

# CONTAINERS: PARTS AND LABOUR

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DANIEL MAHER, DATADOG

@phrawzty

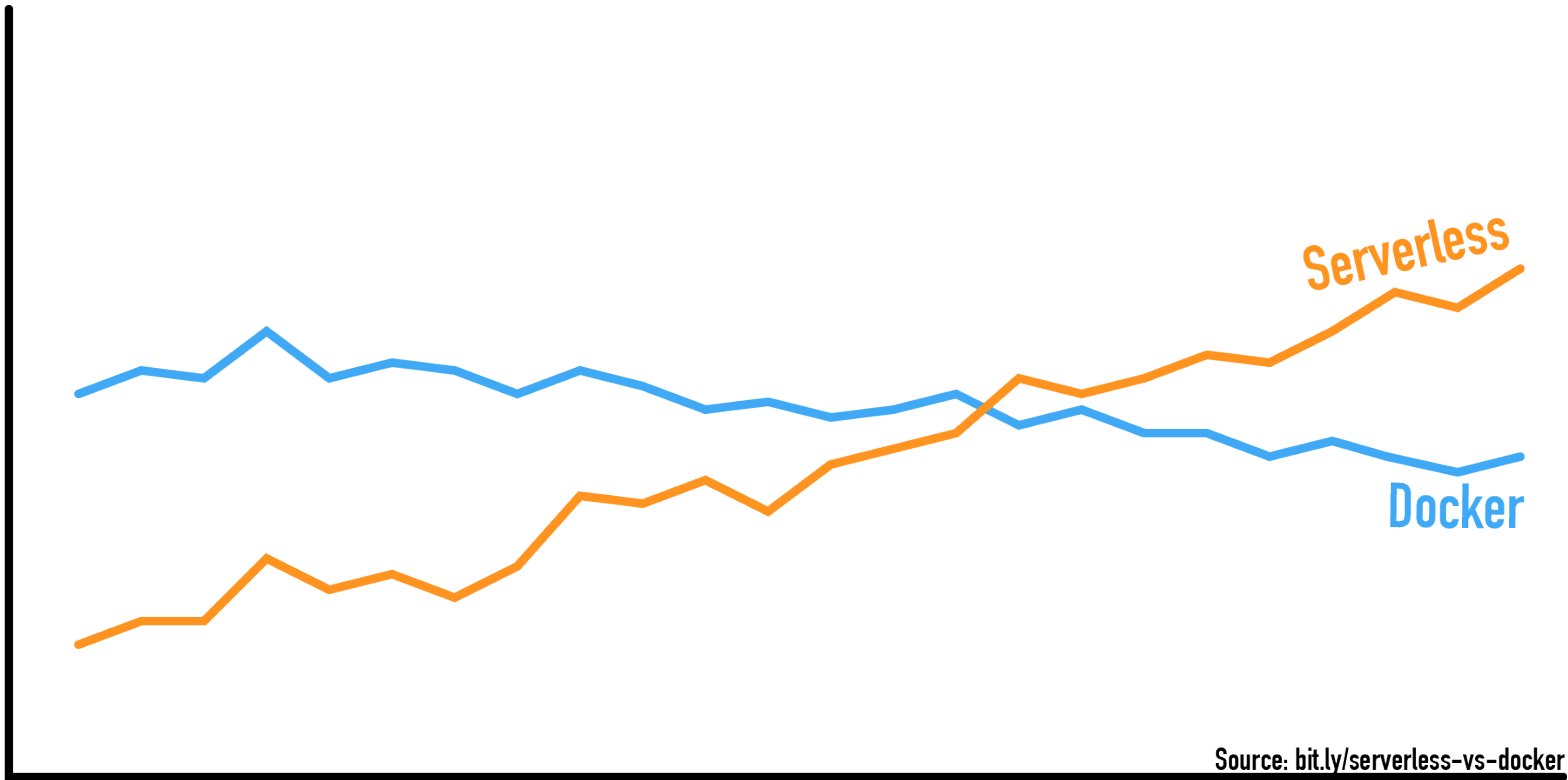
# DOCKER DOCKER DOCKER

## CONTAINERS: PARTS AND LABOUR

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@phrawzty



# 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](http://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**



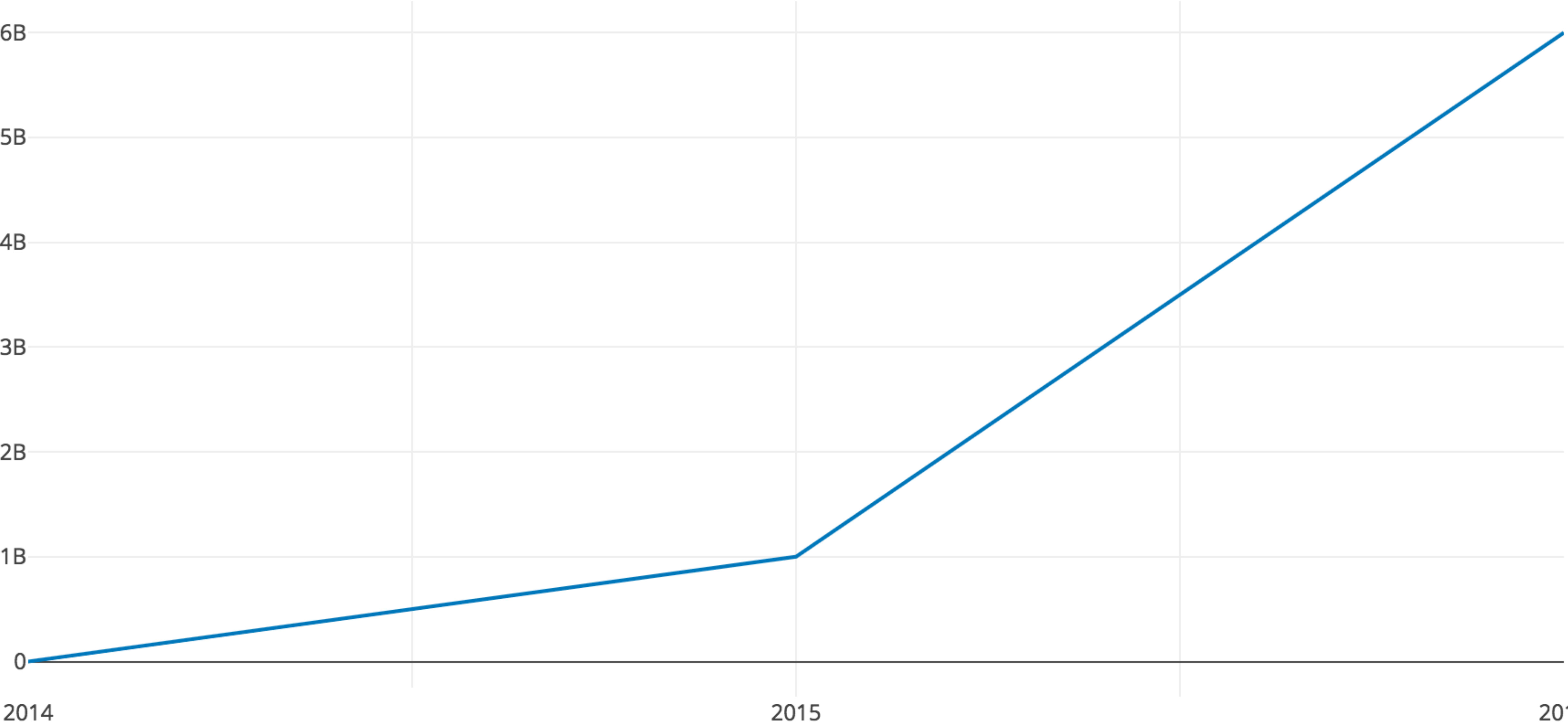
**steeve** commented on Feb 25, 2014

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?



Updated June 2018

# 8 SURPRISING FACTS ABOUT REAL DOCKER ADOPTION

<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.

