

# MULTI DC DEPLOYMENTS

The Basecamp Way

HELLO 

I am John. I work at Basecamp.

# Basecamp 3 has been up 99.996% of the time since launch.

"Uptime" refers to the period of time when Basecamp is up and running. On rare occasions we must take Basecamp offline for maintenance, or an unexpected problem might occur that would take Basecamp offline. We work hard to limit these interruptions. Our goal is 100% uptime.

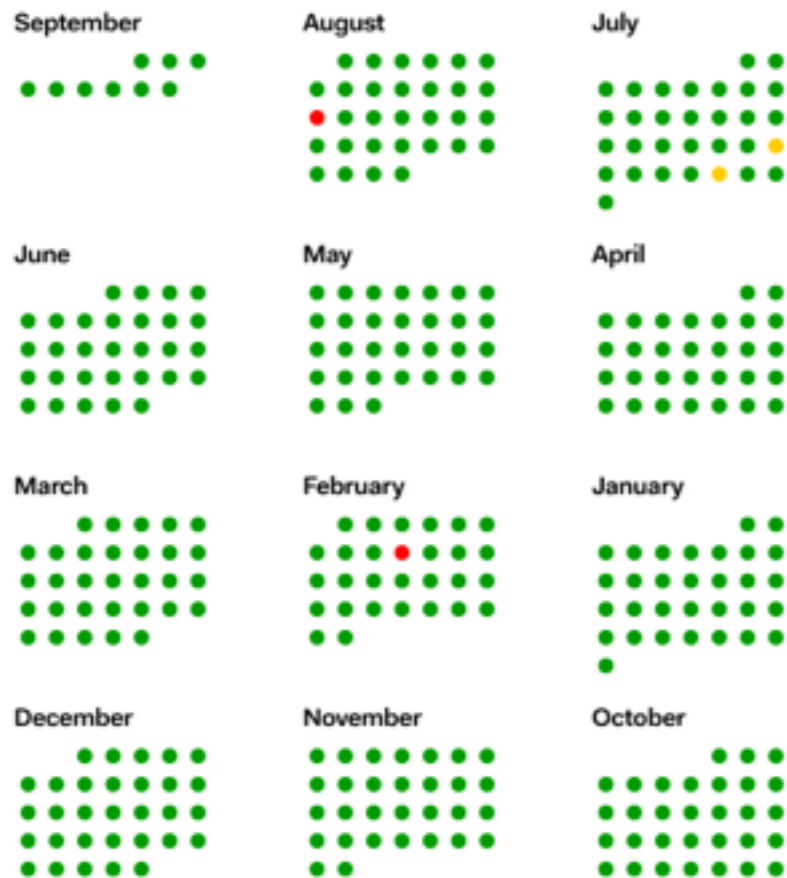
## Meet the ops team.

We have a team of 7 people dedicated to improving the reliability, performance, and speed of Basecamp. They're the unsung heroes — the folks behind the scenes that keep everything running smoothly.



