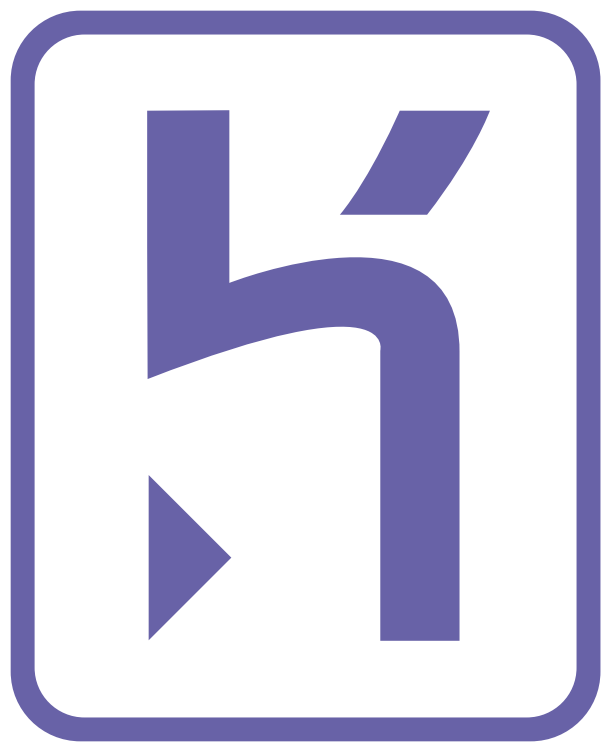


On Distributed Failures

(and handling them with Doozer)

Blake Mizerany

@bmizerany



heroku

PaaS

JOHN TRAVOLTA

SATURDAY NIGHT FEVER™

30TH ANNIVERSARY SPECIAL COLLECTOR'S EDITION



Platform

as a Service

a platform

you service.



“Don’t be
confused!”

- Steve Mizerany

We manage,
for you:

Ruby

Java

node.js

Clojure

1000s of
Servers

100,000s of
Apps

1e9s

Page Views

a month

SQL Database-as-a-Service

the largest and most reliable Postgres service in the world



Create Databases Instantly



Connect, Use and Develop



Scale and Grow



Sleep Well

A powerful, reliable, and durable open-source SQL-compliant database, [PostgreSQL](#) is the datastore of choice for serious applications. Now it is available in seconds with a [single click](#) . Never worry about servers. Never worry about config files. Never worry about patches. Simply focus on your data.

CIRUN ALL THE
THINGS!



Really.

Blog >

2011

2010

2009

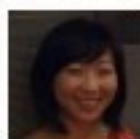
2008

2007

2006

[Change Log](#)[Developer Roadmap](#)[Developer Garage](#)

Developer Blog



Facebook and Heroku: an even easier way to get started

By Cat Lee – Today at 11:00am

We continue to make it even easier to get started building apps on Facebook Platform. We know that one of the most difficult things to getting started is setting up a place to host your app. As a result, we are starting to partner with some of the top cloud service providers to make it simpler for you to have your first app up and running in a few clicks -- all from within the [Dev App](#).

Today, we are happy to announce our partnership with [Heroku](#) as the first of these providers to be integrated into the Dev App. With Heroku, you can now start building from a sample app in your choice of languages, including PHP, Ruby, Node.js and Python at no cost.

Getting Started

Visit the [Dev App](#) and create a new app by clicking the **Create App** button on the upper-right corner. You are then prompted to enter a name for your app. Enter any app name (this can be easily modified later) and agree to the Facebook Terms.

New App

App Name:

Locale:

English (US) ▼

☒ I agree to the [Facebook Terms](#).

Please note that your app name cannot contain Facebook trademarks or have a name that can be confused with an app built by Facebook.

Continue

Cancel

After clicking **Continue** and completing the captcha, you will be taken to a page to edit basic settings for your app. Click on the **Get Started** button within the **Cloud Services** section, which now appears below the **Basic Info** section.