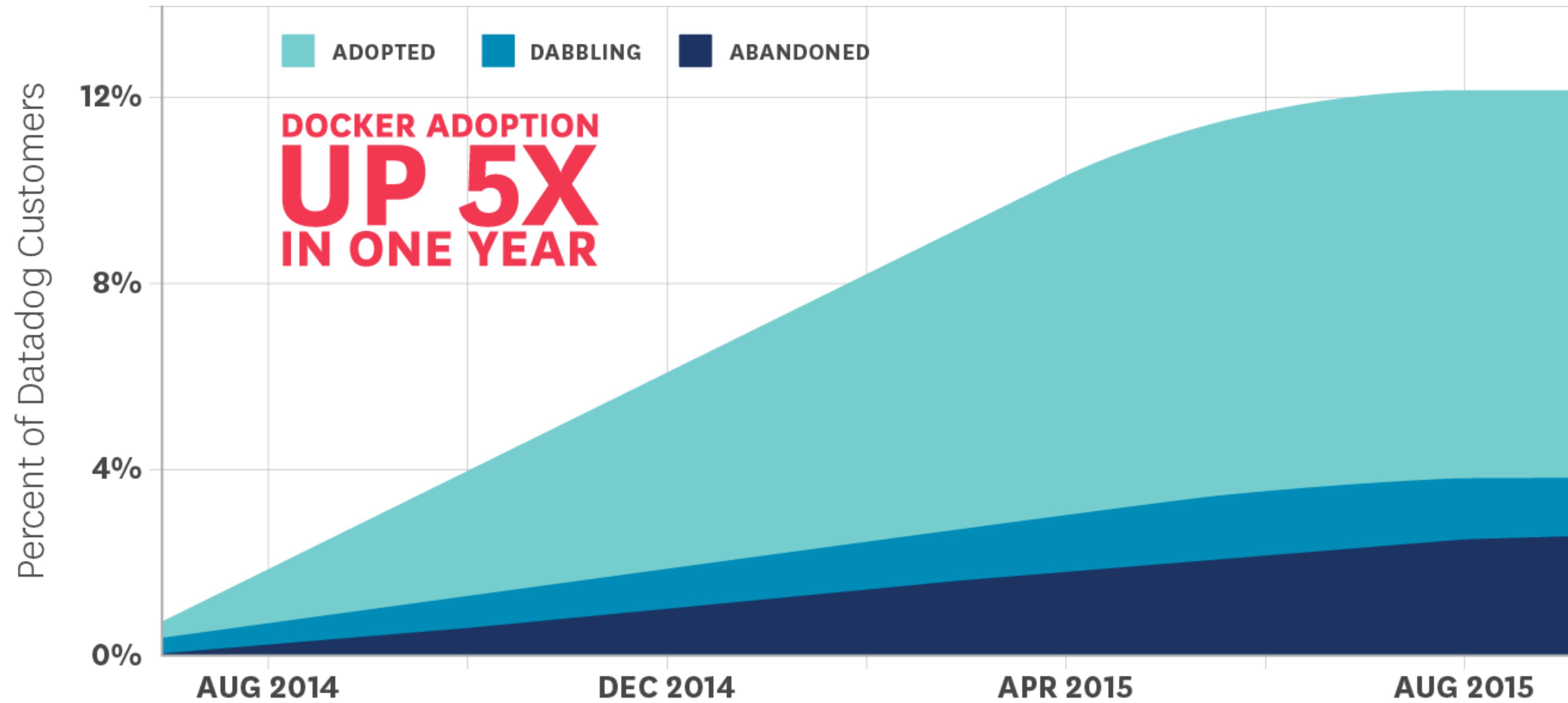
# Docker Adoption

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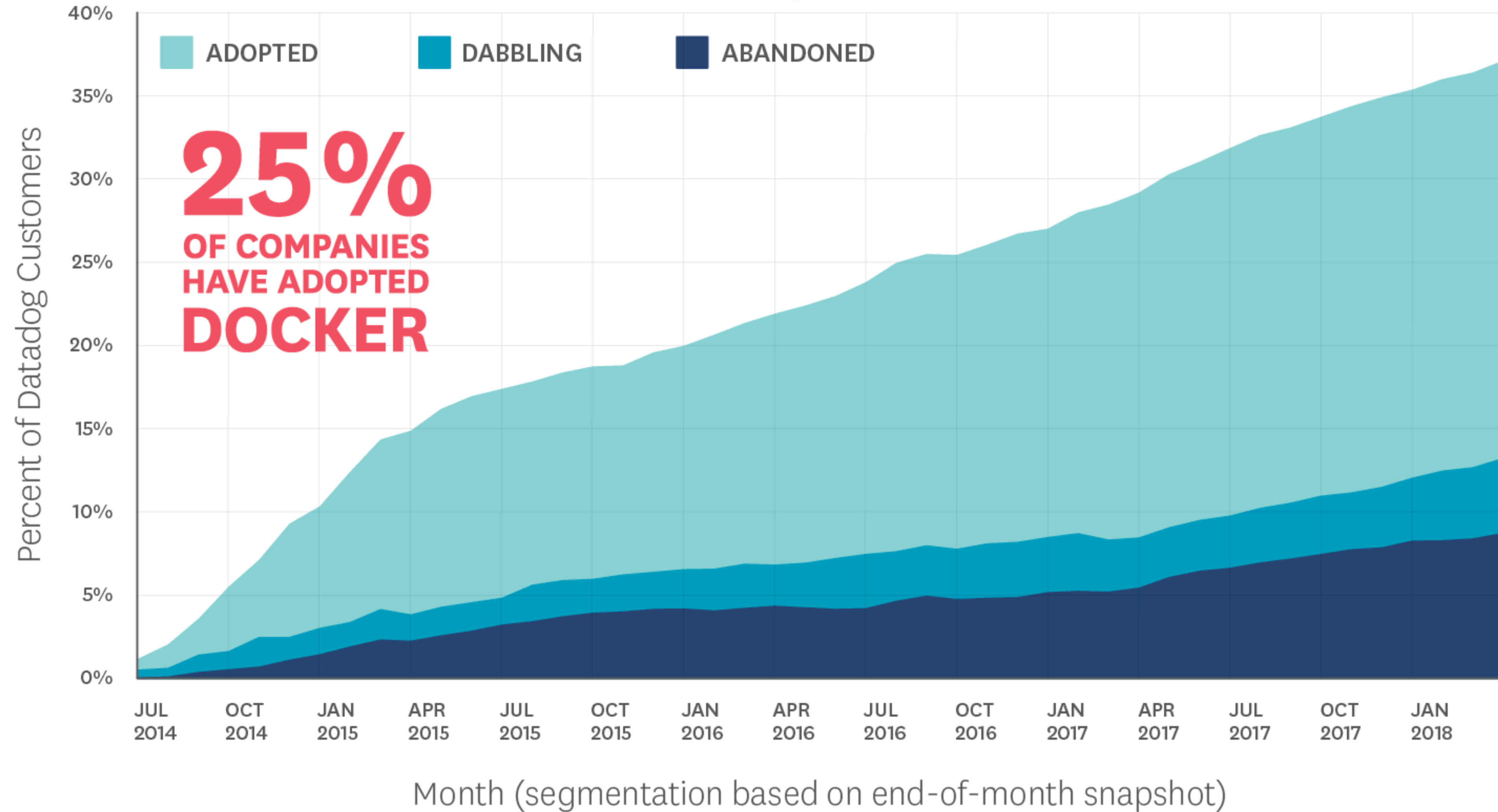
**Abandoner:** a currently active company that used Docker in the past, but hasn't used it at all in the last month.

# Docker Adoption Behavior



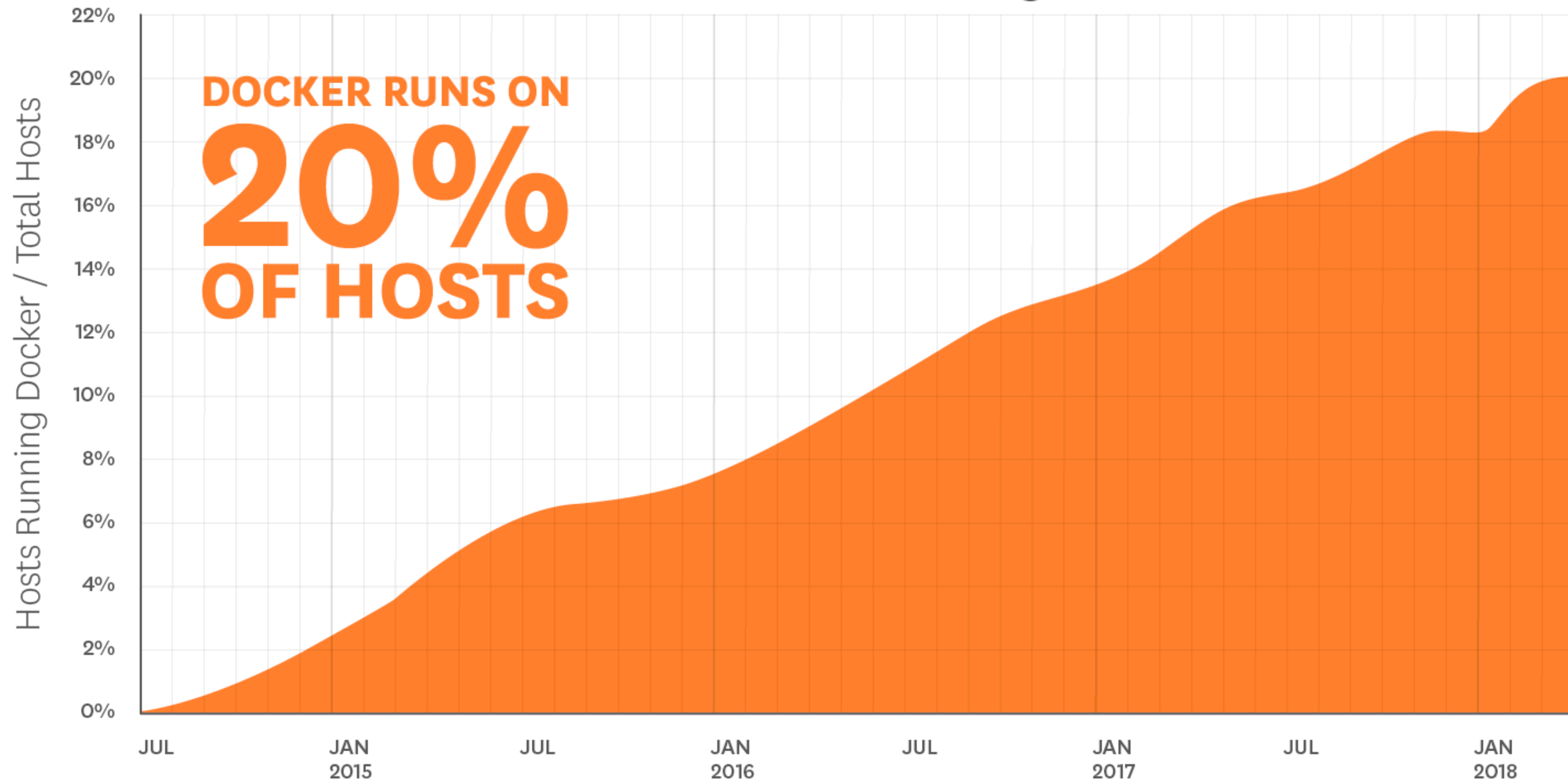
Source: Datadog

# Docker Adoption Behavior



Source: Datadog

## Portion of Hosts Running Docker

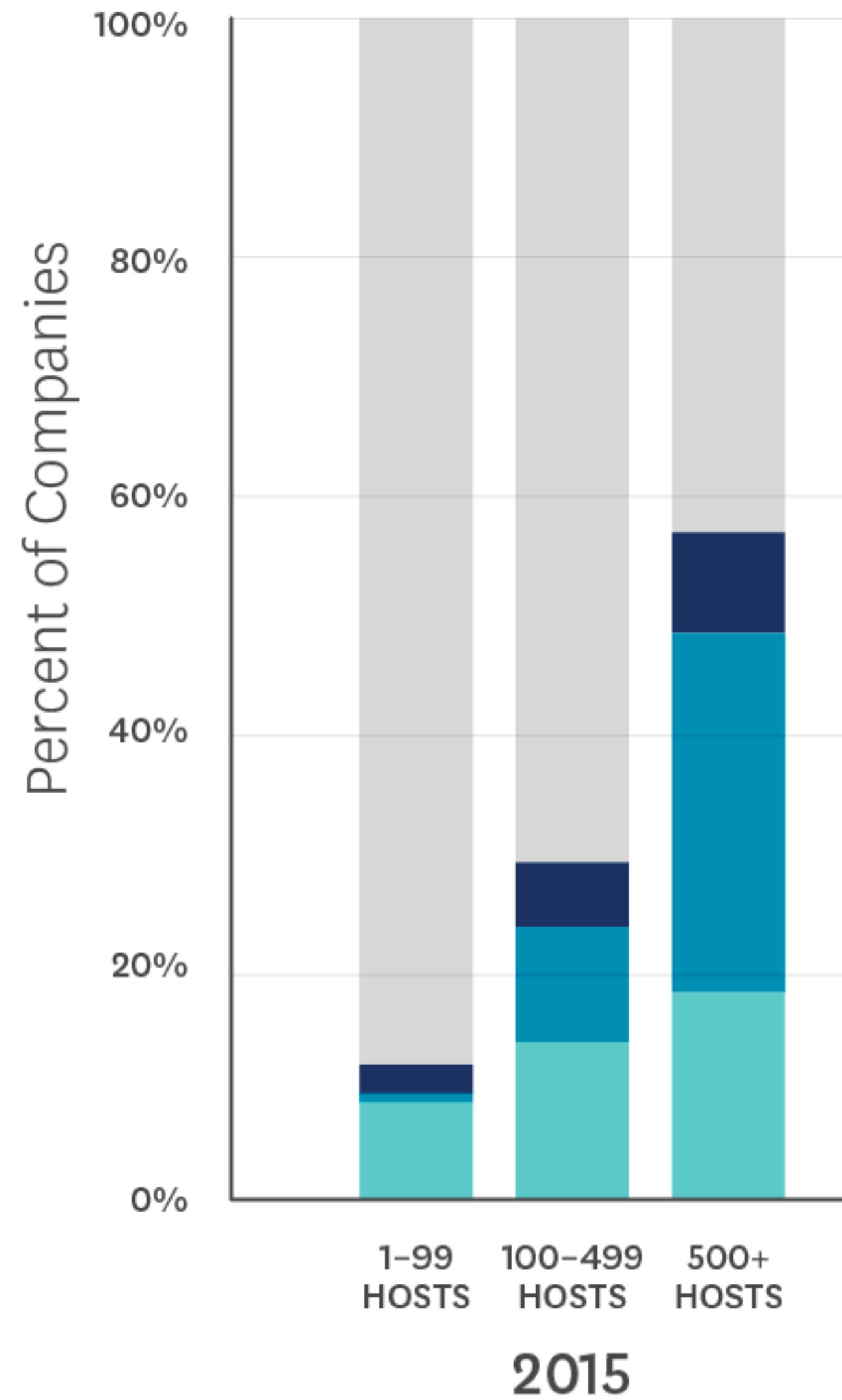


Source: Datadog

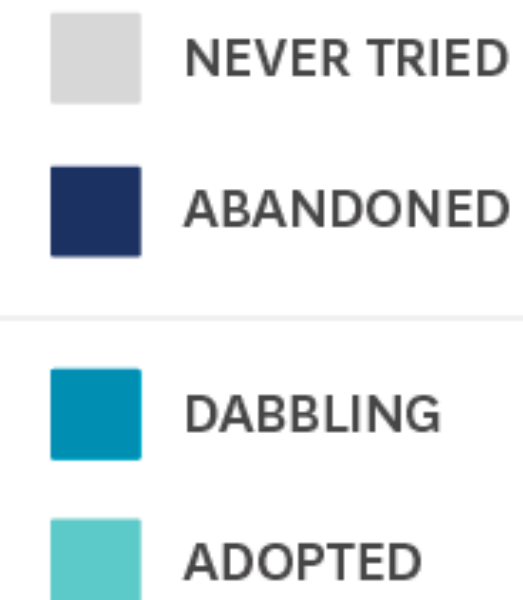
# WHO'S ADOPTING DOCKER?

