cache
appserver
ROLE

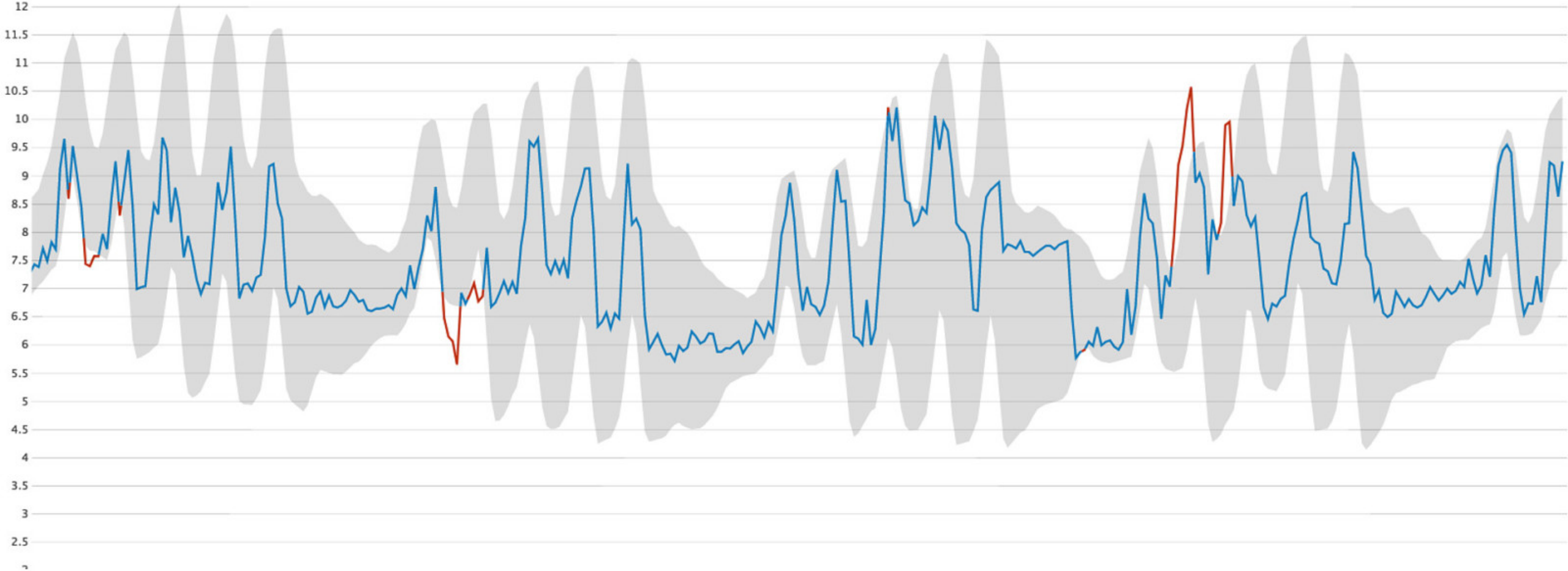
Query Based Monitoring

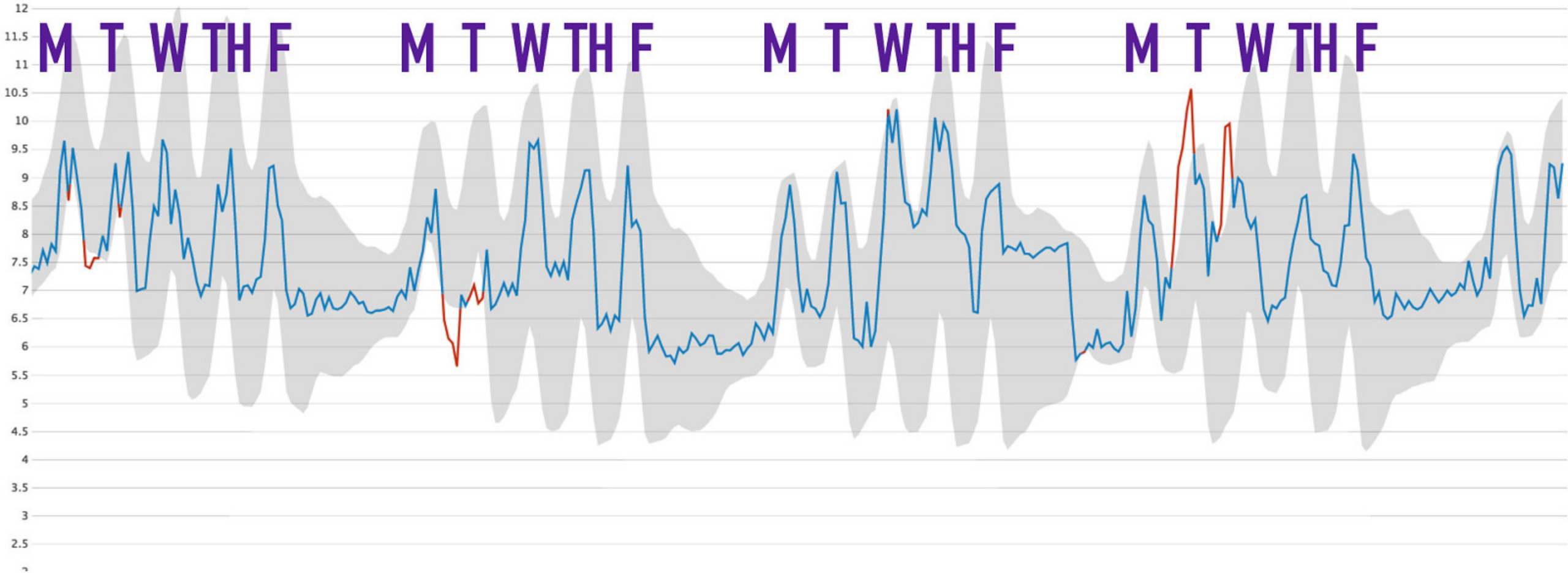
"What's the average throughput of **application:nginx** per **version** ?"