Many
Iterations

Many
Services

Evolution of a Distributed System

C3T

(Trademark Pending)

C3T

(Not Really)

In a very
particular order:

Communicate

Coordinate

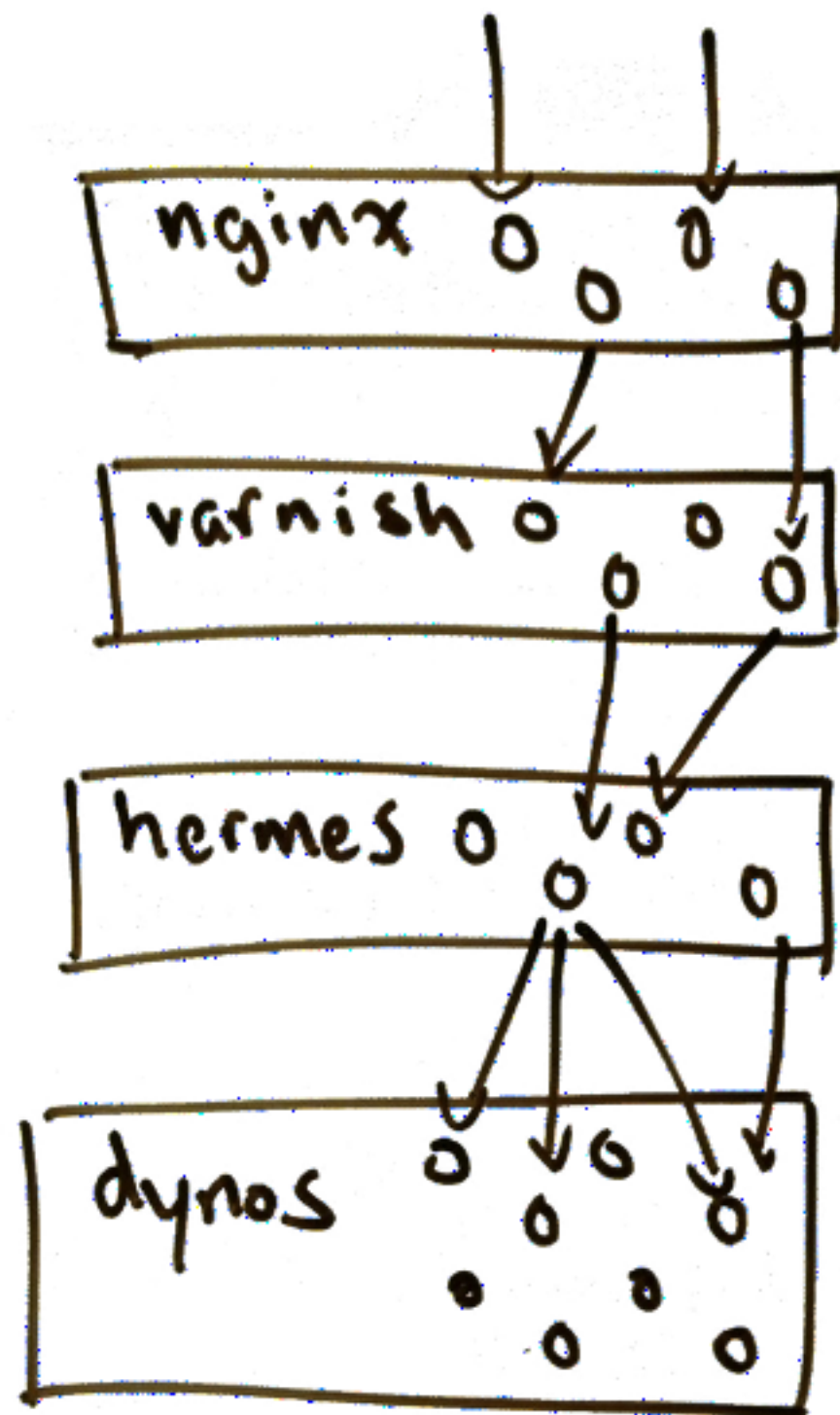
Consolidate

Tolerate

Communicate

(explained)

git



API

New Hermes?
Update Nginx.

New Dyno?