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# Docker Adoption Status by Infrastructure Size

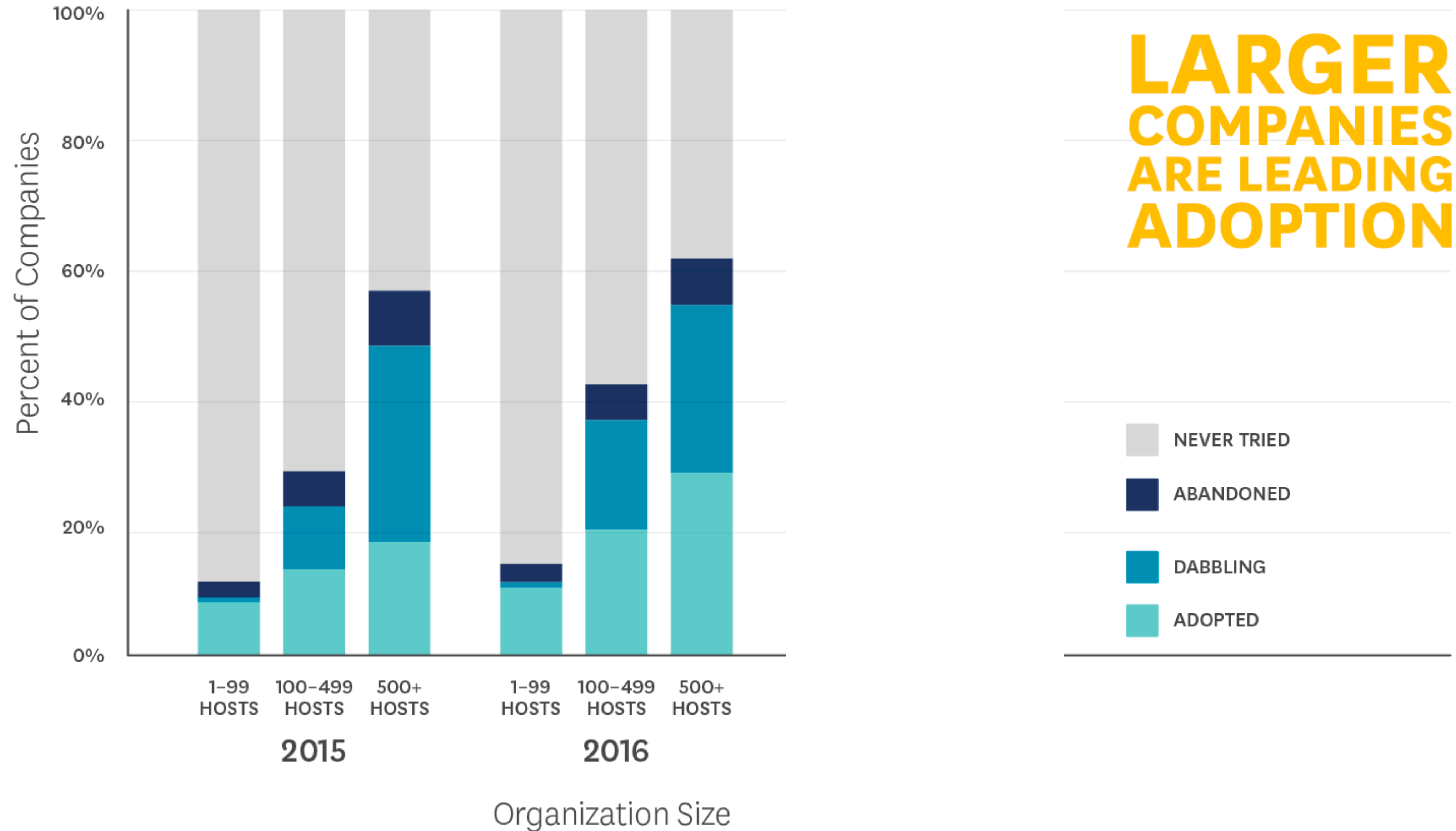


**LARGER  
COMPANIES  
ARE LEADING  
ADOPTION**



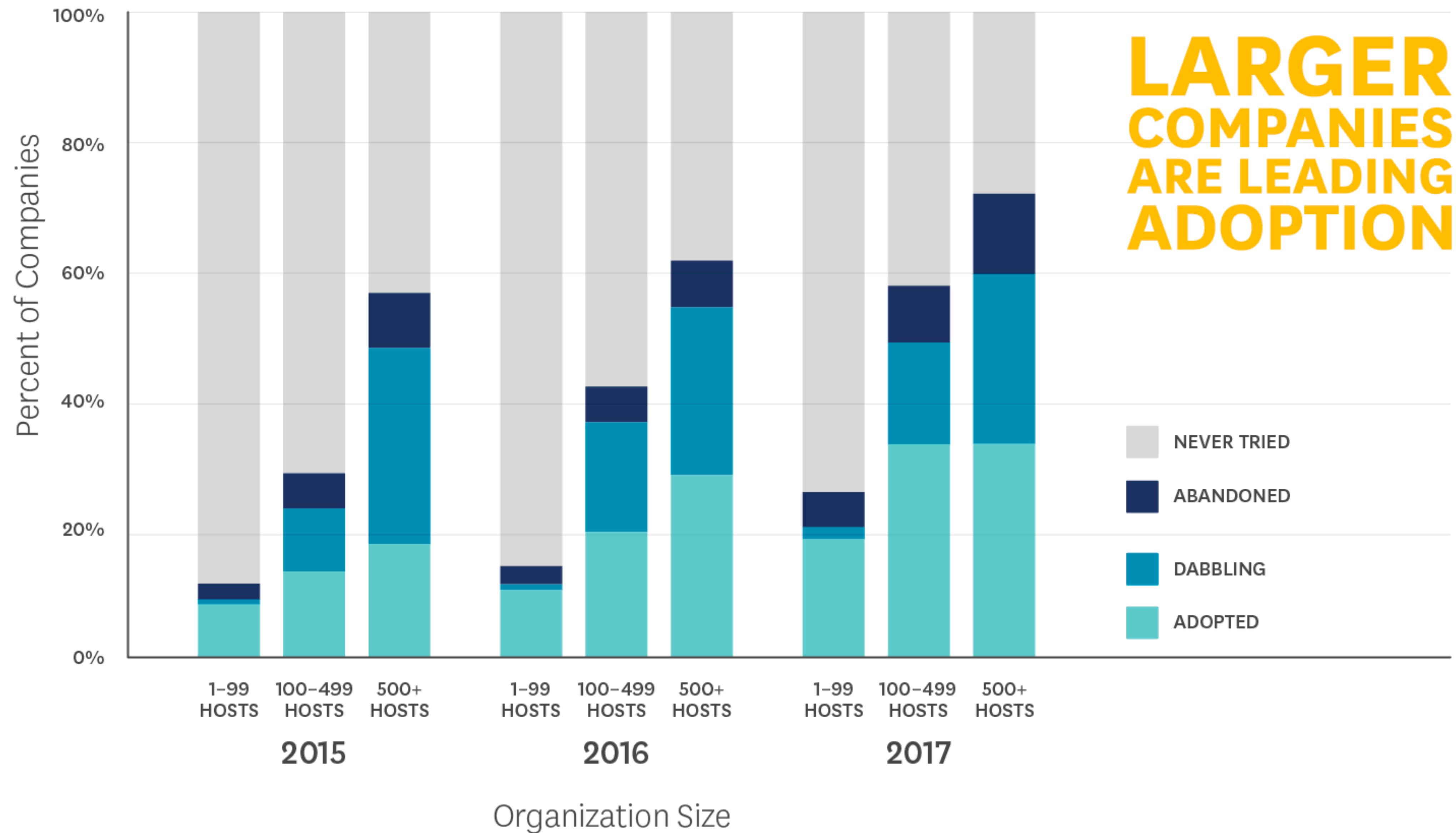
Source: Datadog

# Docker Adoption Status by Infrastructure Size



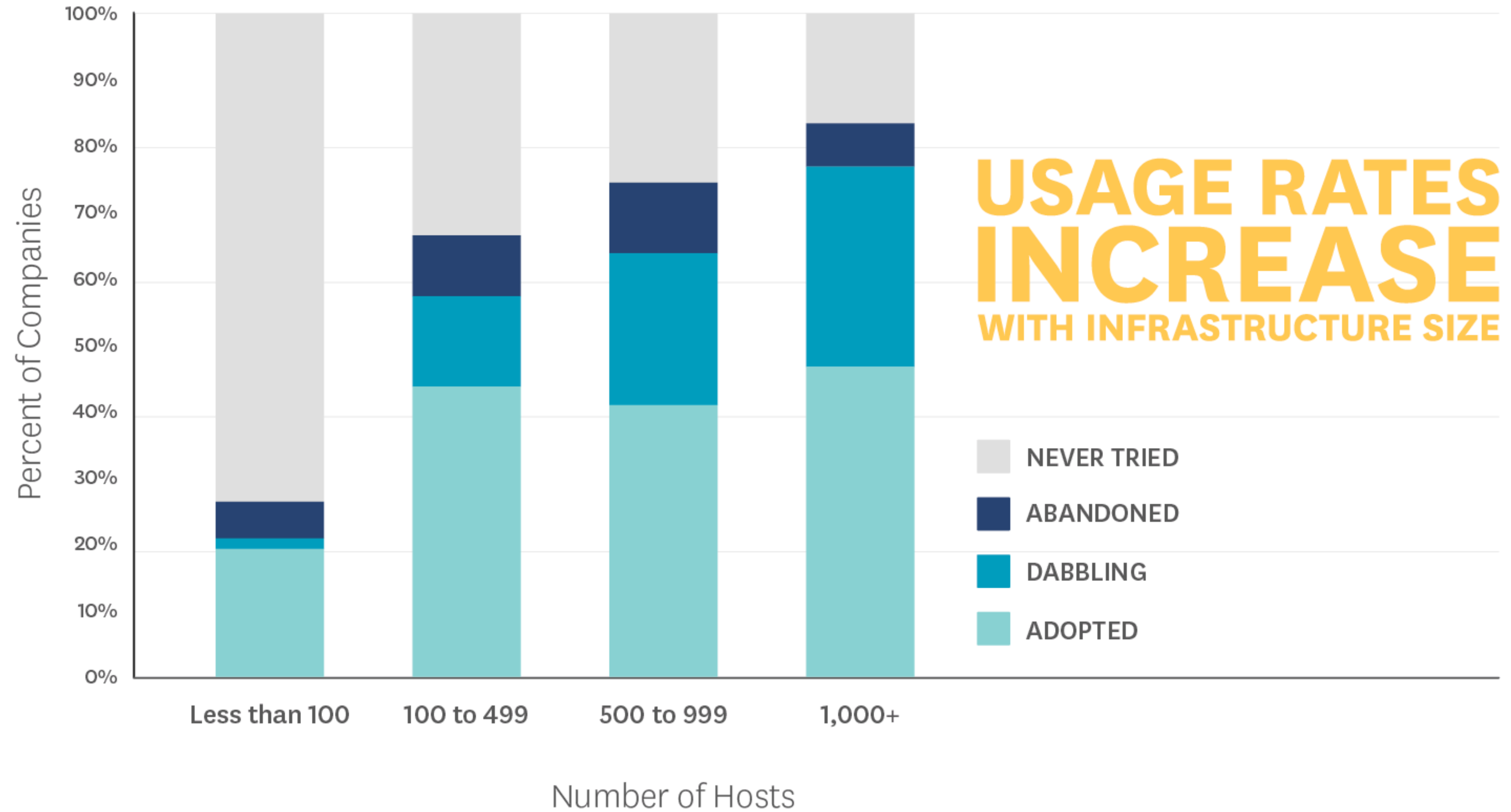
