

Puppet

Plus

Parentheses

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WHAT'S THIS PUPPET THING?

DevOps, Infrastructure As Code,
<Insert Buzzword/Catchphrase here>

open-source tool for sysadmins

Puppet DSL

a language for describing system
state

BABY'S FIRST MANIFEST

```
1  node 'myserver.domain.org' {
2      file { '/tmp/hello.txt':
3          ensure => present,
4          content => 'Hello from Puppet'
5      }
6  }
```

```
1  package { "openssh-server":
2    ensure => installed
3  }
4
5  service { "sshd":
6    ensure  => "running",
7    enable  => "true",
8    require => Package["openssh-server"]
9  }
10
11 file { "/etc/ssh/sshd_config":
12   mode    => 600,
13   owner   => "root",
14   group   => "root",
15   require => Package["openssh-server"],
16   notify  => Service["sshd"] # Restart ssh server if being updated
17 }
```

PUPPET

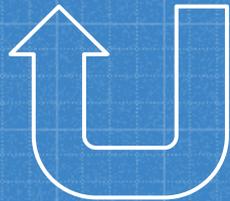
- puppet **agent** on each machine
- puppet **master** contains manifests
- agents “check-in” (agent run) periodically



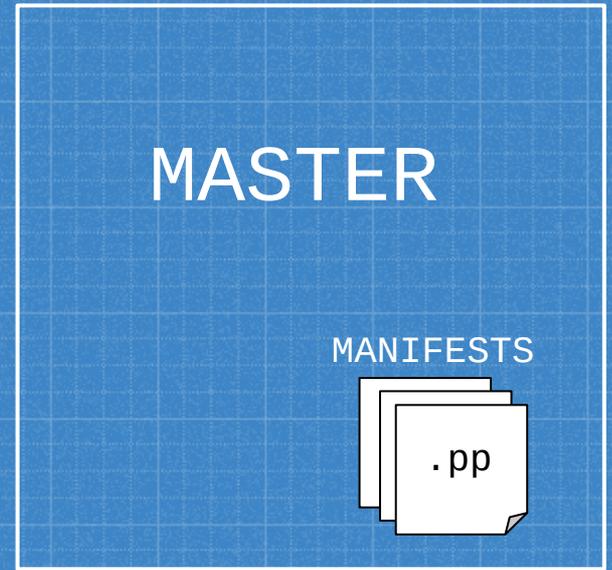
1. system info (facts)



2. your state
should be X
(catalog)



3. okay, let's
change things!



PUPPET IMPLEMENTATION

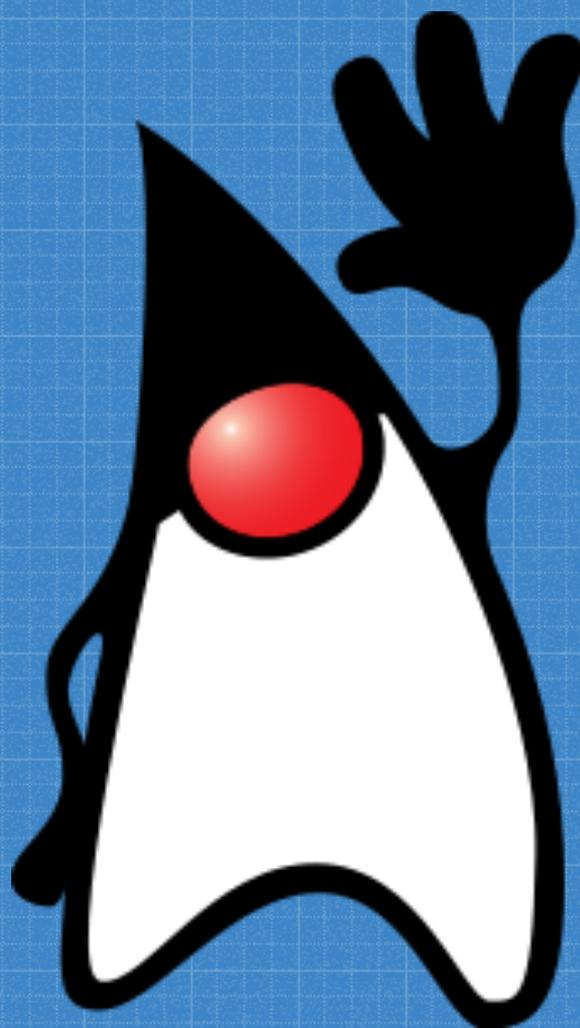
- Ruby
- monolithic codebase
 - agent + master
 - shared code
- Rack
- Apache + Passenger