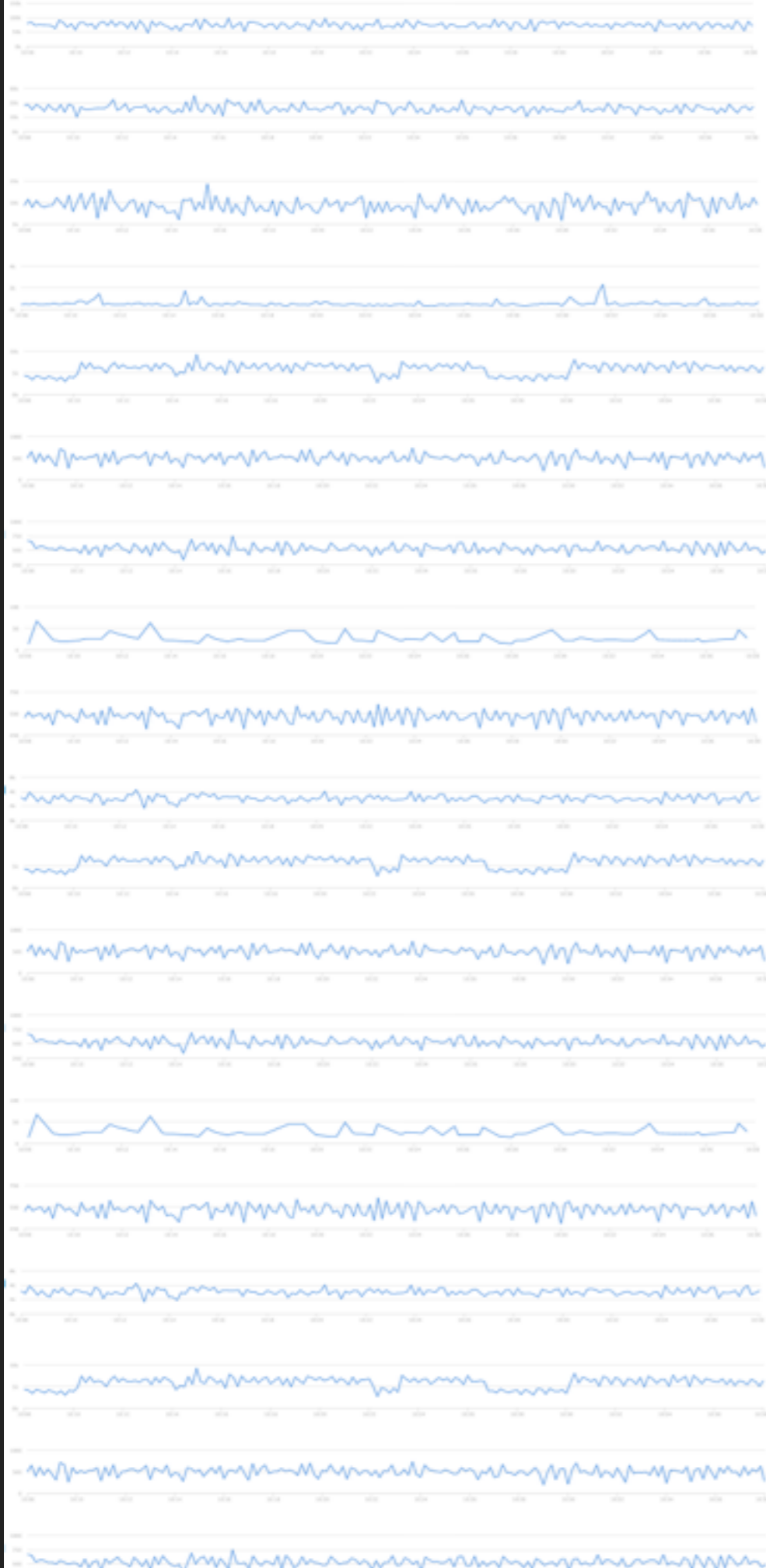
## Basecamp 3 daily uptime since launch.