Source: Datadog

# Docker Adoption Status by Infrastructure Size



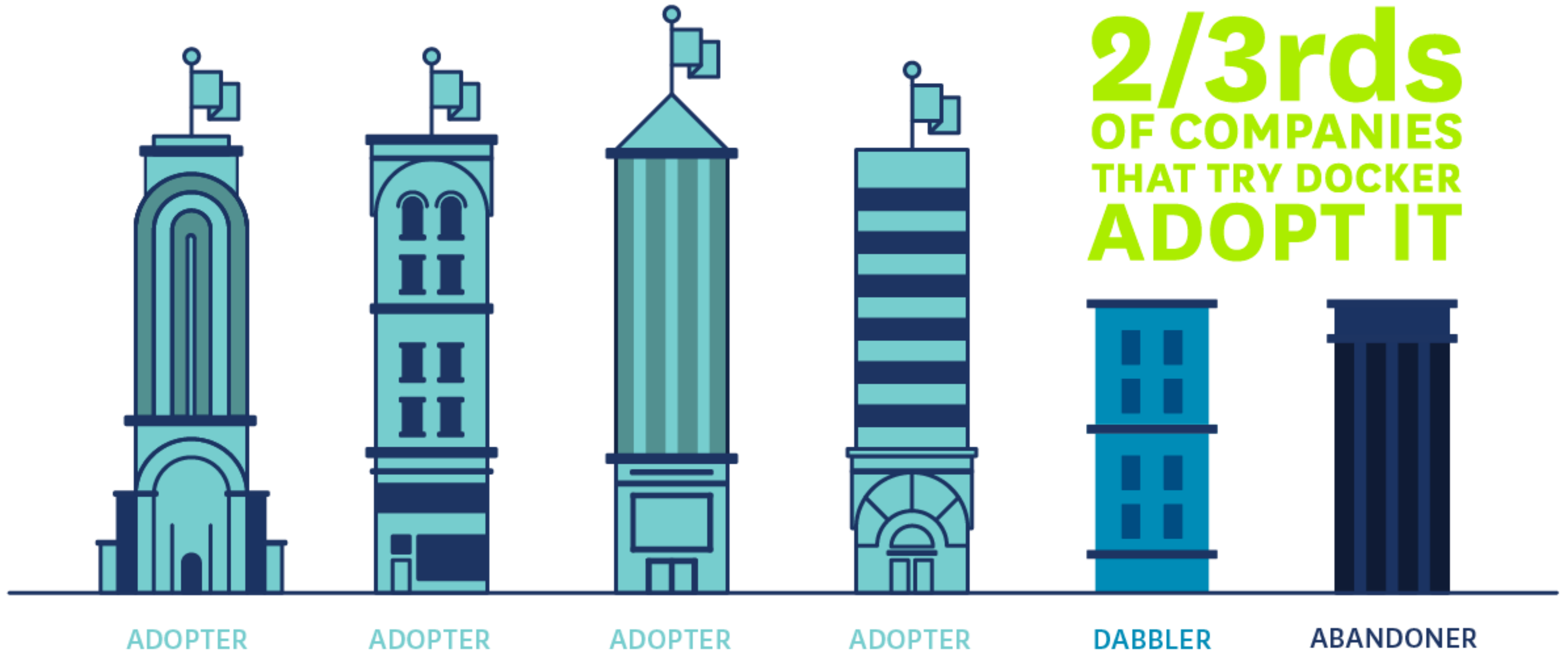
Source: Datadog

# Docker Adoption Status by Infrastructure Size



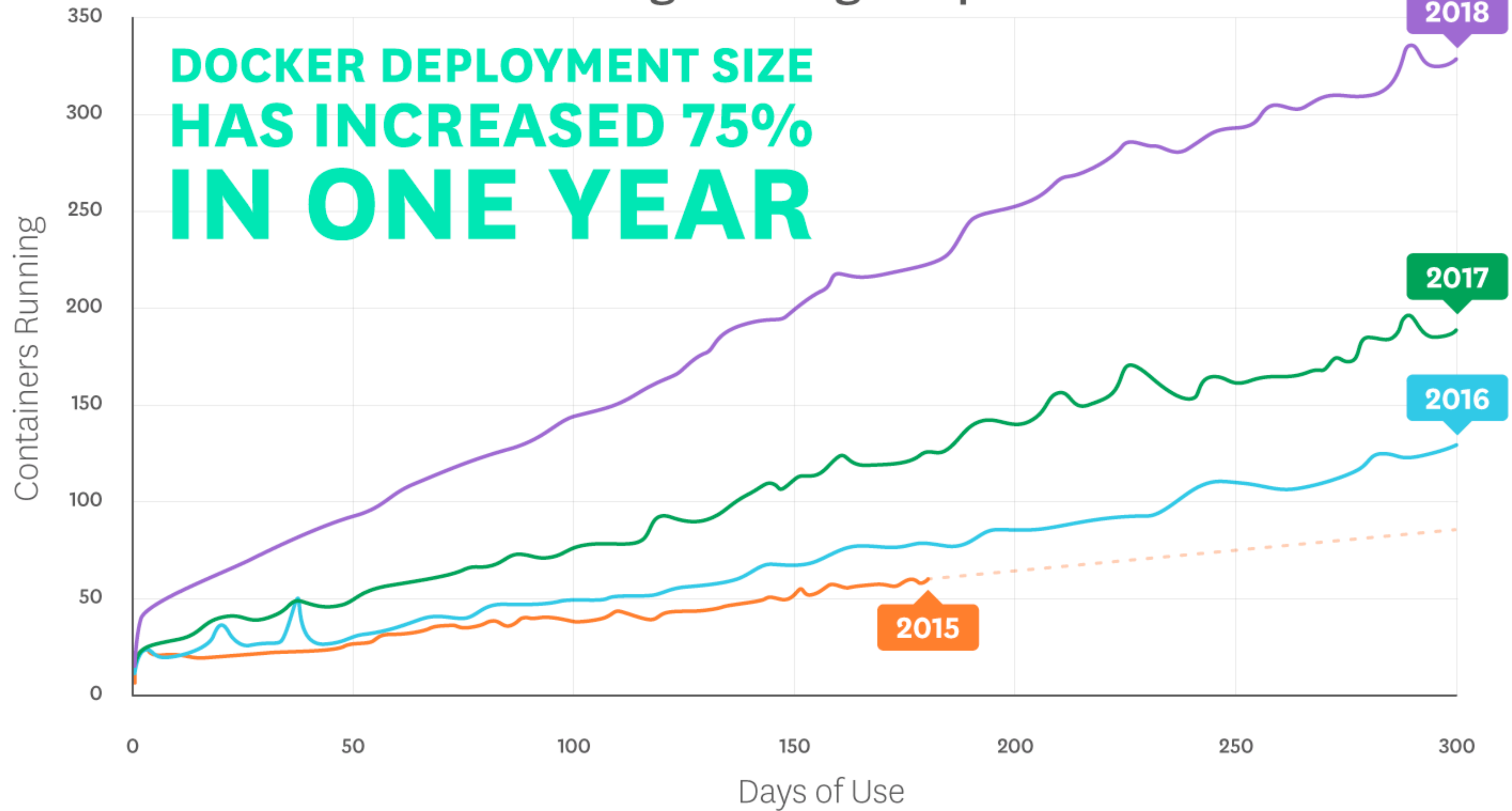
Source: Datadog

**2/3rds**  
OF COMPANIES  
THAT TRY DOCKER  
**ADOPT IT**



*Source: Datadog*

