

How to Train your Jenkins?

- ... to Use Your Resources Effectively and Get More Value for Each Buck Spent on Resources

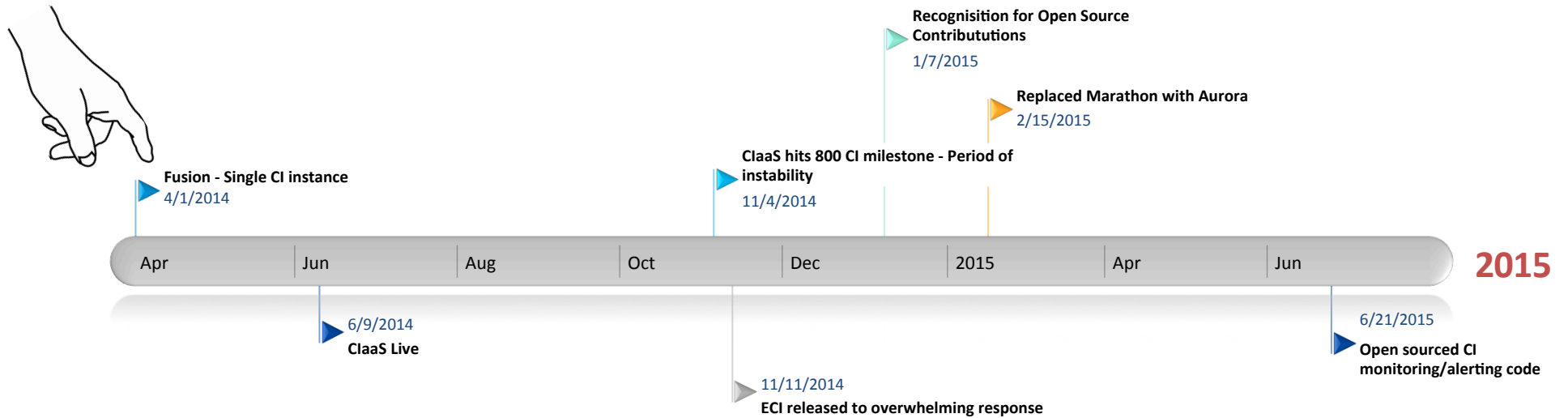
Soma Shekar Oruganti

- 08/ 20 / 2015

© 2015 PayPal Inc. All rights reserved. Confidential and proprietary.



CI Journey at PayPal



Background- CI at PayPal

- One Ginormous Jenkins Instance, customized for PayPal
- 40,000 runnable jobs
- 12,000 builds are run each day
- Java, Node, Python, and C++ stacks, Fortify and Freestyle jobs too
- Unit test and deploy flows
- One Jenkins master with a pool of a hundred Jenkins slaves
- Specialized “Monster Machine” stages build 40,000,000 lines of code in a half hour