IMPLEMENTATION ISSUES

- difficult to change
- client/server/both?
- MRI + GIL
- Passenger
 - concurrency via multiple processes
 - no shared state / coordination

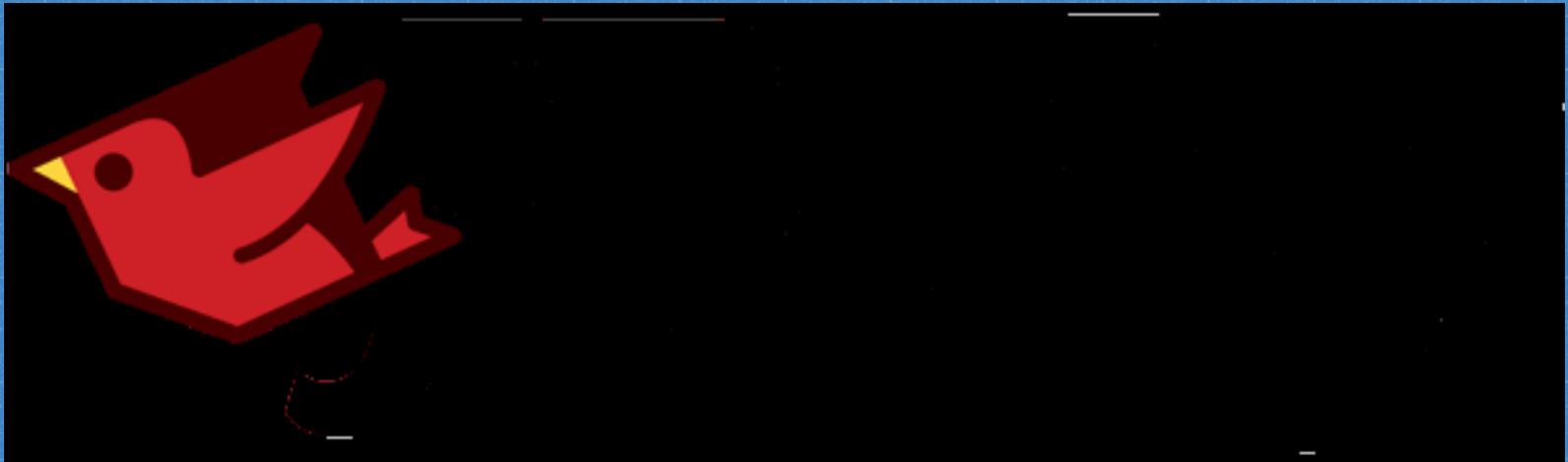
LET'S BUILD A BETTER TECHNOLOGY STACK

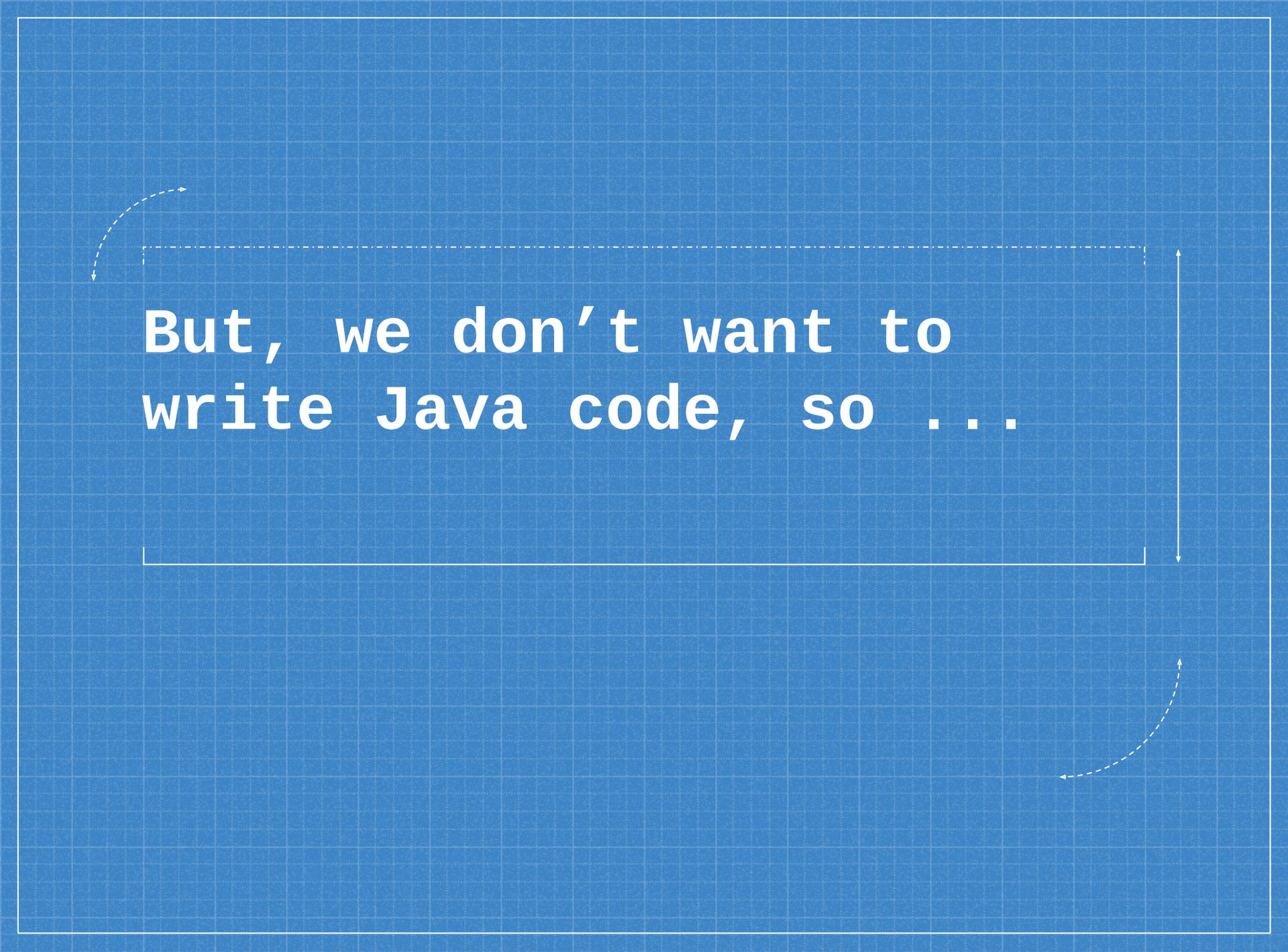
- complete re-write?
 - too difficult
 - some functionality needed on both client + server
 - moving target
- less drastic
 - no more MRI on the server-side
 - ... but still Ruby
 - battle-tested server platform
 - avoid re-inventing the wheel



JAVA VIRTUAL MACHINE

- stable
- fast
- free
- portable
- mature
- concurrent
- libraries for everything





**But, we don't want to
write Java code, so ...**



clojure

Finally, Lisp!

CLOJURE

- runs on the JVM
- tolerates OOP
 - seamless Java inter-op
- pure functions, immutable values
- excellent built-ins for concurrency + state management
- PuppetDB

CLOJURE @ PUPPET LABS, CIRCA 2013

- PuppetDB
- Puppet master -> Clojure
- moar!
- common needs:
 - web server
 - configurability
 - logging
 - lifecycle
 - deployment, packaging

APPLICATION FRAMEWORK OPTIONS

- Clojure
 - Component
 - others

- Java
 - OSGi
 - Classloader issues?
 - JBoss
 - heavyweight



**So we wrote
our own.**

Of course we did!

TRAPPERKEEPER

- open-source Clojure application framework
- code modularity, re-use
- s/Component/Service
- Service:
 - protocol (set of functions signatures)
 - lifecycle
 - state
 - dependencies on other services

```
1  (defprotocol HelloProtocol
2    (hello [_ name]))
3
4  (defservice hello-service
5    HelloProtocol
6    (hello [_ name]
7      (str "Howdy, " name)))
8
9  (defservice another-service
10   [[:HelloService hello]]
11   (start [_ context]
12     (let [foo (hello "FOSDEM")]
13       (assoc context :message foo))))
```