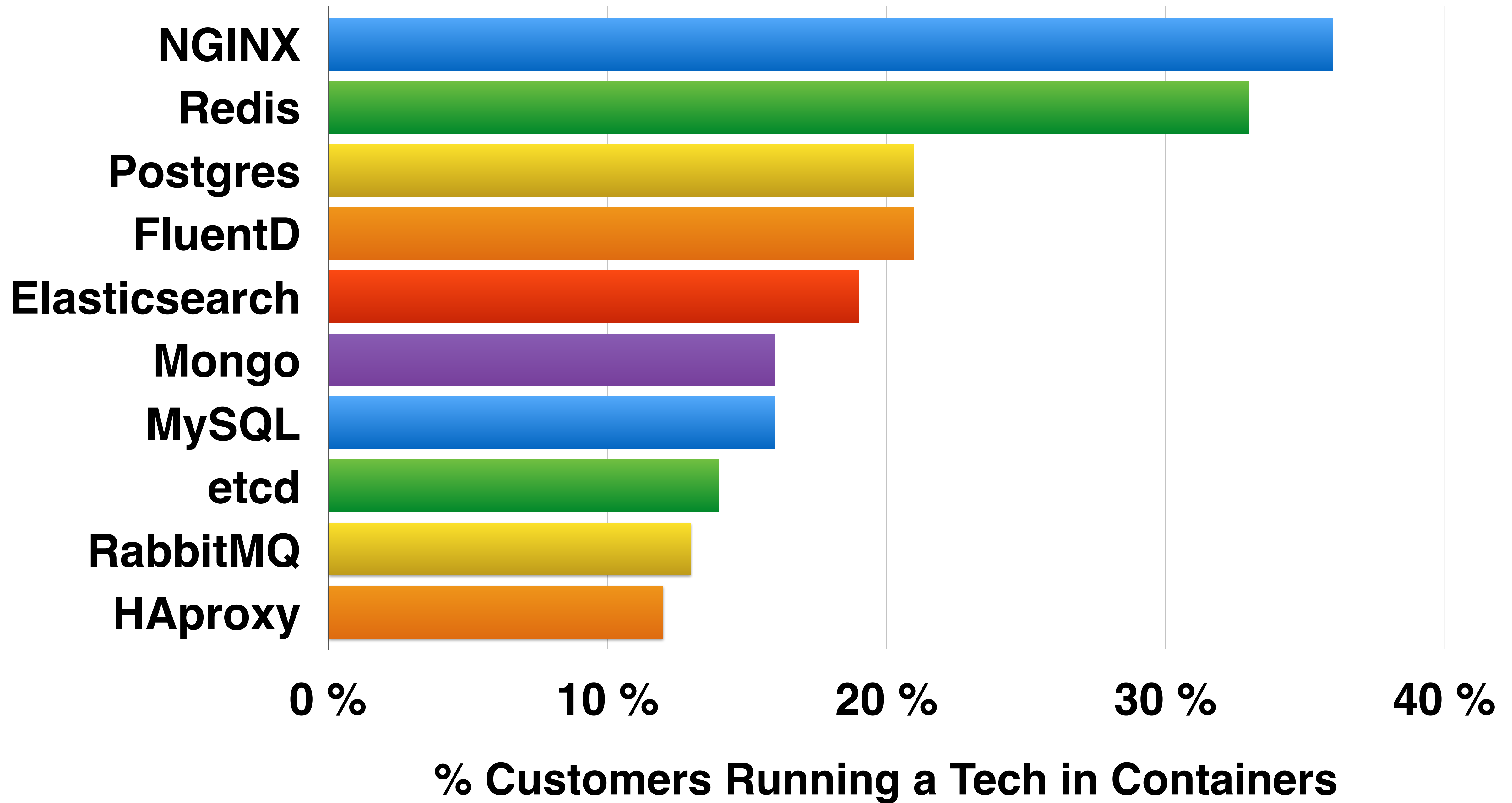
## Usage Among Adopters

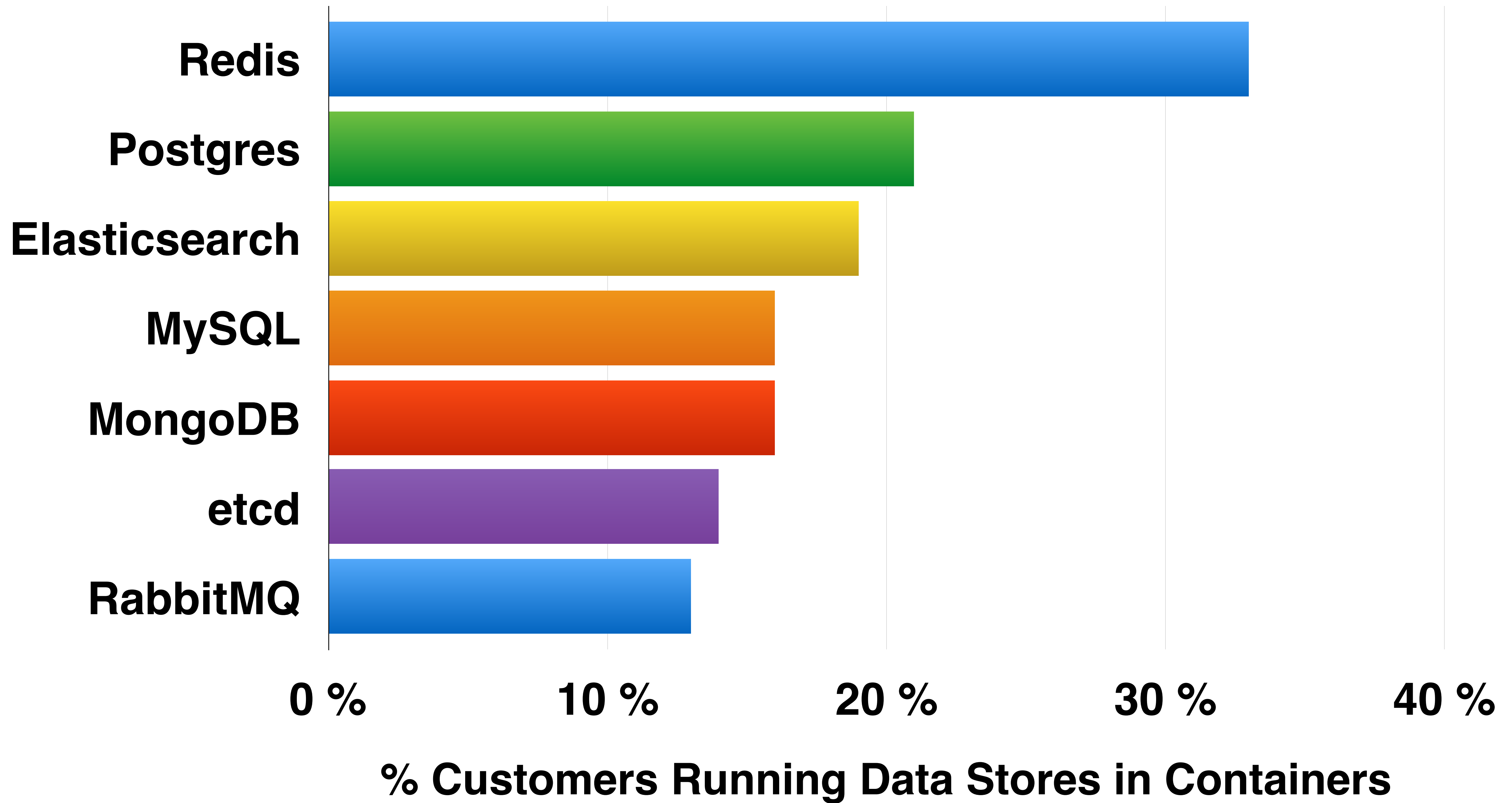


Source: Datadog

# WHAT'S RUNNING?

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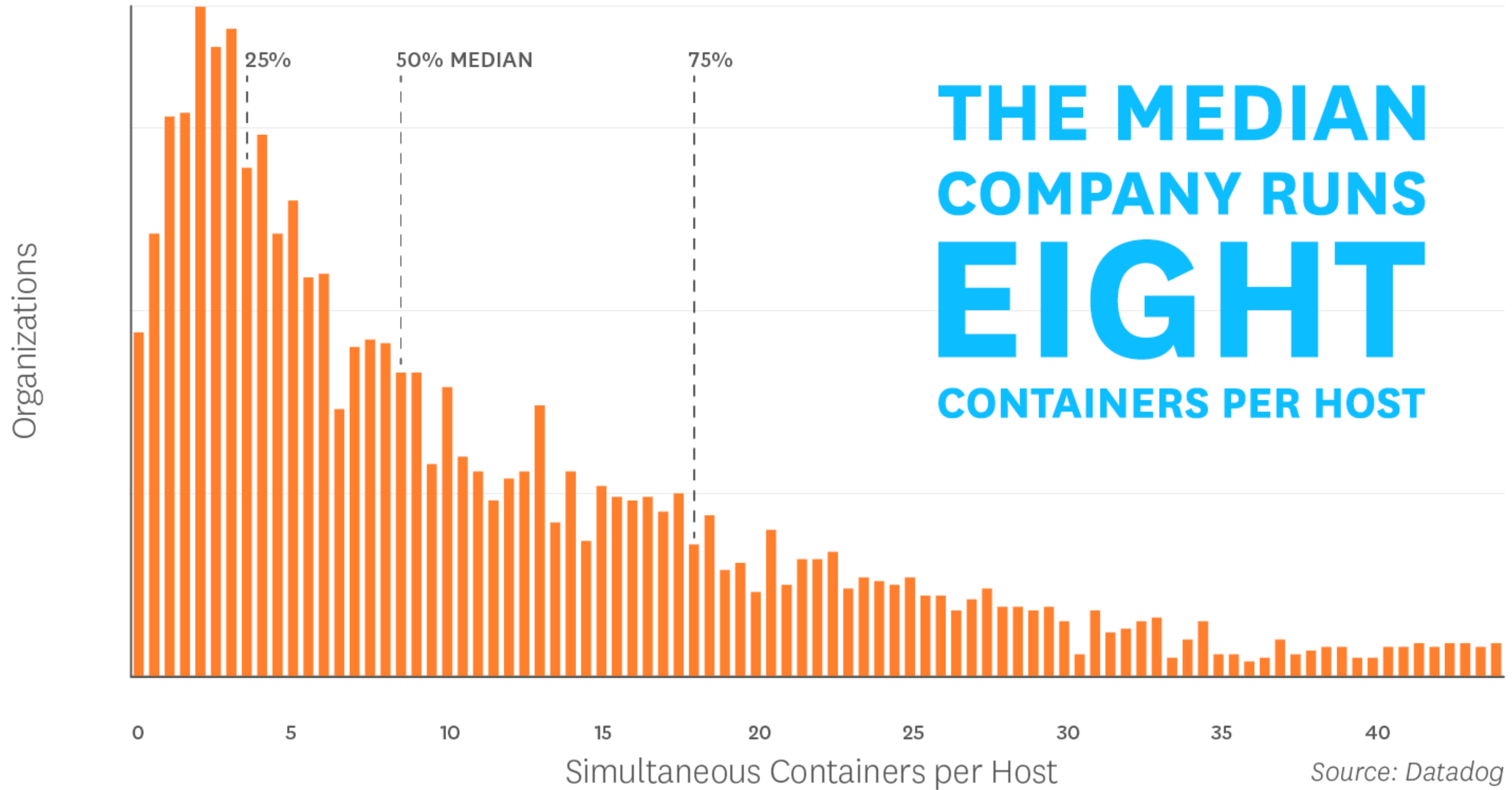
# HOW DENSELY PACKED?

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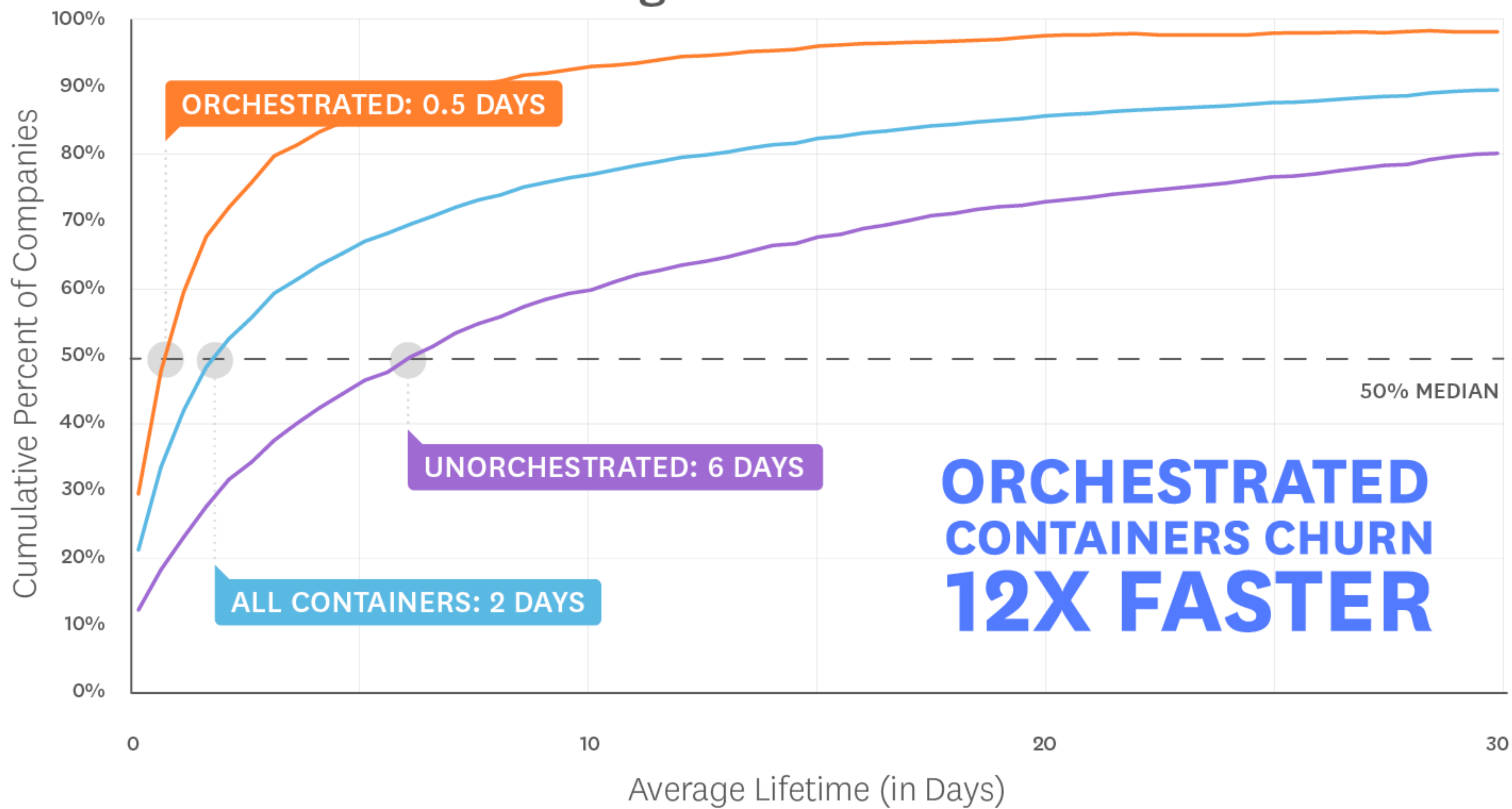