● 24 hours uptime ● Less than 5 minutes down ● More than 5 minutes down



# UPTIME

Is a Feature



# PERFORMANCE

## Is a Feature



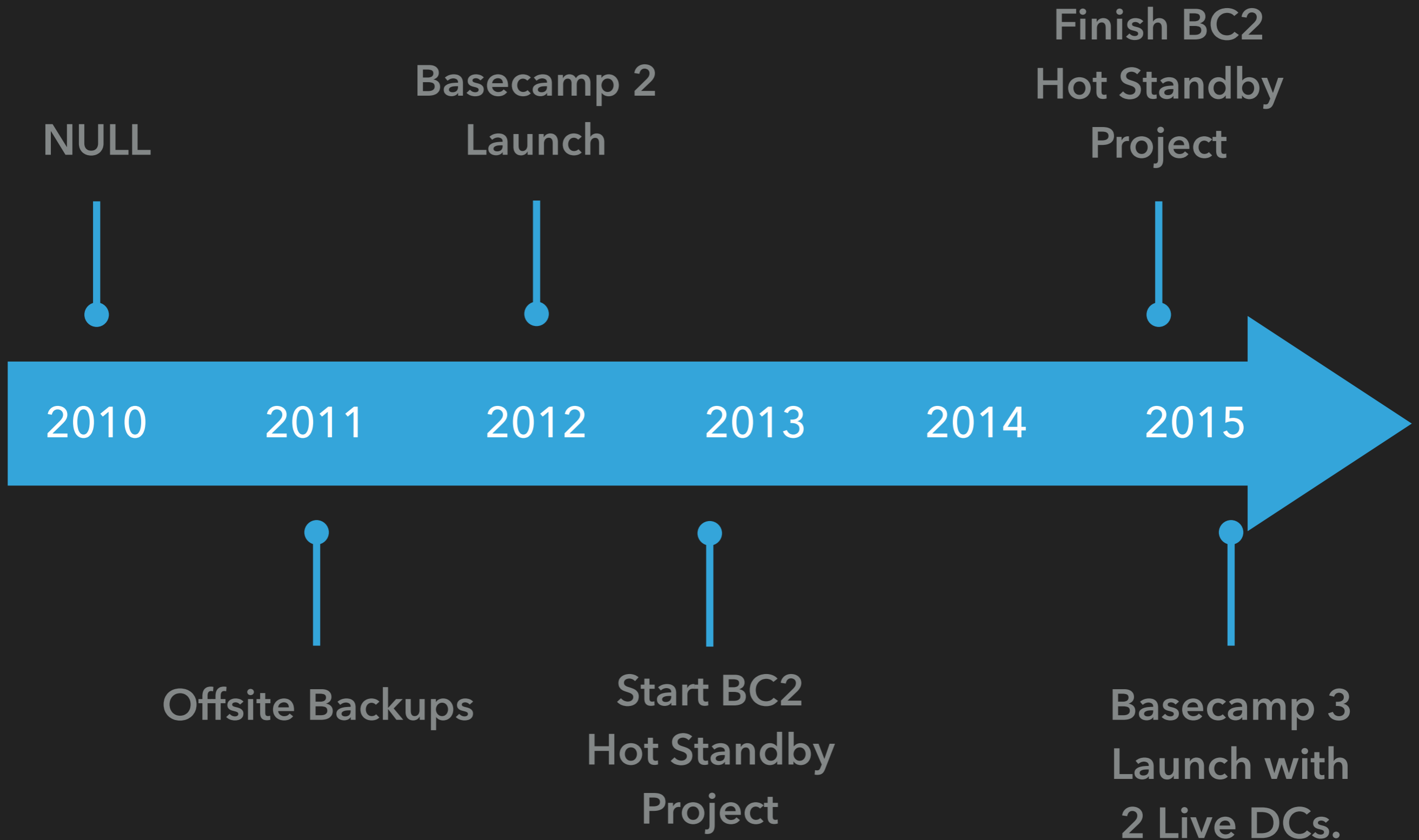
# FISHER-PRICE

Simple

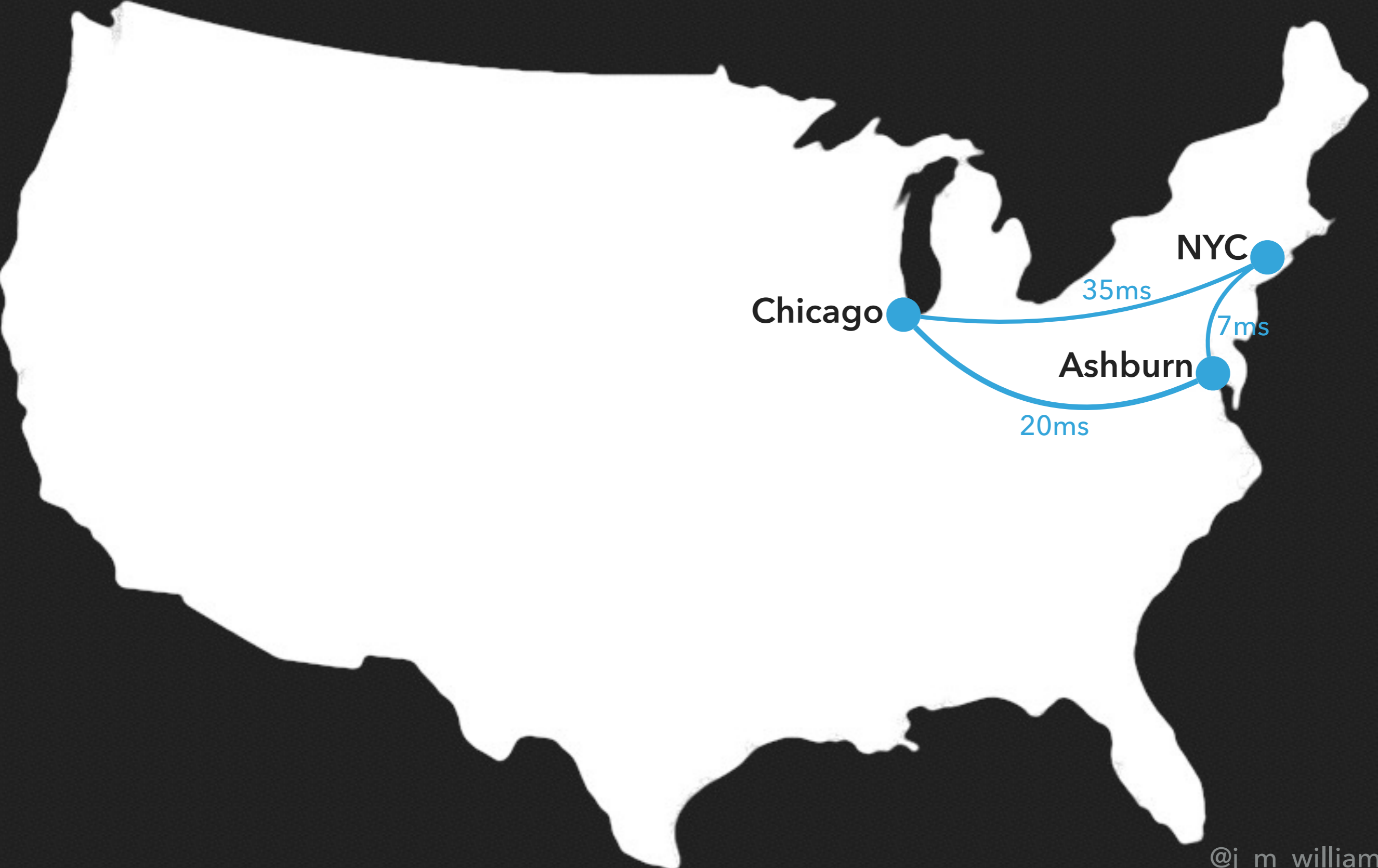
# MULTI DC TYPES

Cold, Hot and Live