Overloaded Jenkins



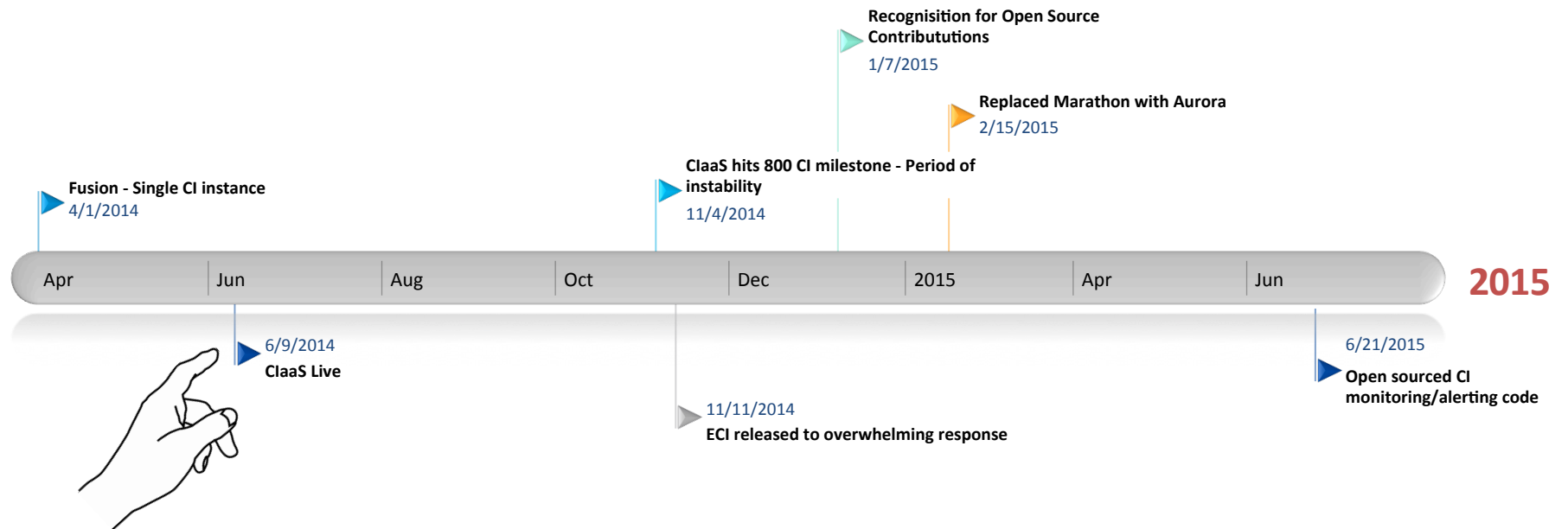
Background- CI

- Individual VMs running Jenkins for each Application
- 2500+ VMs in use
- Each Jenkins would have 2 executor on master to perform builds

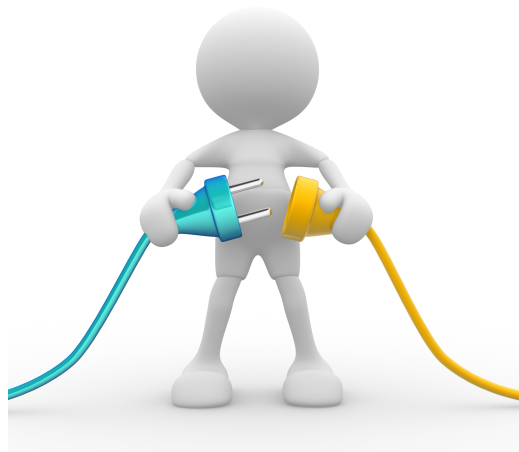
Dedicated Jenkins Instance Per VM



ClaaS Live



Build slaves on Demand - Jenkins Mesos Plugin



- Jenkins Mesos plugin community is active
- We have contributed many enhancements/patches to the plugin

Optimized Resource Utilization



10X Savings

Before:

~ 24,000 CPU's, 180 TB Disk, 54 TB RAM

After:

~2400 CPU's, 18 TB, 7.2 TB RAM

Recovery was slow without Mesos ...



Instant Recovery with Mesos...



Customers Felt It

Before:

“One common issue which blocks the CI (which blocks releases) is the Jenkins site becoming unavailable and you only get a to “Bad Gateway” message. When this bad gateway issue occurs all you can do is file a Jira ticket to bring it back up.”

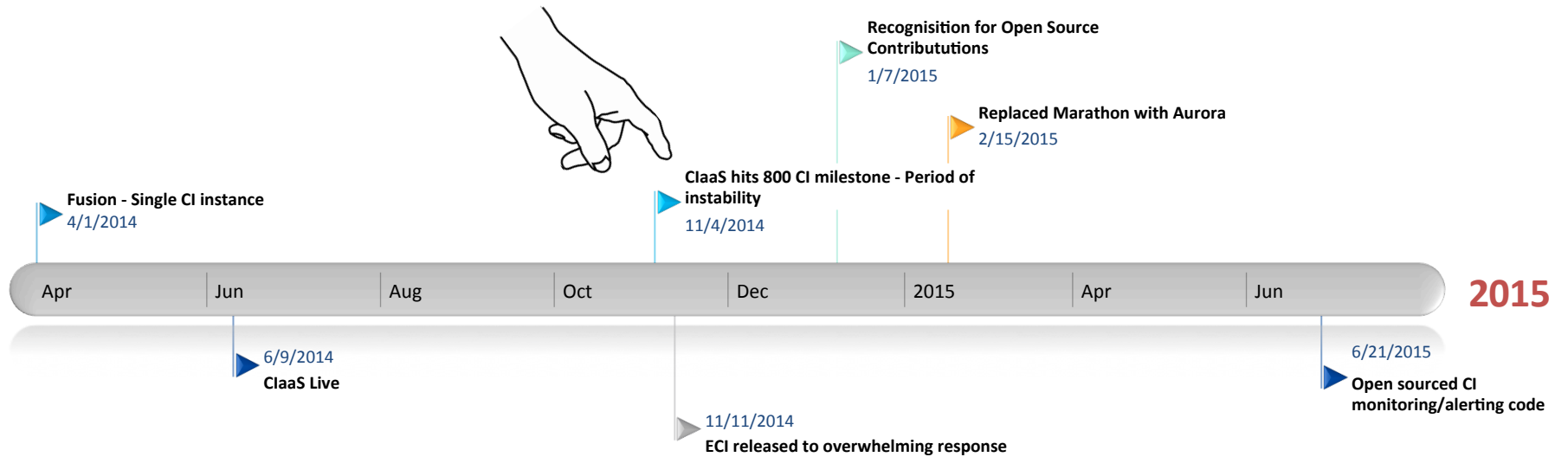
Tim Craig (Millennium)