## Container Density per Host

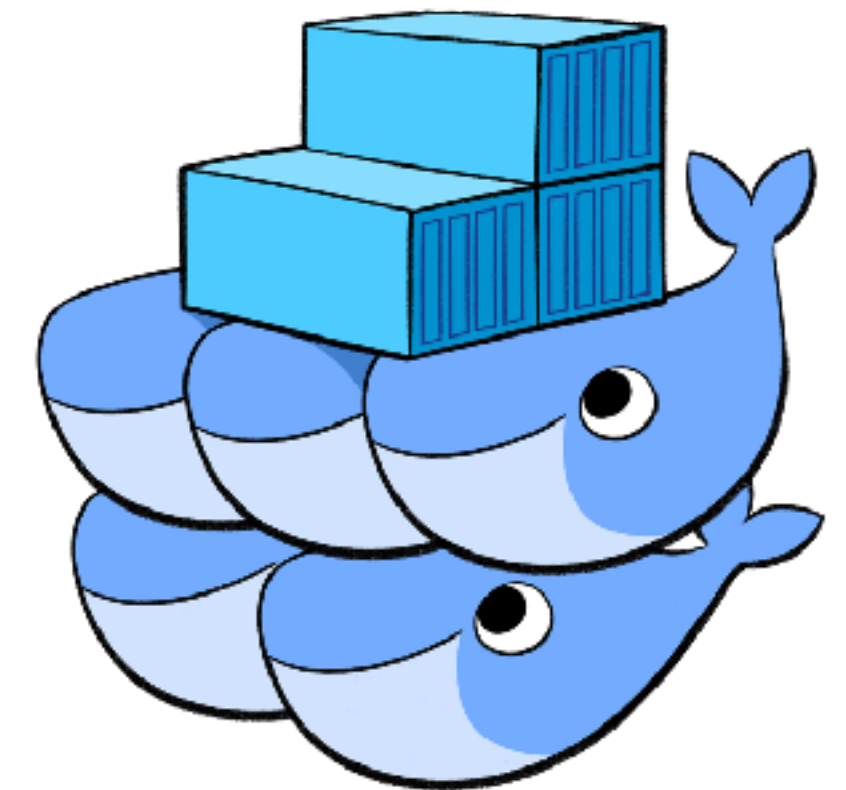
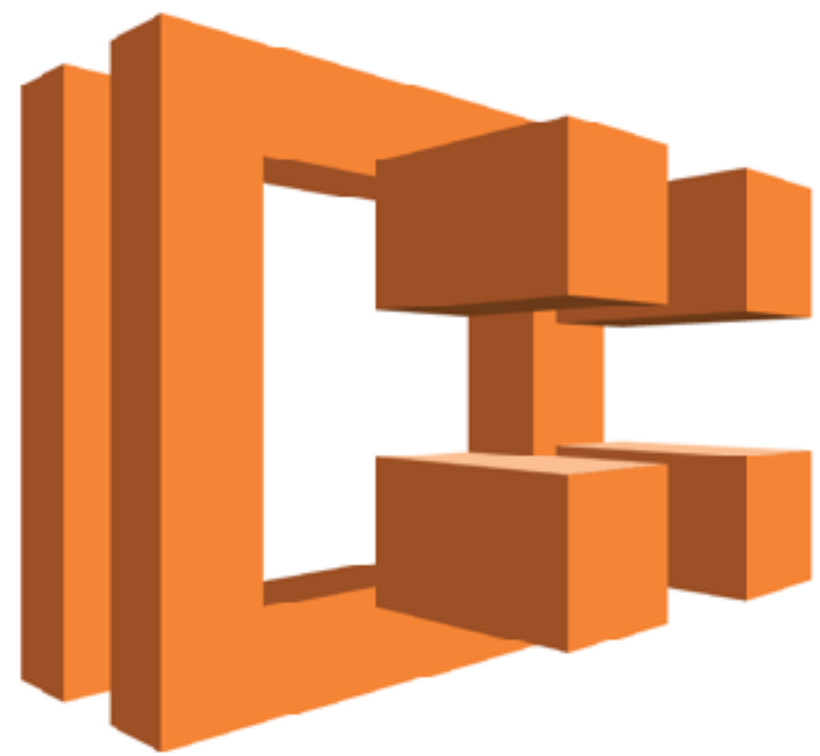


## Average Container Lifetimes



Source: Datadog

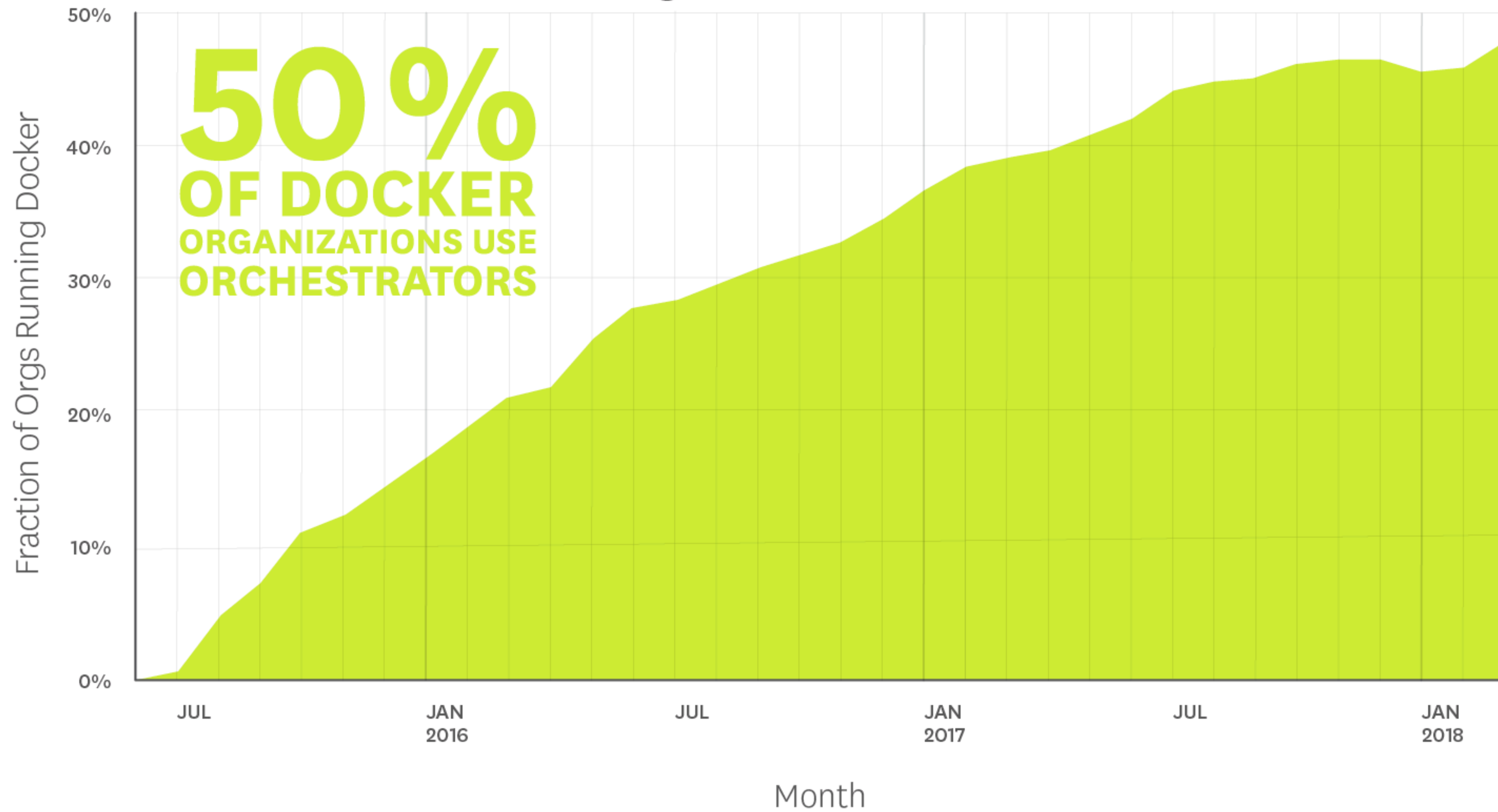
# ENTER THE ORCHESTRATORS



# ORCHESTRATION IS NORMAL

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## Usage of Orchestrators



Source: Datadog

# CONTAINERS INCREASE COMPLEXITY

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HOW DO WE MONITOR THEM?

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

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**HOMER SIMPSON**

# CONTAINERS

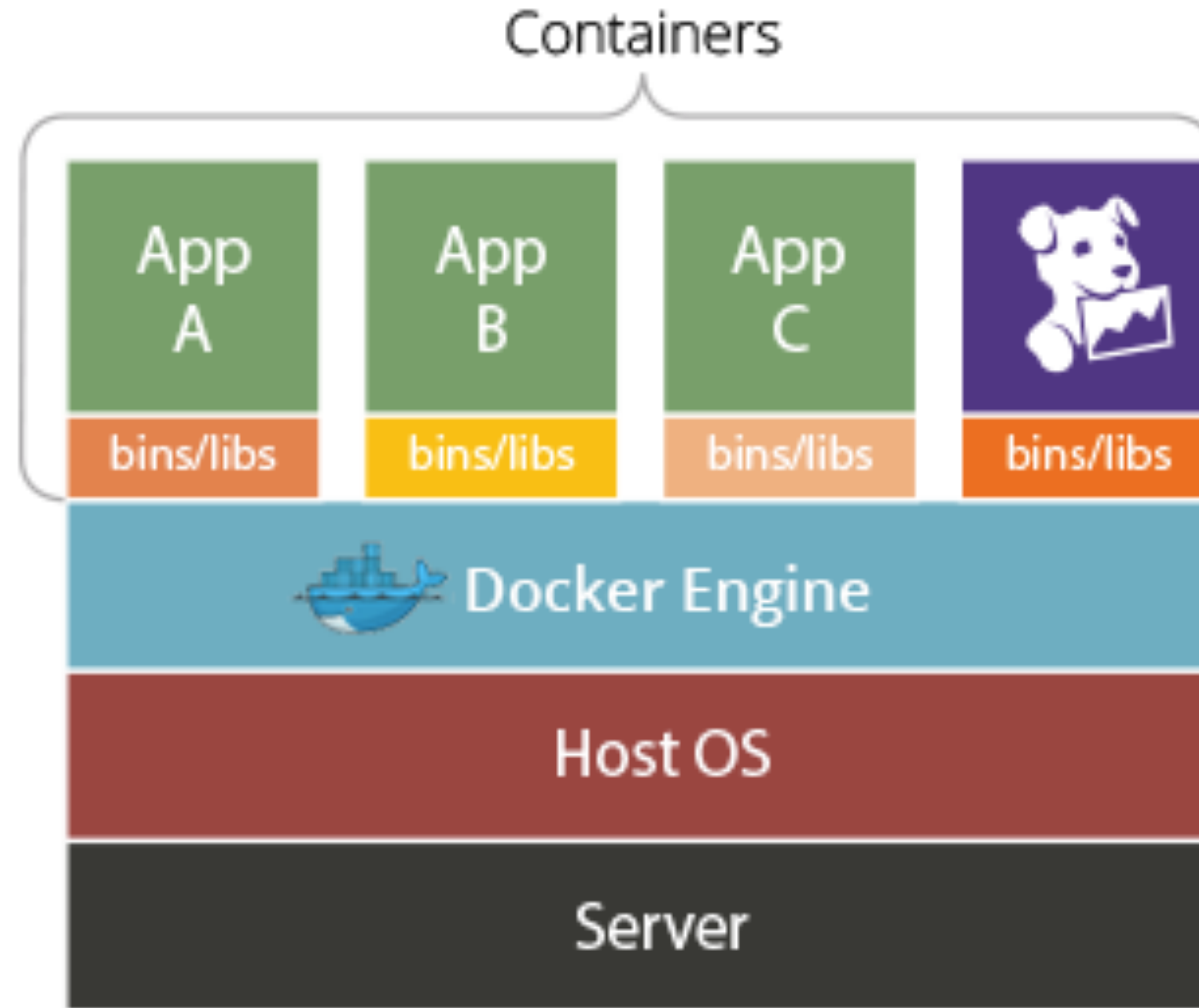
The cause of, and solution  
to, all of life's problems.