# MULTI DC TYPES AT BASECAMP

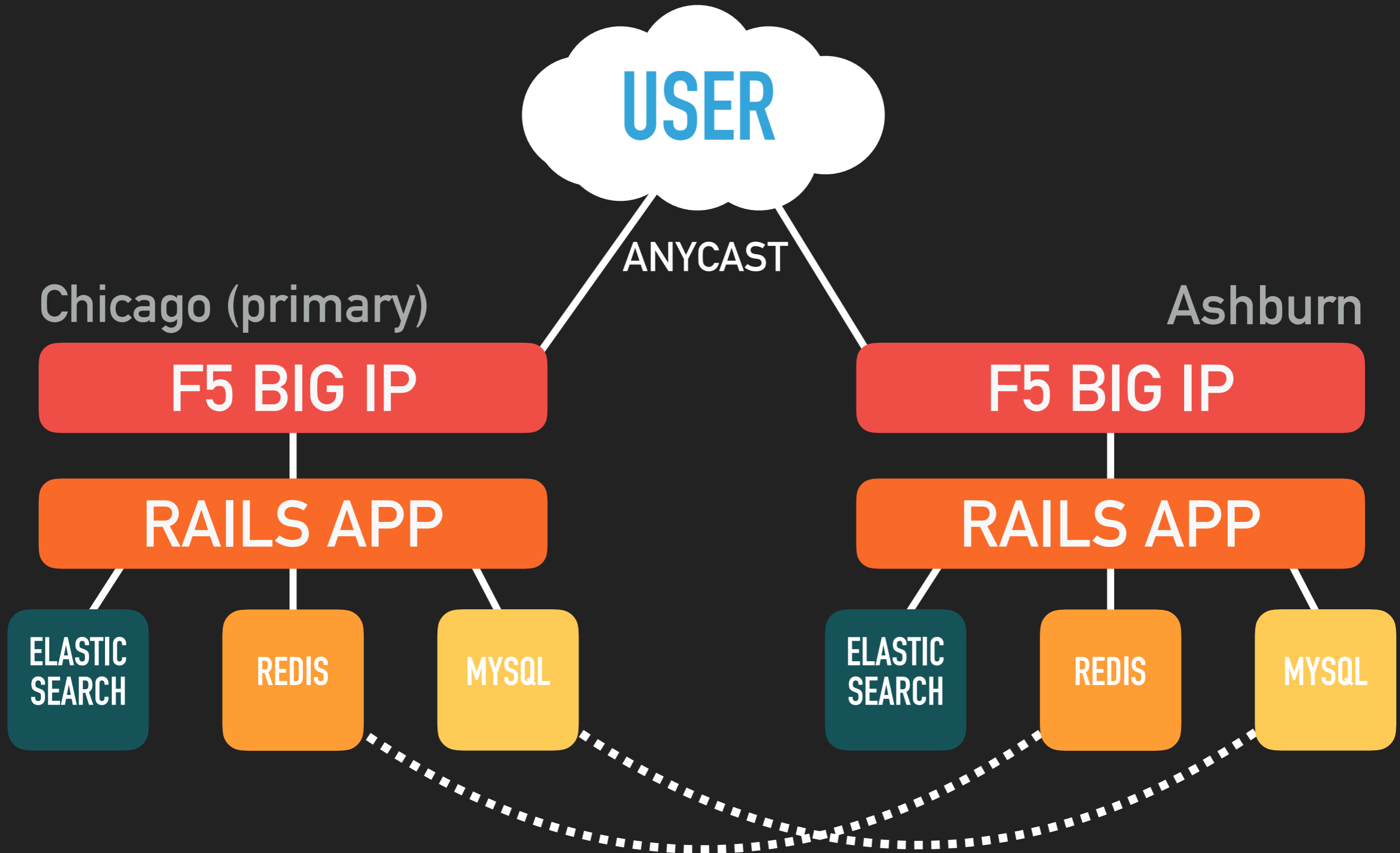


# BASECAMP DATACENTERS





# BASECAMP APP