After:

“I talked to the people who monitored the CI the last two weeks and they both said they did not recall of any issues of the CI going down. So it looks like you guys have fixed 502 errors issues.”

Tim Craig (Millennium)

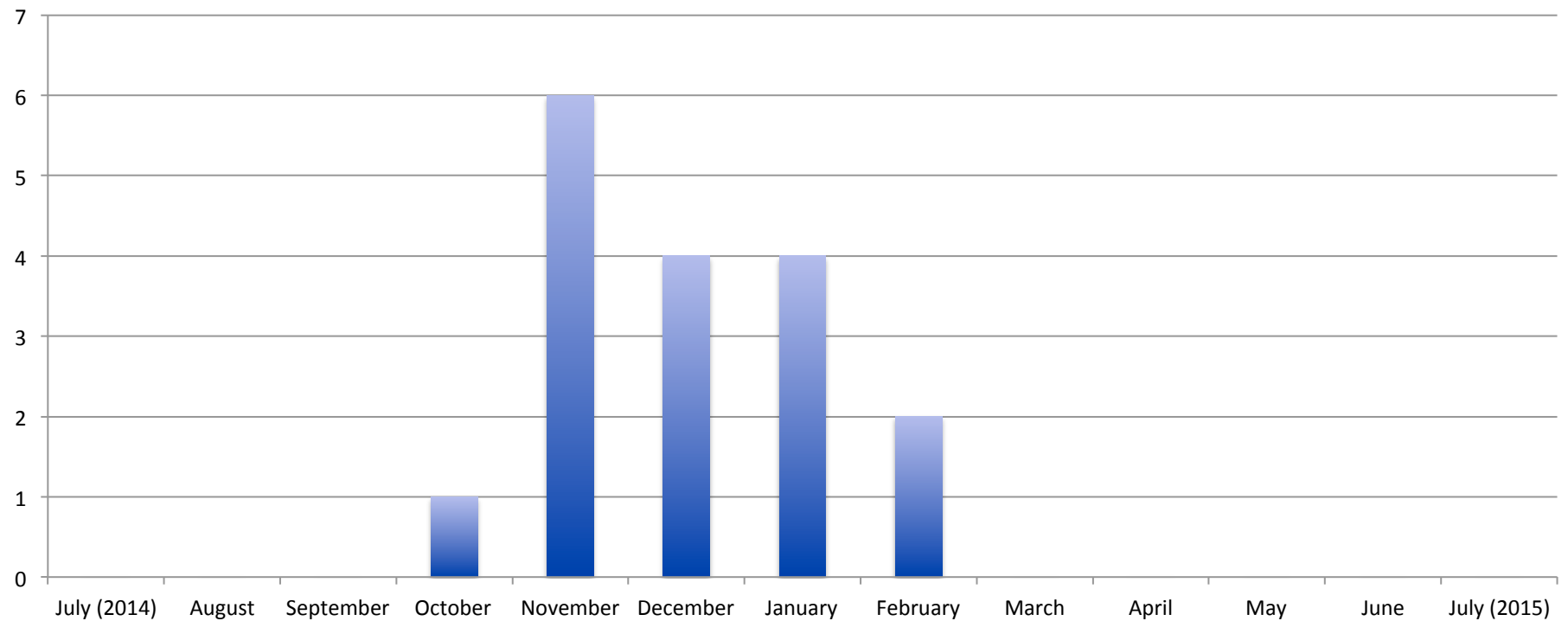
800 CI milestone



CI workload – too much for Marathon

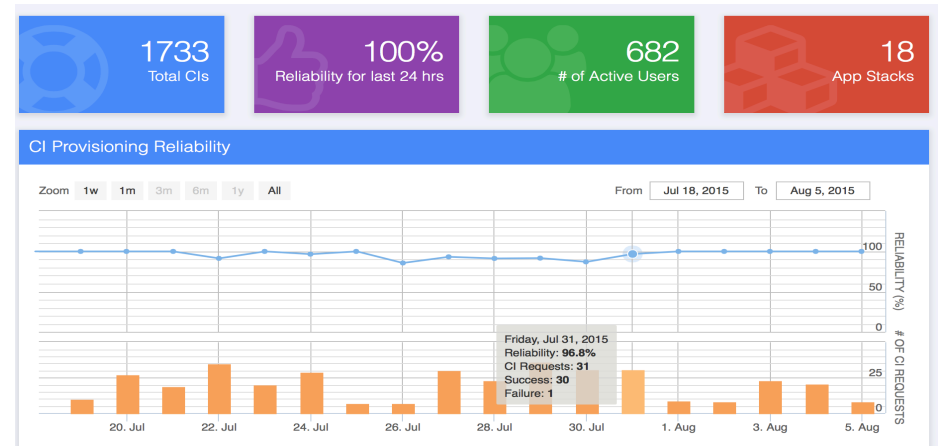


ClaaS Outages



A Step ahead of Customers

- Reporting/Alerting Dashboard
 - Data driven approach
 - One Step ahead of Customer
- Open Sourced Reporting/Alerting Plugin and Code.
- Email alerting



C3 ClaaS Monitoring Alert
CI Dash Monitoring
Sent: Friday, August 14, 2015 at 10:45 AM
To: Thakkallapally, Harish; Jolly, Gaurav; Narayanan, S. Sathya; S. Bhavani(AWF); and 8 more