Update Hermes.



to start with

Broadcast

Coordinate

(explained)

State

of all the things

nothing
canonical

Wait; What?

each sees messages in a different order
if at all

Temp

#exchanges

Consistency

when A was up, what was B?

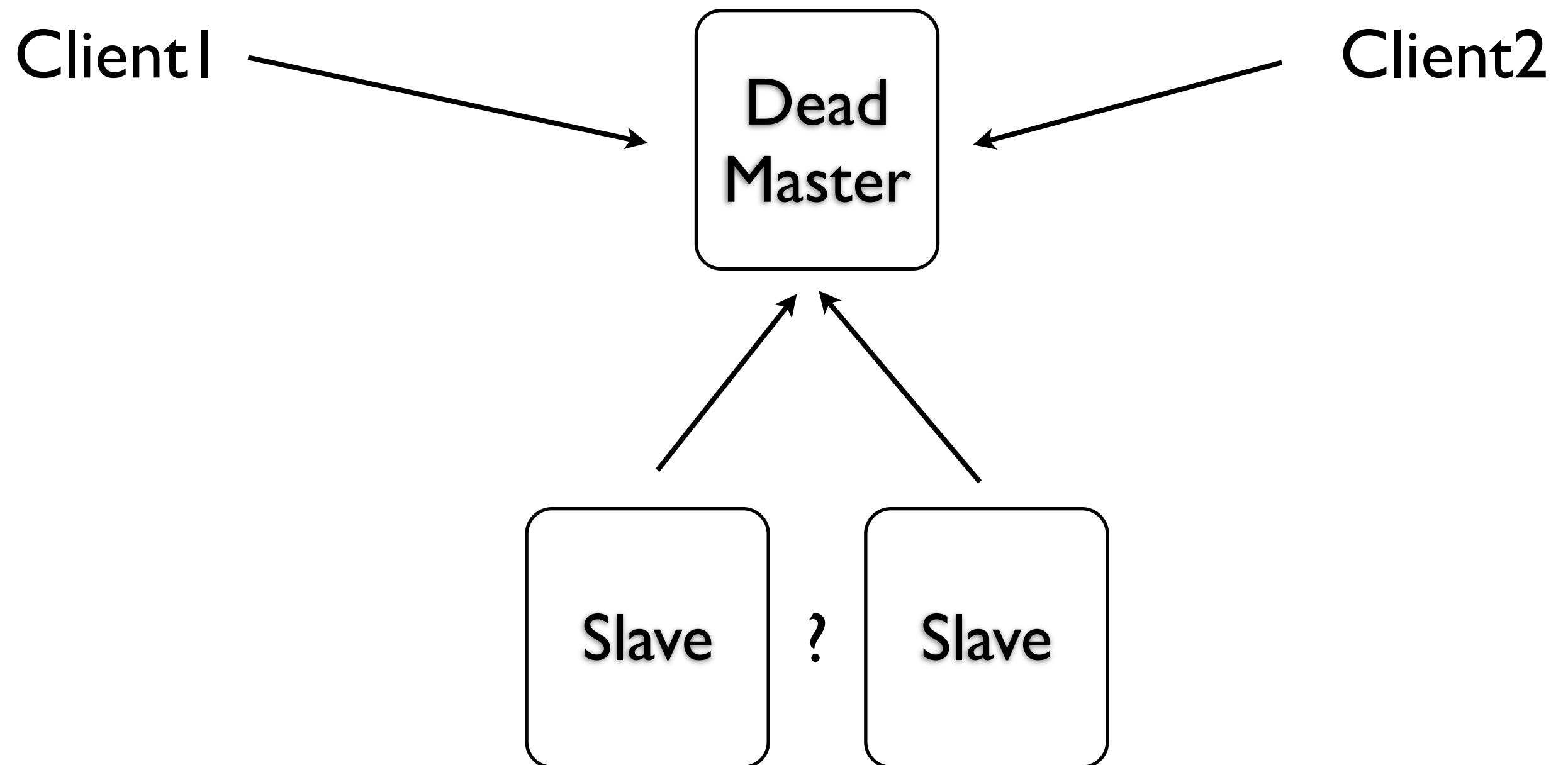
Consolidate

ACID

DB + Rabbit + Clients

Race-conditions

SPOF!