STACK

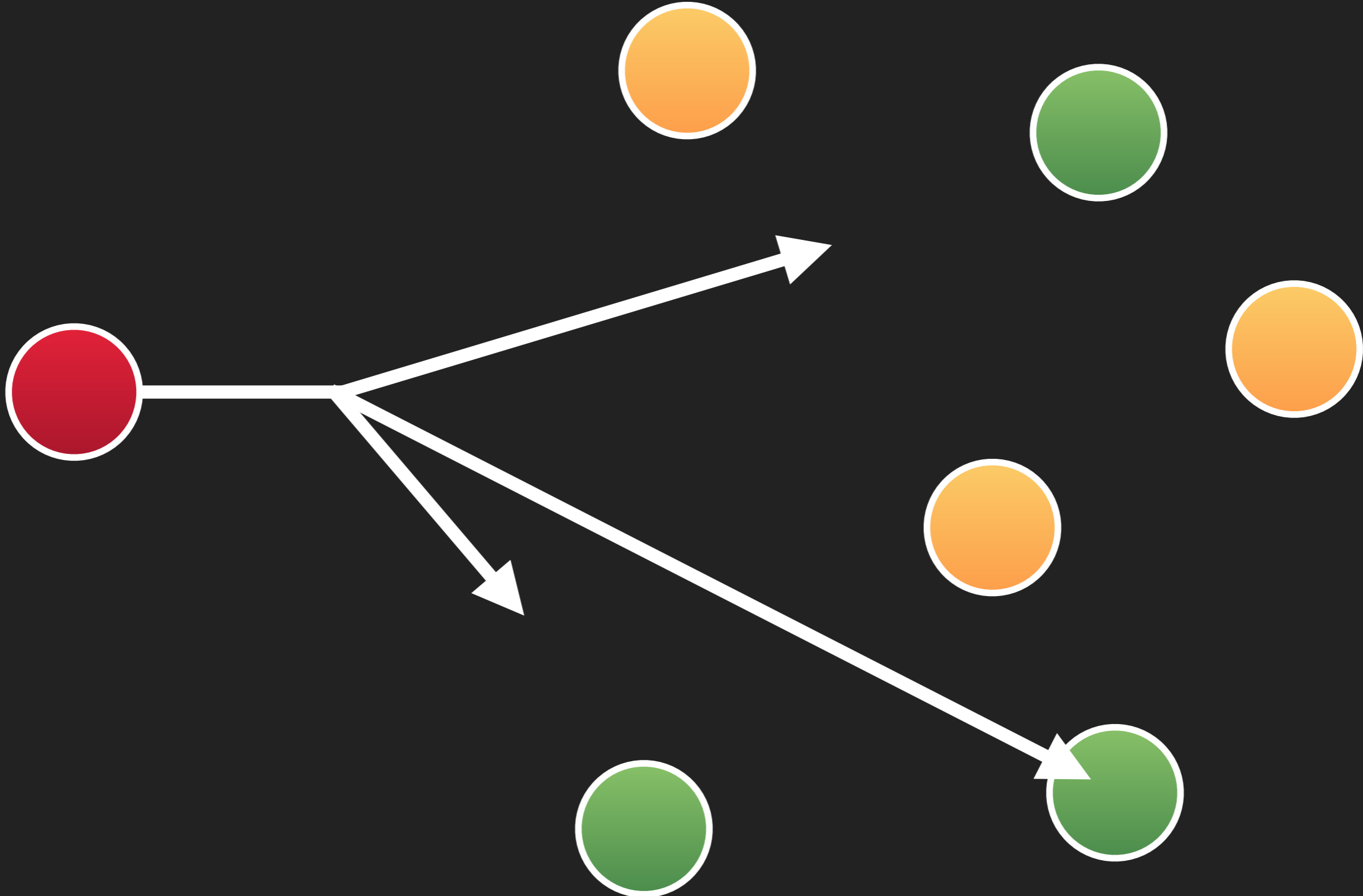


# ANYCAST

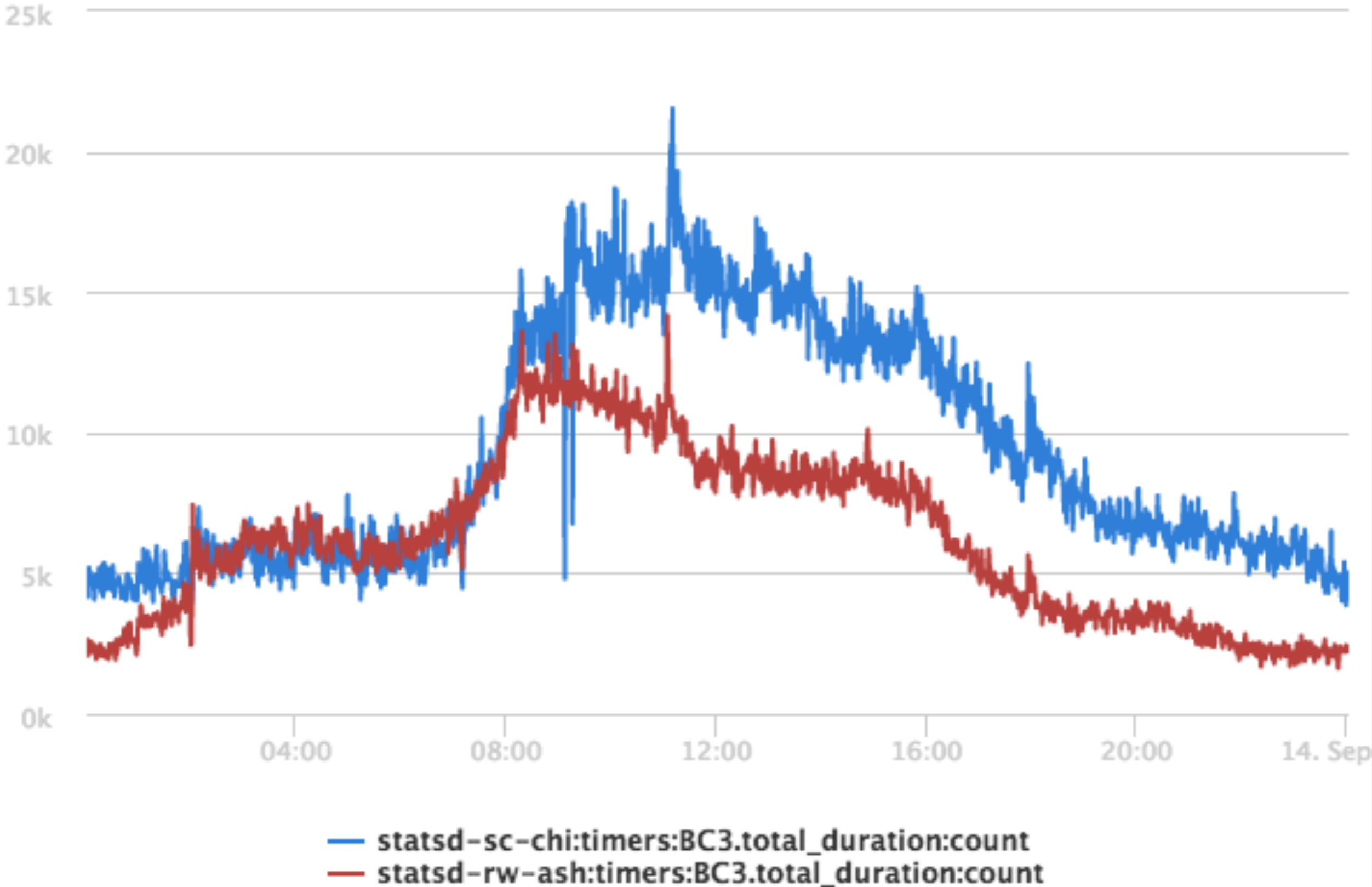
Multiple Datacenters, One IP.