Following CIs are unreachable or having some issues accessing. Please fix them.

Unreachable CIs in the system.

CI Name	Created Date	Last Update	Provision Status	HTTP status	Recommendation
xeon-country-expansion	Jun 06, 2015 06:15	Jul 19, 2015 07:55	180	503	Corrupted config.xml. Decommission
merchantsignunodeweb-ci-6866	Jul 30, 2015 11:19	Jul 30, 2015 11:27	180	503	Corrupted config.xml. Decommission

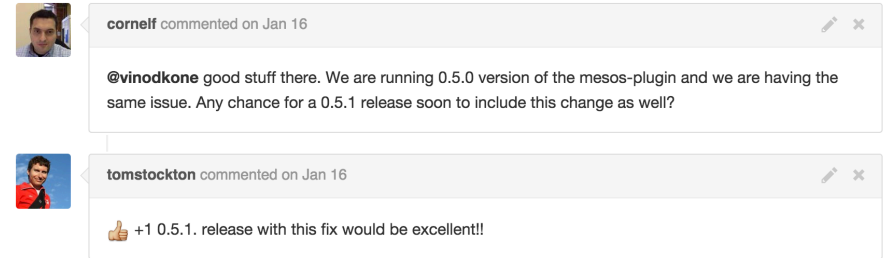
Build Hogging CIs

Framework Name	CPUs	Memory(MB)	Tasks	Registered Ago(Min)	Host Name
merchantsignunodeweb-ci-6866-ci-compute-3437.ccg21.dev.paypalcorp.com-1438280380-13839	0	0	0	75	ci-compute-3437.ccg21.dev.paypalcorp.com
xeon-country-expansion-ci-compute-3437.ccg21.dev.paypalcorp.com-1437317632-15491	0	0	0	104	ci-compute-3437.ccg21.dev.paypalcorp.com