Consistency
+ High Yield

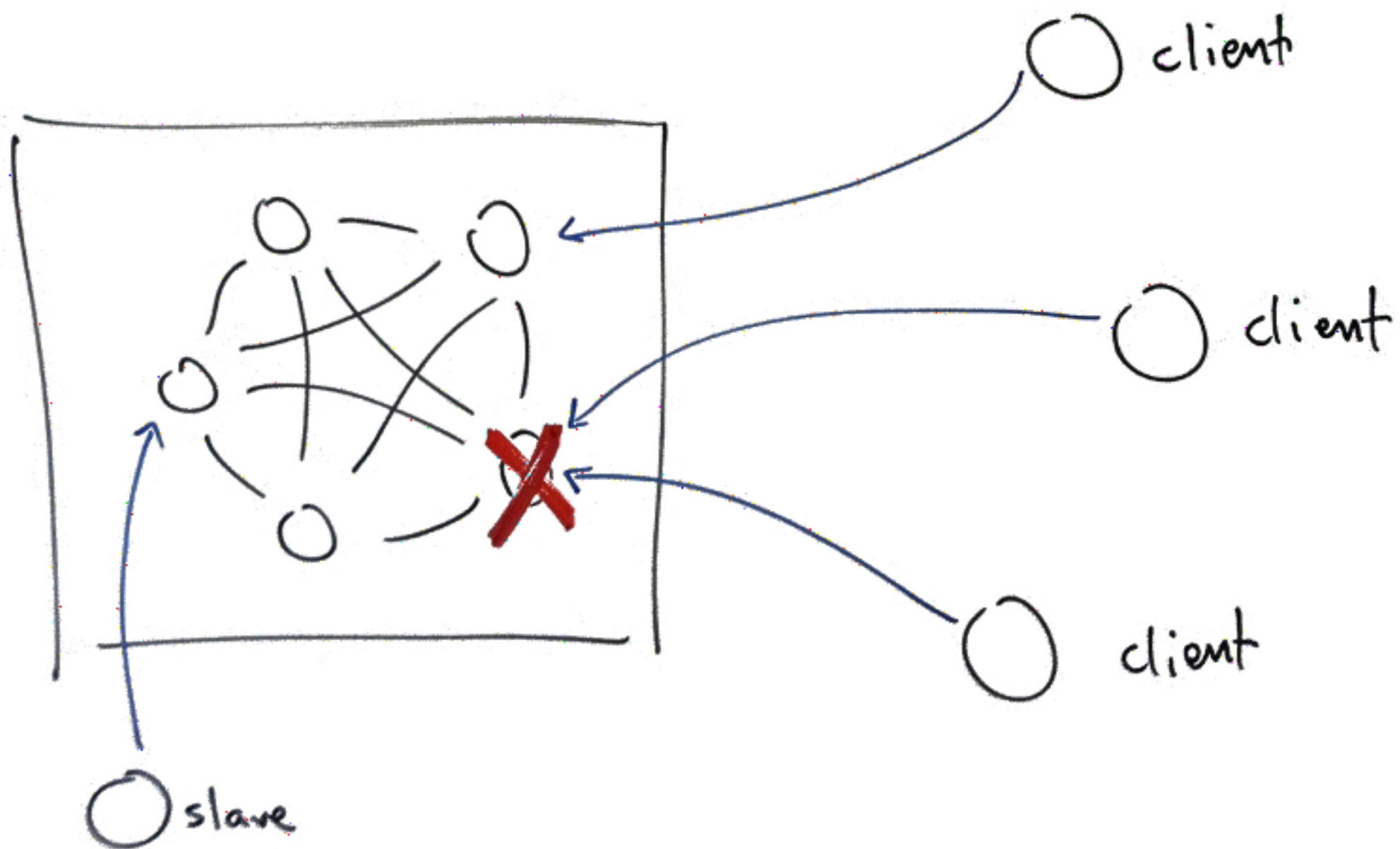
Tolerate



Paxos

Multi-master

Acts like a single process on a single machine.