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HOMER SIMPSON



# Side Car Containers



**AS COMPLEXITY INCREASES**

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**FUNDAMENTALS BECOME MORE IMPORTANT**

# 4 QUALITIES OF GOOD METRICS




















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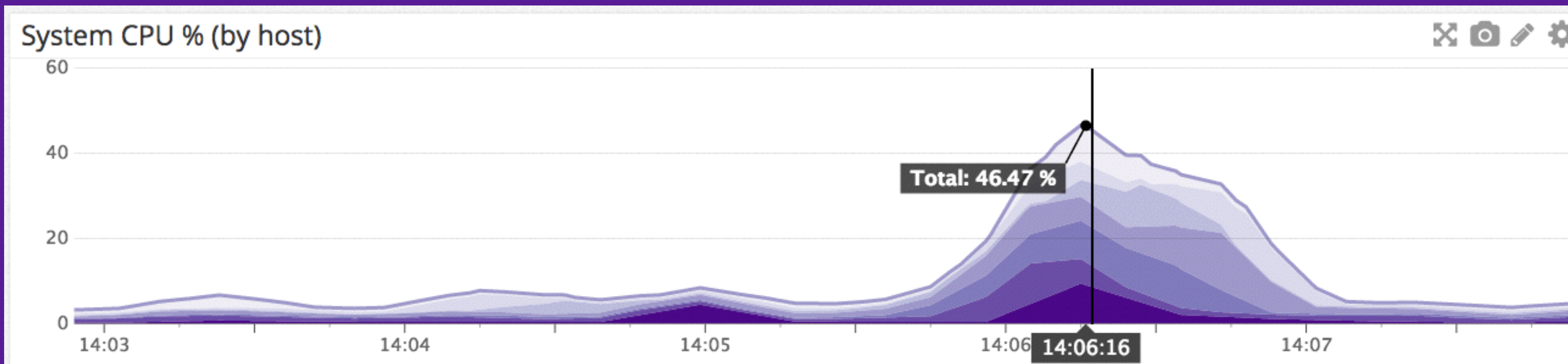
NOT ALL METRICS ARE EQUAL

**1. MUST BE WELL UNDERSTOOD**

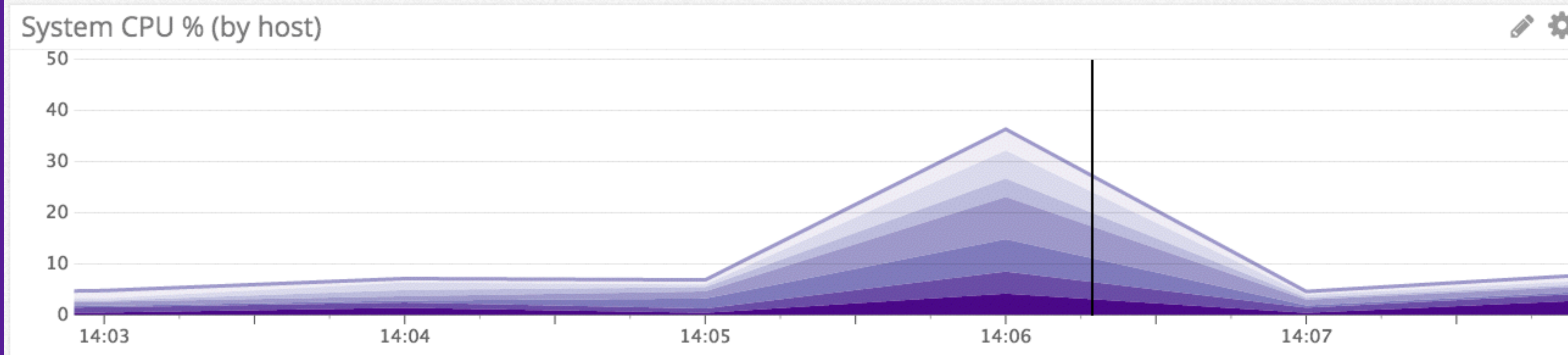


## 2. SUFFICIENT GRANULARITY

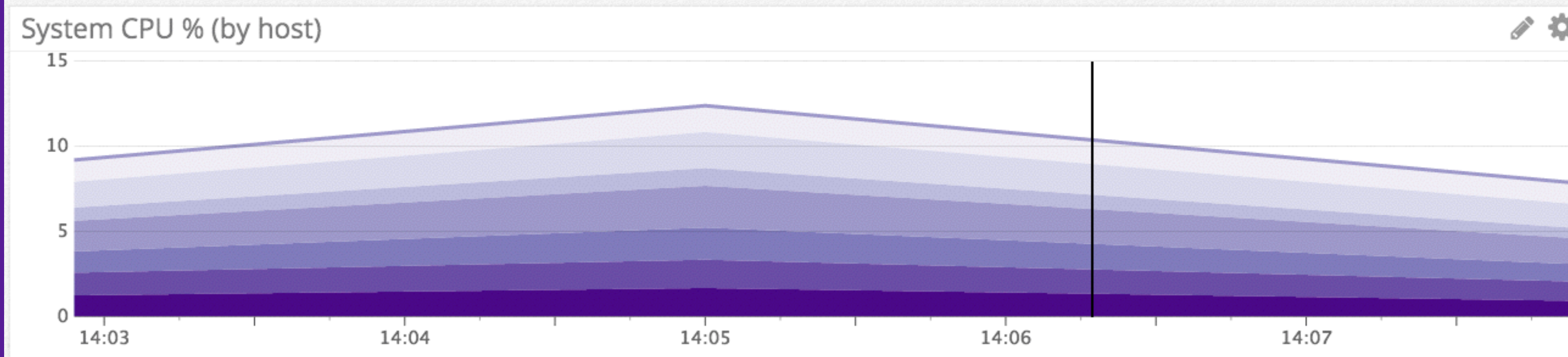
RANK	PARTICIPANT		RESULT
		<b>Anthony ERVIN</b>  USA	21.40
		<b>Florent MANAUDOU</b>  FRA	21.41
		<b>Nathan ADRIAN</b>  USA	21.49
4.		<b>Ben PROUD</b>  GBR	21.68
5.		<b>Andrii GOVOROV</b>  UKR	21.74
6.		<b>Bruno FRATUS</b>  BRA	21.79
6.		<b>Bradley Edward TANDY</b>  RSA	21.79
8.		<b>Simonas BILIS</b>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



1 second  
Peak 46%



1 minute  
Peak 36%



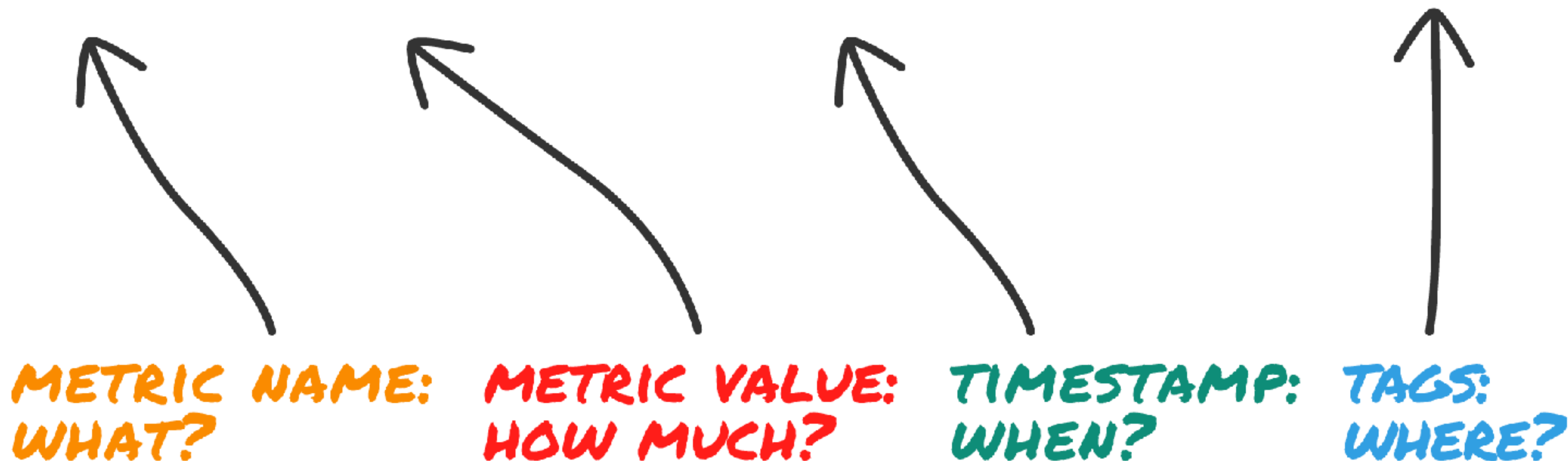
5 minutes  
Peak 12%

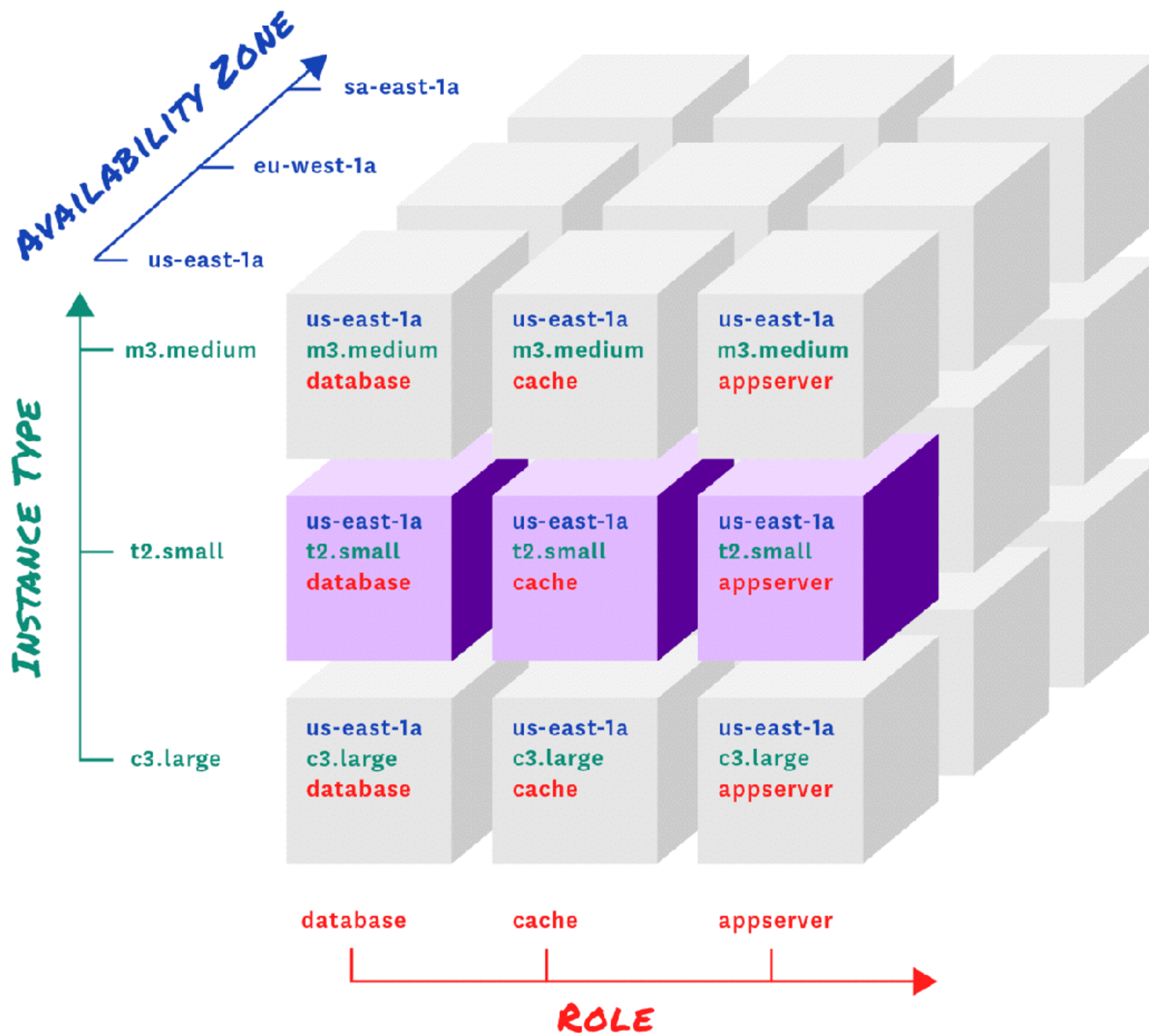


**3. TAGGED & FILTERABLE**

## DATAPoint

SYSTEM.NET.BYTES\_RCVD 4 2016-03-02 15:00:00 ['FILE-SERVER']