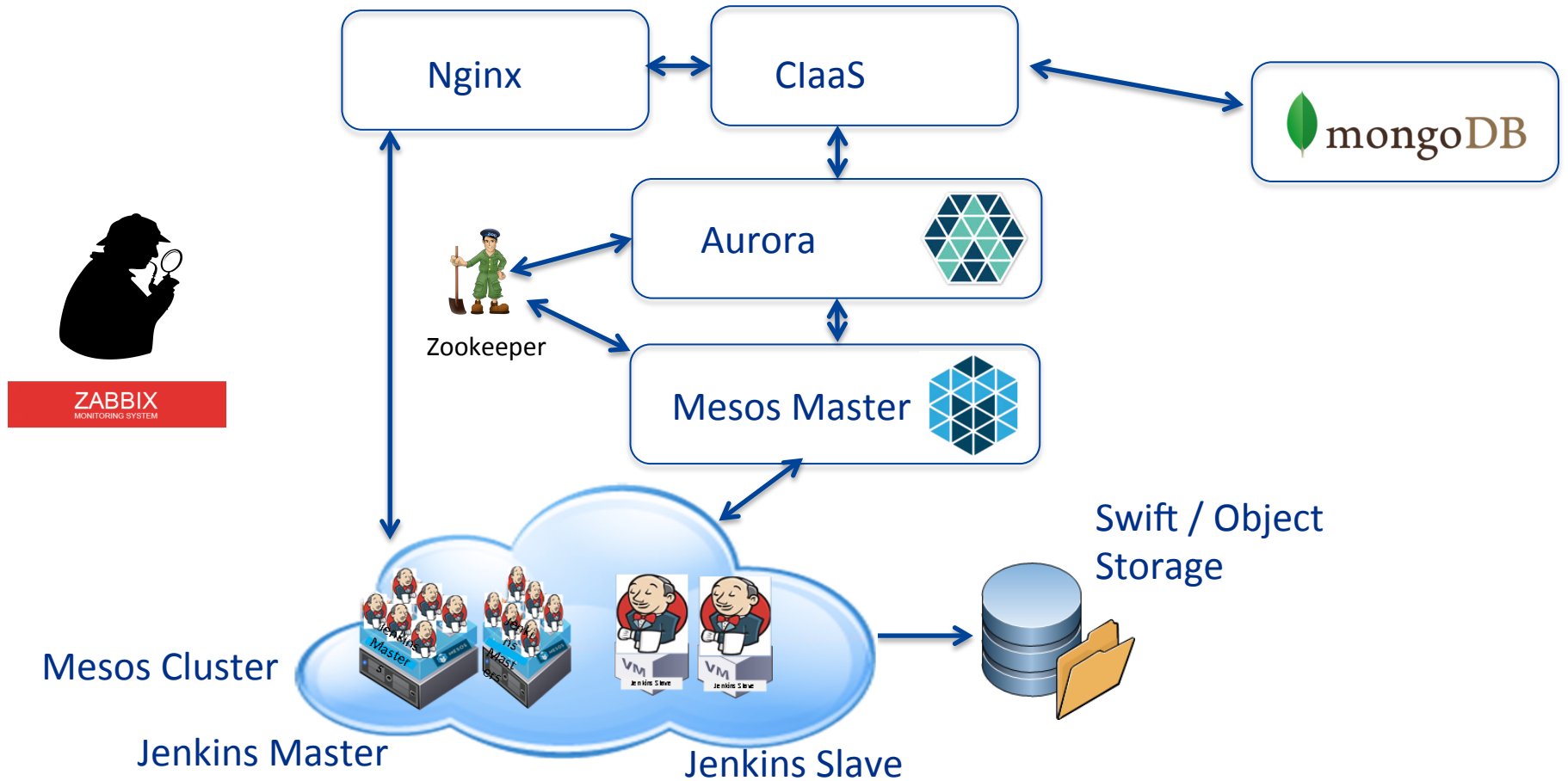
Thanks,
ClaaS(Continuous Integration as a Service)

We Never Give Up

- **~20 Open Source contributions**
 - Mani from ClaaS is a committer and led the last two releases of Mesos Jenkins Scheduler
- **Replace Marathon with Aurora**
 - Zero Outages and no customer impact.