Design

Use.

Design

Reliable.

Design

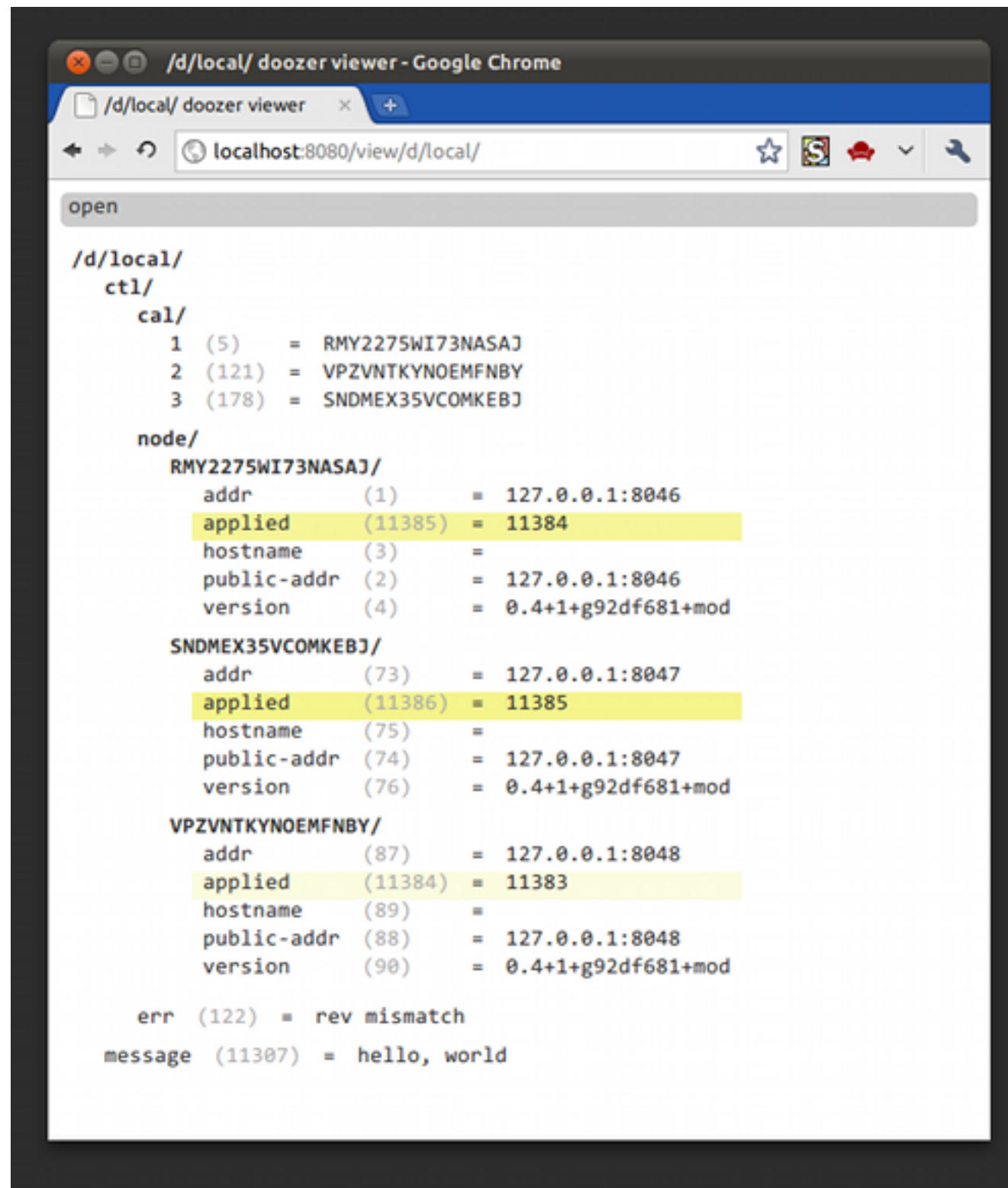
Highly focused on consensus.