ANYCAST

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# ANYCAST



## Robot Army

Chatbots

✓ Following

15 



Matthew Kent 10:09am

!o anycast\_disable bc3 rw-ash



ops 10:09am

Working on disabling anycast on bc3 rw-ash



Matthew Kent 1:45am

!o anycast\_enable bc3 rw-ash



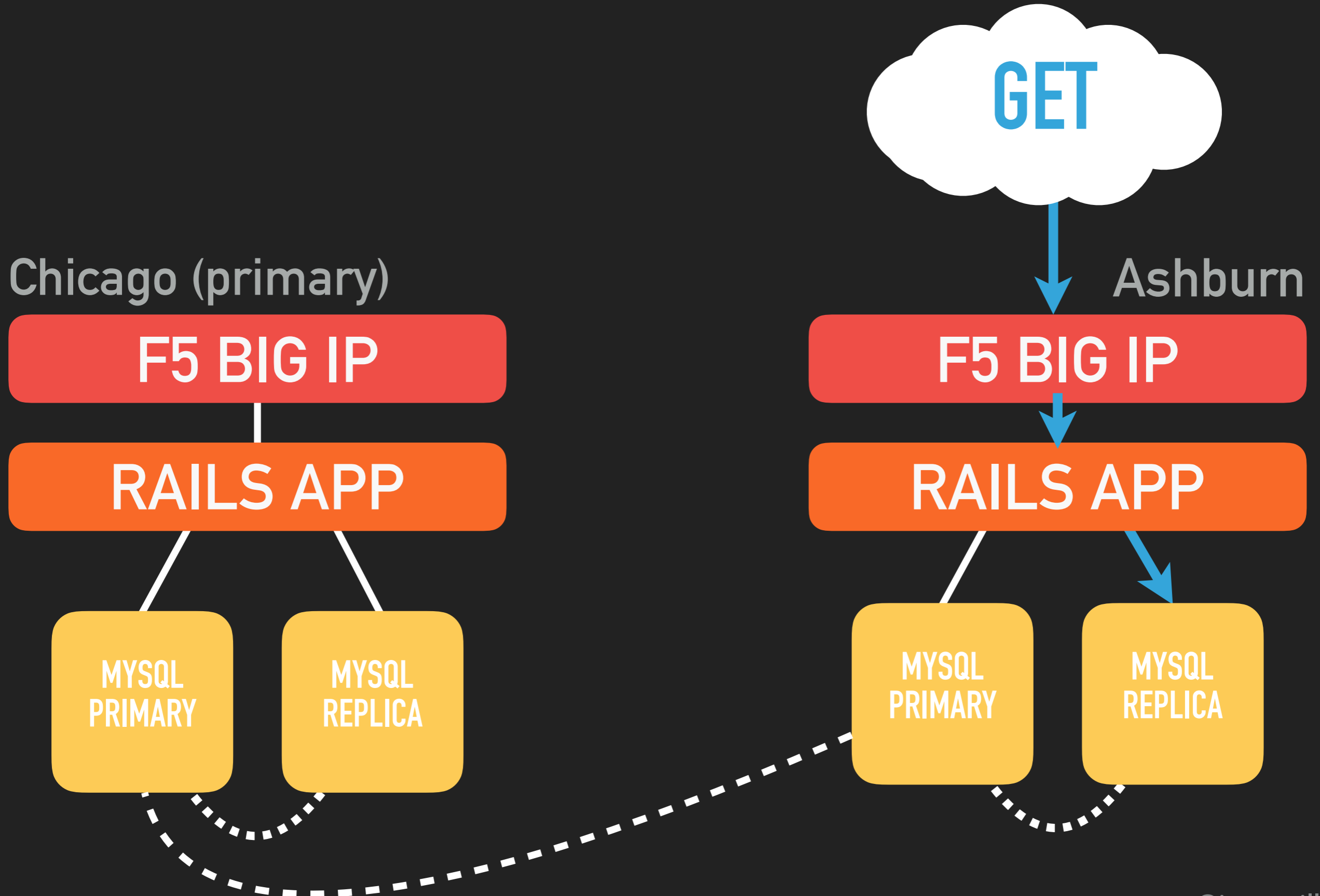
ops 1:45am

Working on enabling anycast on bc3 rw-ash

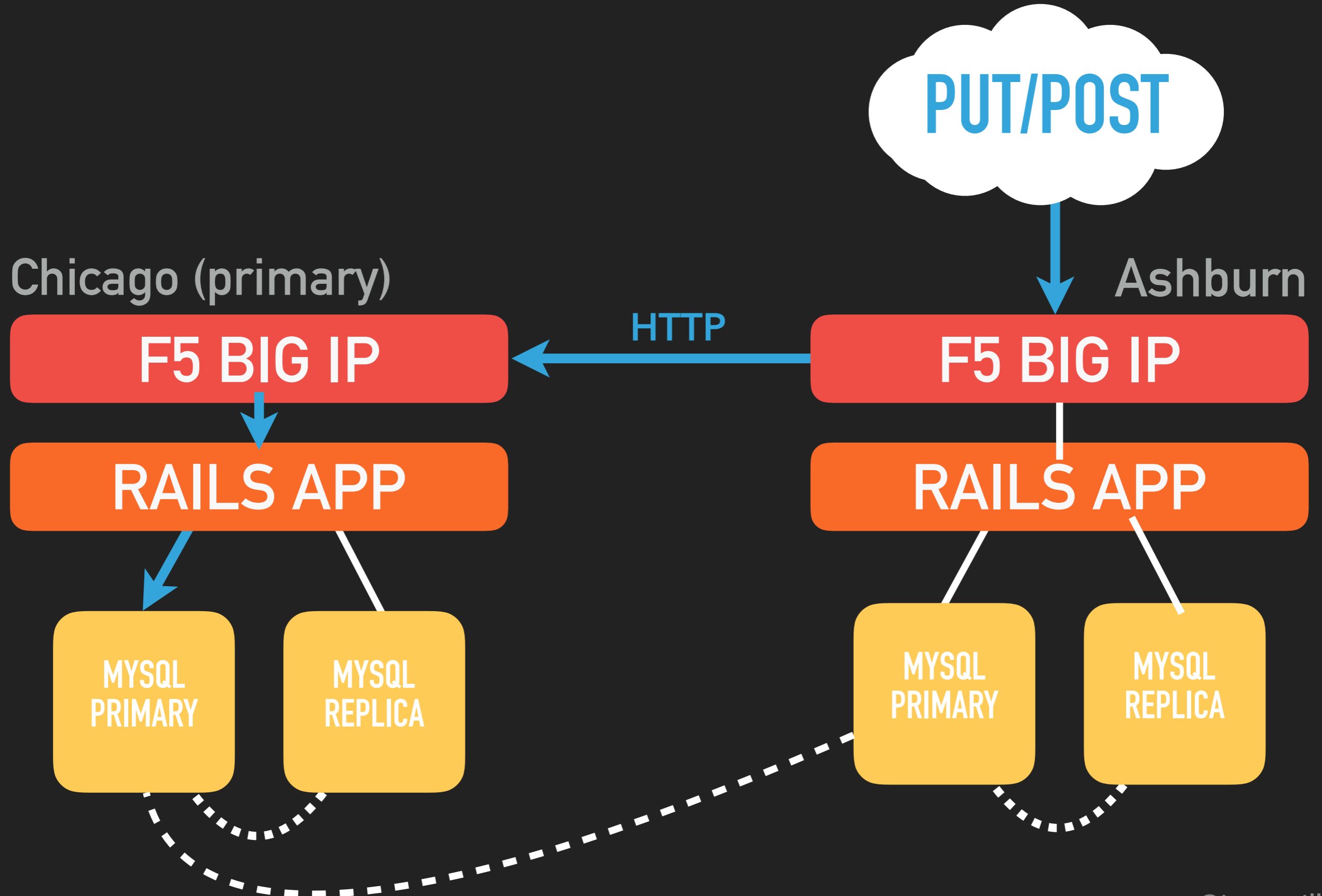
# MYSQL

Read local. Write where it's fast.

# MYSQL - READ LOCAL



# MYSQL - WRITE WHERE IT IS FAST





# CACHE

So long Memcached. Hello Redis.

# SWITCHTOWER

Test well and test often.

SSH AVAILABLE?

MYSQL RUNNING?

SERVER: DATABASE-01

SSH AVAILABLE?

MYSQL RUNNING?

DATABASE CLUSTER

SERVER: DATABASE-01

SSH AVAILABLE?

MYSQL RUNNING?

SERVER: DATABASE-02

SSH AVAILABLE?

MYSQL RUNNING?

# SWICHTOWER

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john@deploy-101: /u/failover\_scripts — ssh • ssh -C -oproxycommand=ssh -qC gateway-01.sc-chi.37signals.com nc -w 10 %h %p deploy-101

— john@staging-05: — ssh • ssh -C -oproxycommand=ssh -qC gateway-01.sc-chi.37signals.com nc -w 10 %h %p staging-05

```
john@deploy-101:/u/failover_scripts$ bc3/bin/preflight_bc3_staging_to_rw-ash
```

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# INTERMISSION

Turn downtime into a long request.

## INTERMISSION

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- ▶ Written in Lua.
- ▶ Uses OpenResty Nginx.
- ▶ HTTP interface with 3 endpoints:
  - ▶ enable
  - ▶ disable
  - ▶ status
- ▶ [github.com/basecamp/intermission](https://github.com/basecamp/intermission)

# MYSQL ROLE SWAP

(Nearly) Zero interruption mysql maintenance.

## MYSQL ROLE SWAP

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- ▶ Written in Ruby.
- ▶ Uses State Machine and Active Record.
- ▶ YAML configuration.
- ▶ Optional integration with intermission.
- ▶ Optional management of floating IPs.
- ▶ [github.com/basecamp/mysql\\_role\\_swap](https://github.com/basecamp/mysql_role_swap)



# BASECAMP FAILOVER

Putting the tools together for seamless failover.

## MYSQL ROLE SWAP

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- ▶ Switchtower pre-flight checks
- ▶ Disable crons and background jobs.
- ▶ Switchtower mid-flight checks to verify cron and jobs are dead.
- ▶ Enable Intermission to pause traffic.
- ▶ Use MySQL Role Swap to promote secondary DC to primary.
- ▶ Failover Redis instances by promoting secondary DC to primary.
- ▶ Publish DNS changes.
- ▶ Restart Rails instances.
- ▶ Disable Intermission to unpaue traffic.
- ▶ Enable crons and background jobs.
- ▶ Switchtower post-flight checks.

**QUESTIONS?**

# THANK YOU!

Twitter: @j\_m\_williams

Switchtower: [github.com/basecamp/vaporware](https://github.com/basecamp/vaporware)

Intermission: [github.com/basecamp/intermission](https://github.com/basecamp/intermission)

MySQL Role Swap: [github.com/basecamp/mysql\\_role\\_swap](https://github.com/basecamp/mysql_role_swap)