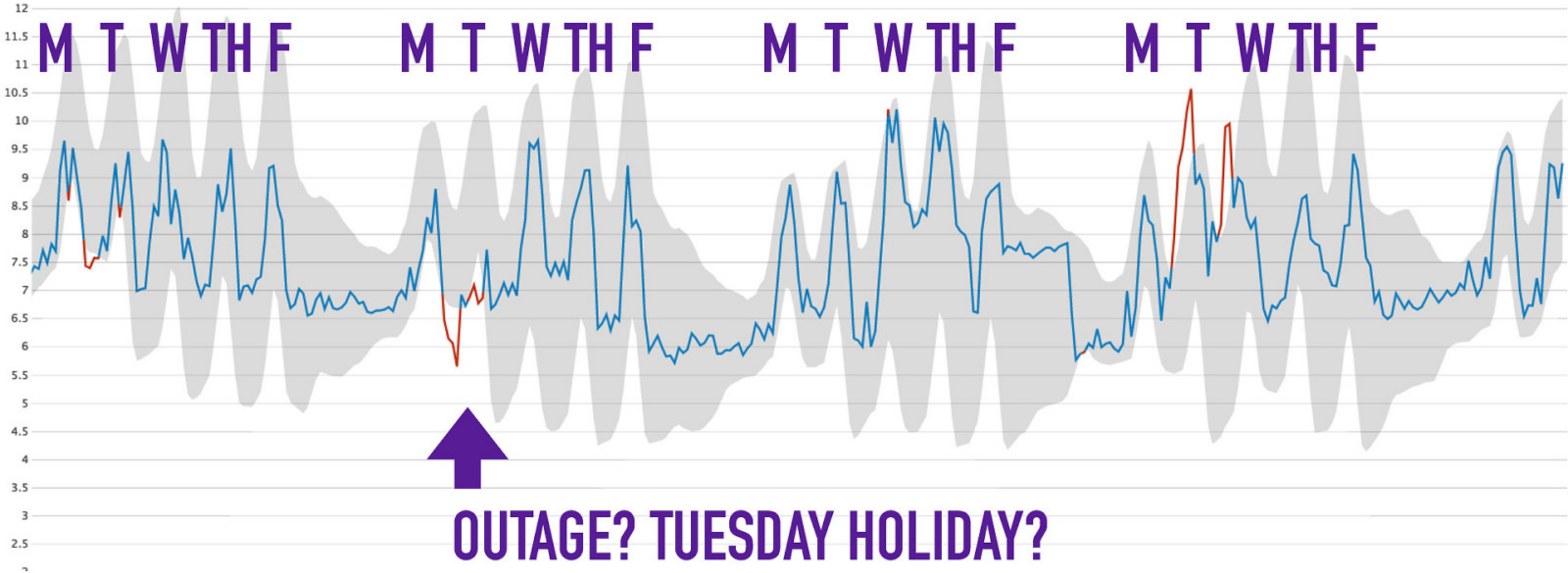
"Alert me when **role:web-app** running **application:postgres** hosted in **region:eu-west-1** behaves differently than **region:eu-west-2**"


4. LONG-LIVED


12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5


12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5


M T W TH F M T W TH F M T W TH F M T W TH F
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5



OUTAGE? TUESDAY HOLIDAY?

25%

OF COMPANIES HAVE ADOPTED DOCKER

DOCKER DEPLOYMENT SIZE
HAS INCREASED 75%
IN ONE YEAR

25%
OF COMPANIES
HAVE ADOPTED
DOCKER

DOCKER DEPLOYMENT SIZE
HAS INCREASED 75%
IN ONE YEAR

25%
OF COMPANIES
HAVE ADOPTED
DOCKER

THE MEDIAN
COMPANY RUNS
EIGHT
CONTAINERS PER HOST

DOCKER DEPLOYMENT SIZE
HAS INCREASED 75%
IN ONE YEAR

25%
OF COMPANIES
HAVE ADOPTED
DOCKER

50%
OF DOCKER
ORGANIZATIONS USE
ORCHESTRATORS

THE MEDIAN
COMPANY RUNS
EIGHT
CONTAINERS PER HOST

SUMMARY

1. Both Docker adoption and system complexity continue to grow
2. The fundamentals of monitoring are therefore more important than ever

MERCI !

DANIEL MAHER

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