Design

Painstakingly crafted the API

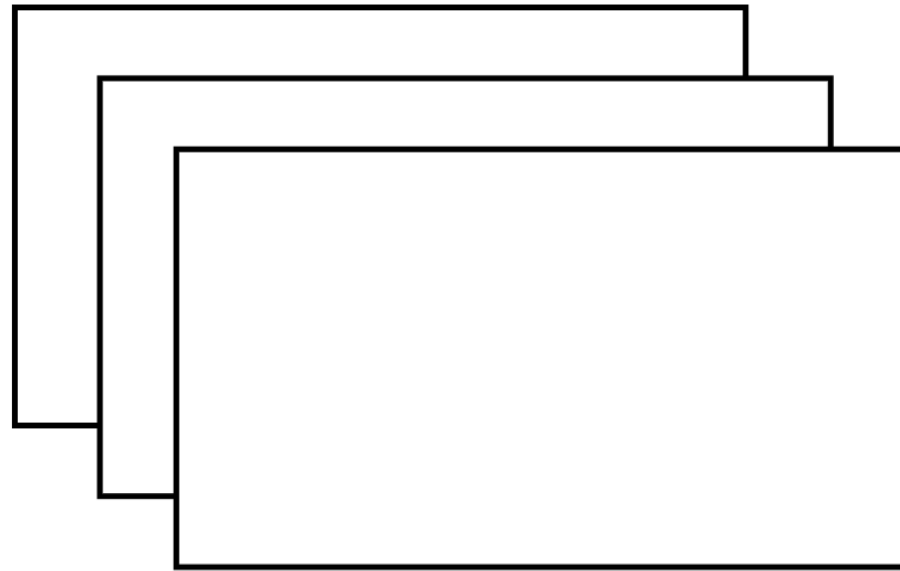
Data Store

Looks like Unix file system



Totally Ordered

Each member sees the same sequence.



Keeps Versions

Persistent Data Structure

Few Commands

(General / Orthogonal)

**GET, SET, DEL,
WAIT**

```
$ doozerd
```

```
...
```

```
$ printf world | doozer set /hello 0
```

```
71
```

```
$ doozer get /hello
```

```
world
```

```
$ printf WORLD | doozer set /hello 71  
123
```

```
$ doozer get /hello 71  
world
```

```
$ doozer get /hello  
WORLD
```

```
$ doozer get /hello 71  
world
```

Idempotent

(clients automatically retry commands when disconnected)

```
$ printf WORLD | doozer set /hello 0
```

71

```
$ printf WORLD | doozer set /hello 0
```

```
Error: REV_MISMATCH
```

```
$ printf WORLD | doozer set /hello 999
```

166

```
c, _ := doozer.Dial(uri)
data, r, _ := c.Get("/myapp.conf", nil)
update(data)
for {
    ev, _ := c.Wait("/myapp.conf", r+1)
    update(ev.Body)
    r = ev.Rev
}
```



```
func lock(c *doozer.Conn, p string) {
    r, _ := c.Rev()
    for {
        if _, e := c.Set(p, 0, ""); e == nil {
            return // obtained the lock
        }
        ev, _ := c.Wait(p, r+1)
        r = ev.Rev
    }
}

func unlock(c *doozer.Conn, p string, r uint64) {
    c.Del(p, r)
}
```

Operational Notes:

Crash-only

Self-hosted
config

Keeps tail of
history.

You don't lose events.

Asynchronous client-side persistence

<https://github.com/mmcgrana/gorg>

Future:

Speed

Client to monitor
Sessions / Locks

Links:

github.com/ha/doozerd

groups.google.com/group/doozer

Clients:

Go: github.com/ha/doozer

Ruby: github.com/bmizerany/fraggle-block

EM: github.com/ha/fraggle

Python: github.com/progrium/pydoozer

Scala: github.com/sclasen/flange

Running Heroku on Heroku

Noah Zoschke

10:30 AM Tomorrow

Thank You.