Highly Available Setup

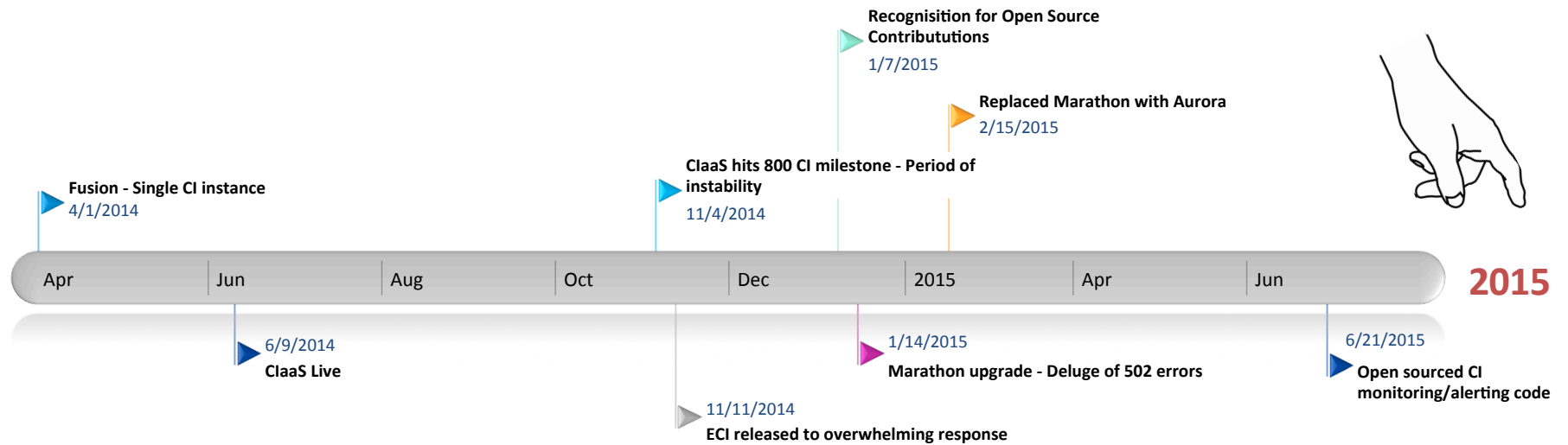


CD for Code and Config Management

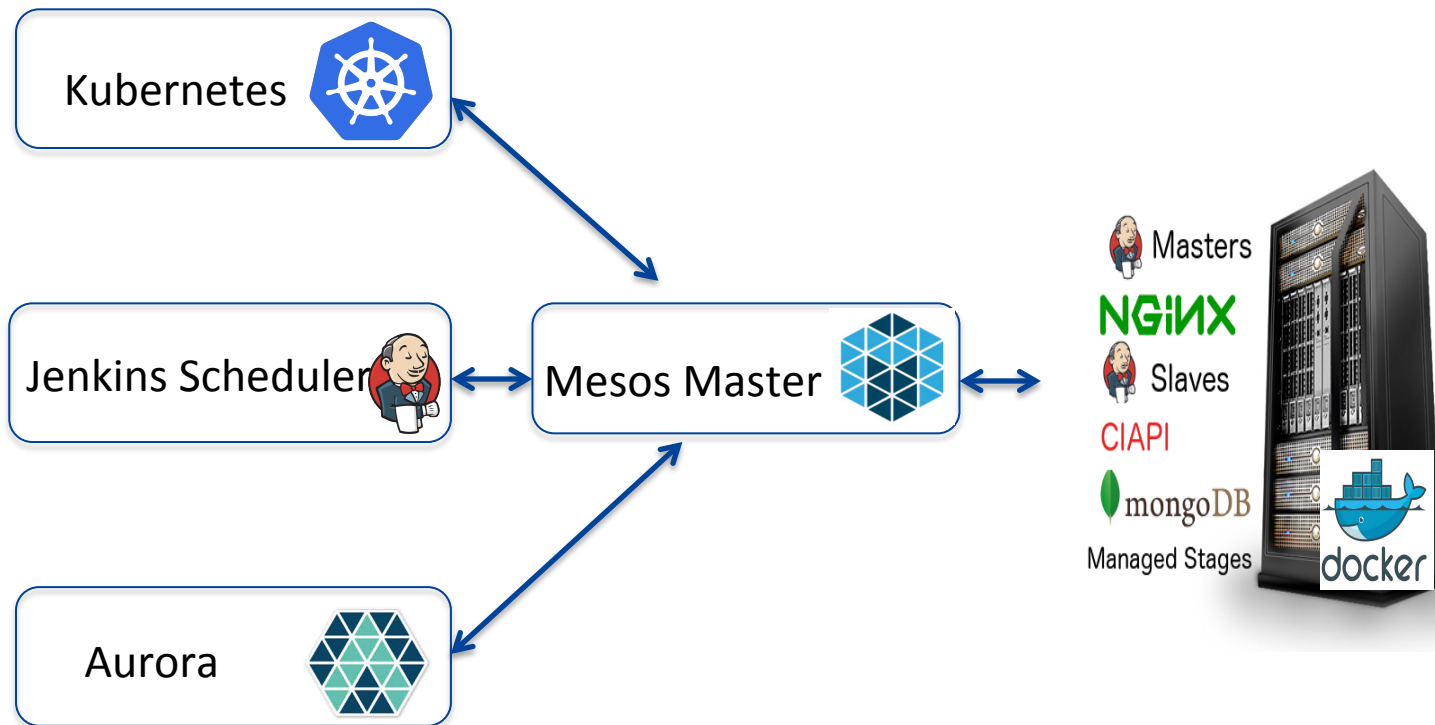
- **Ansible Based Configuration Management**
- **Ansible/Jenkins/GitHub for continuous deployment**



H2 2015 and Beyond



Under the Hood



DEMO