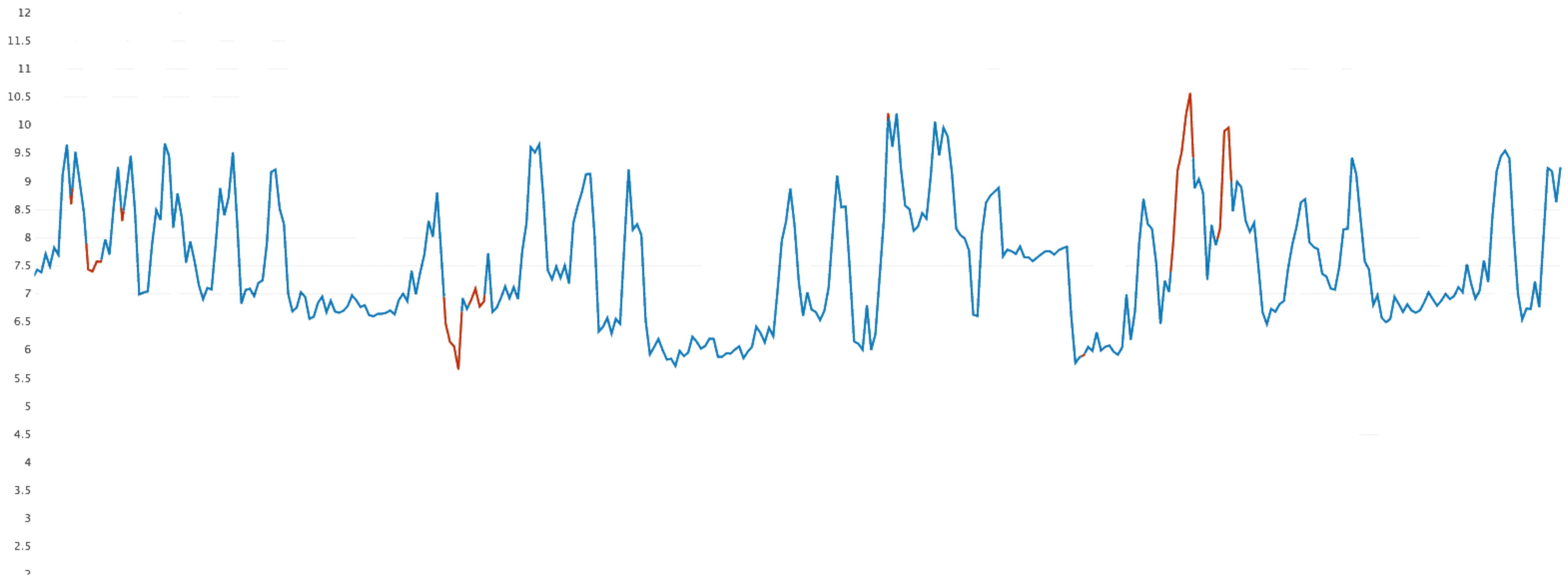
# Query Based Monitoring

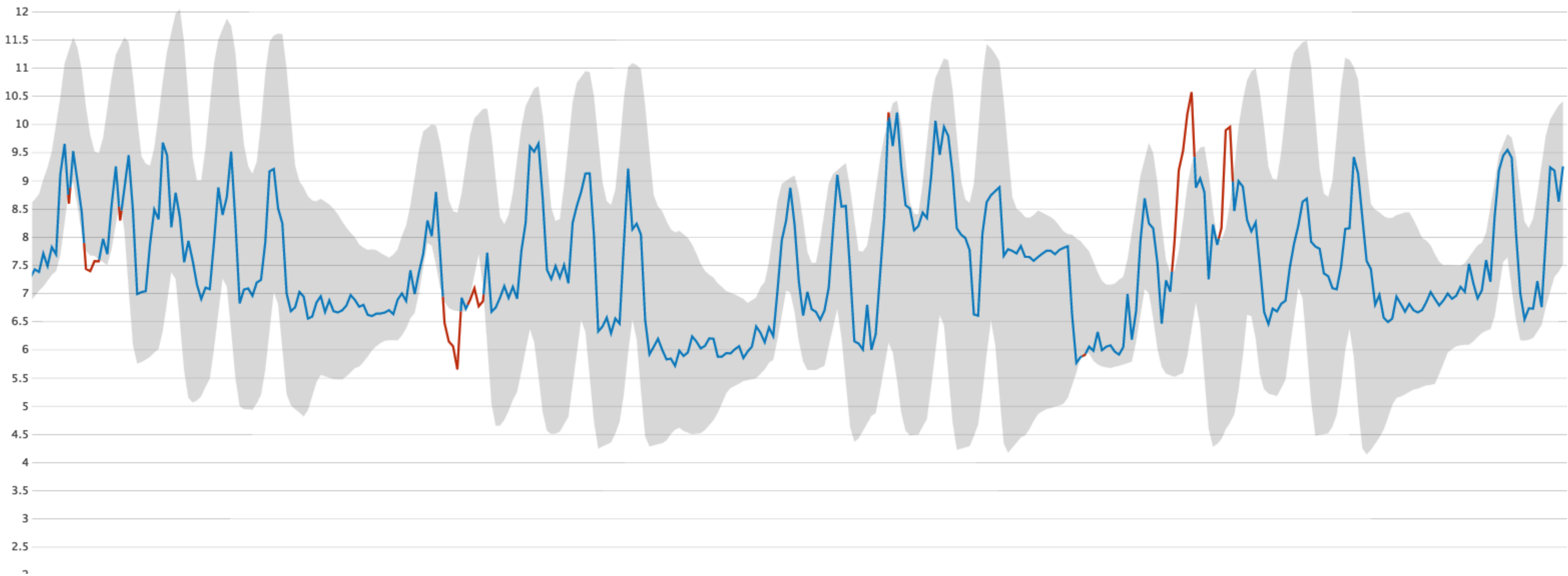
“What’s the average throughput of application:nginx per version ?”

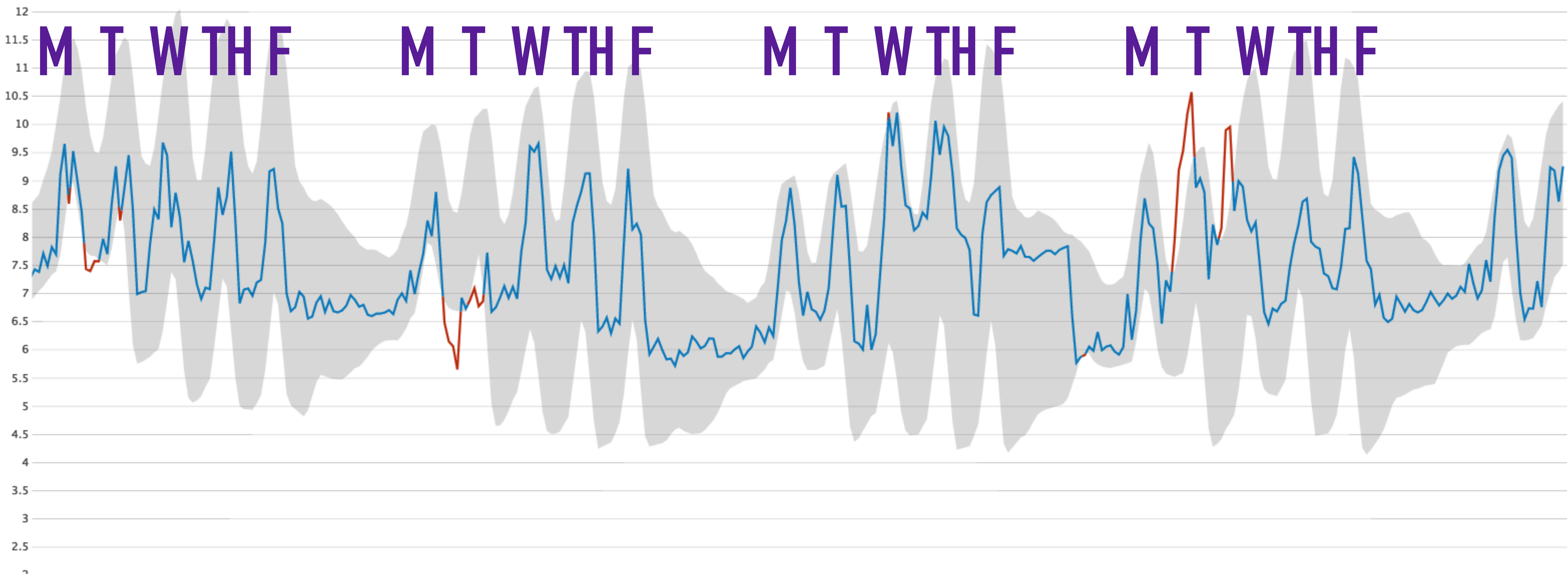
“Alert me when role:web-app running application:postgres hosted in region:eu-west-1 behaves differently than region:eu-west-2”

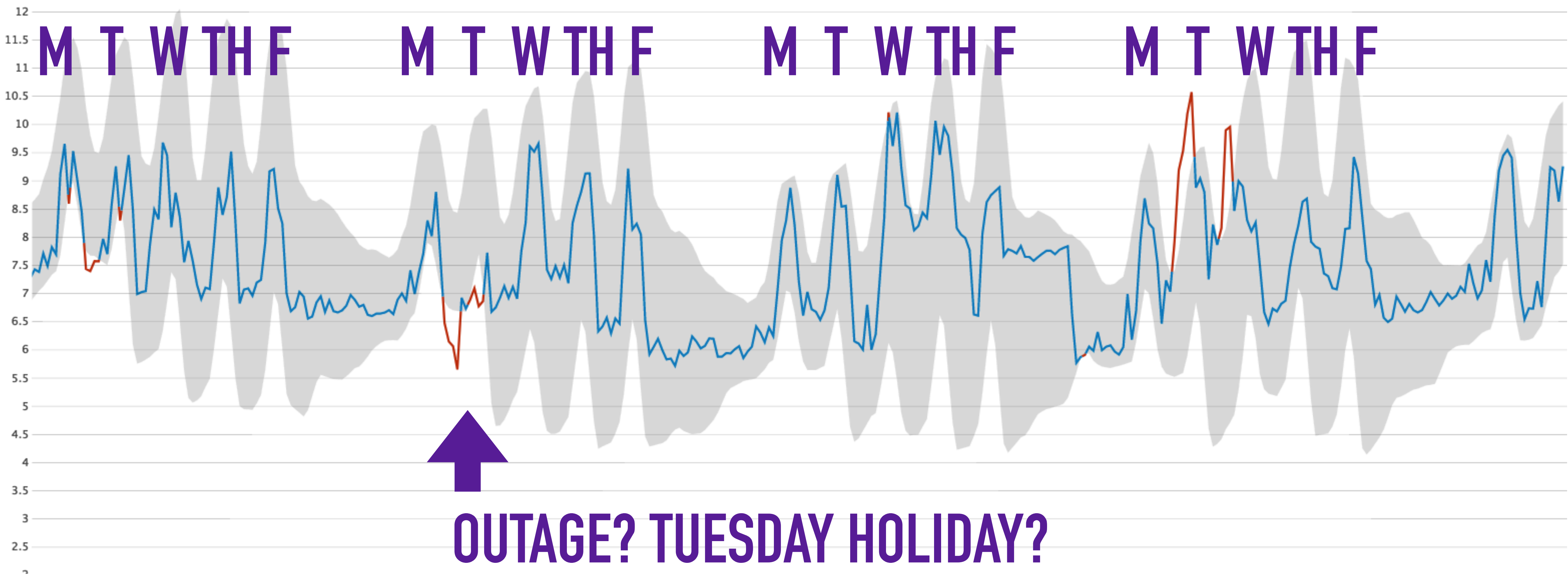
## 4. LONG-LIVED











**25%**  
**OF COMPANIES**  
**HAVE ADOPTED**  
**DOCKER**

**DOCKER DEPLOYMENT SIZE  
HAS INCREASED 75%  
IN ONE YEAR**

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**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

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# SUMMARY

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

# MERCI !

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