A VERY QUICK BRAG

Trending Clojure repositories on GitHub this week

All Showcases **Trending** Stars

Repositories

Developers

Trending: **this week** ▾

All languages

Unknown languages

Clojure

Haskell

Java

Objective-C

Ruby

Rust

Shell

☰ Other: **Languages** ▾

1  **puppetlabs / trapperkeeper** Clojure
A services framework for Clojure / JVM applications
★ 289 🍴 8 built by 

★ Star

2  **swannodette / om** Clojure
ClojureScript interface to Facebook's React
★ 40 🍴 4 built by 

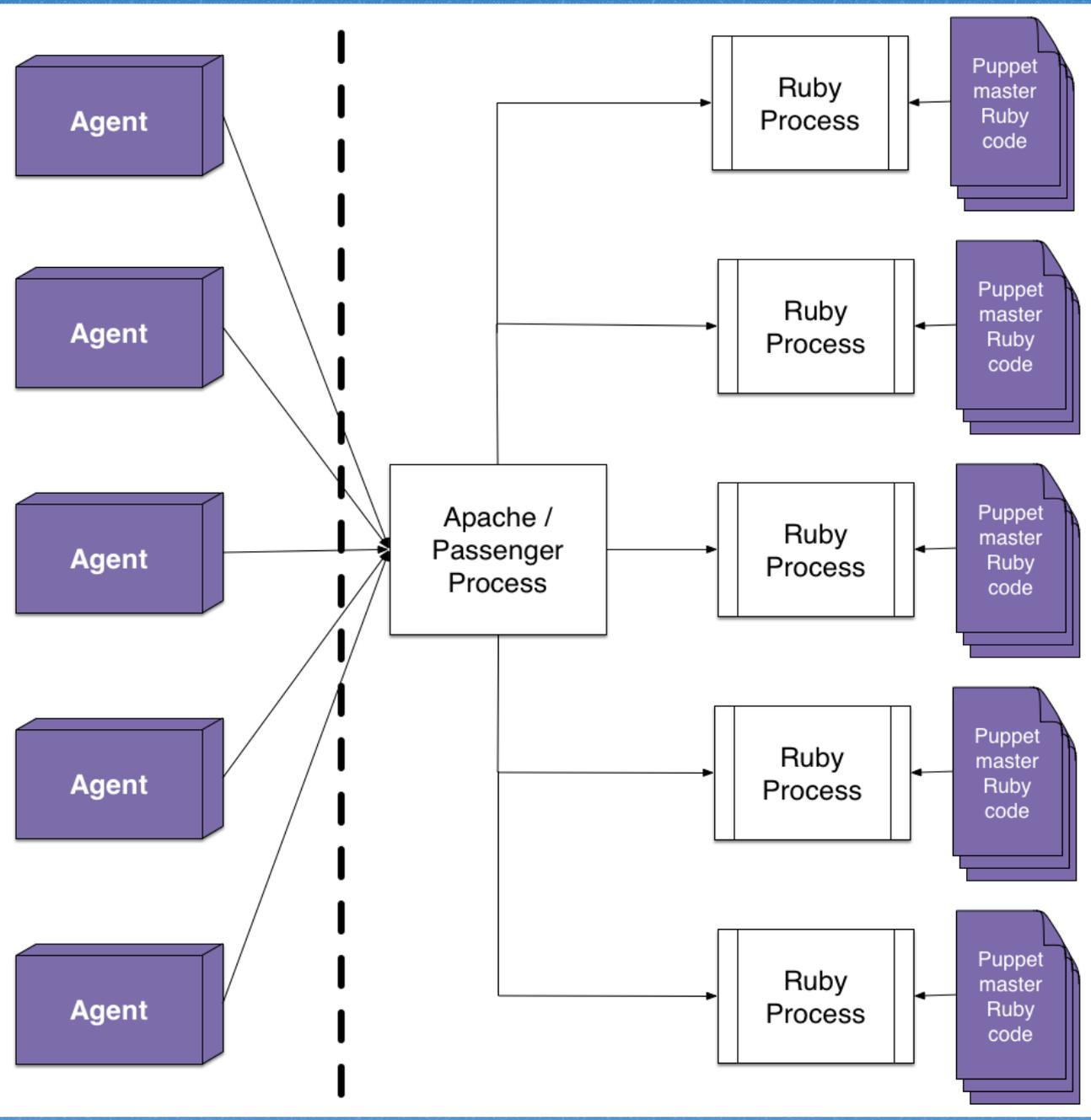
★ Star

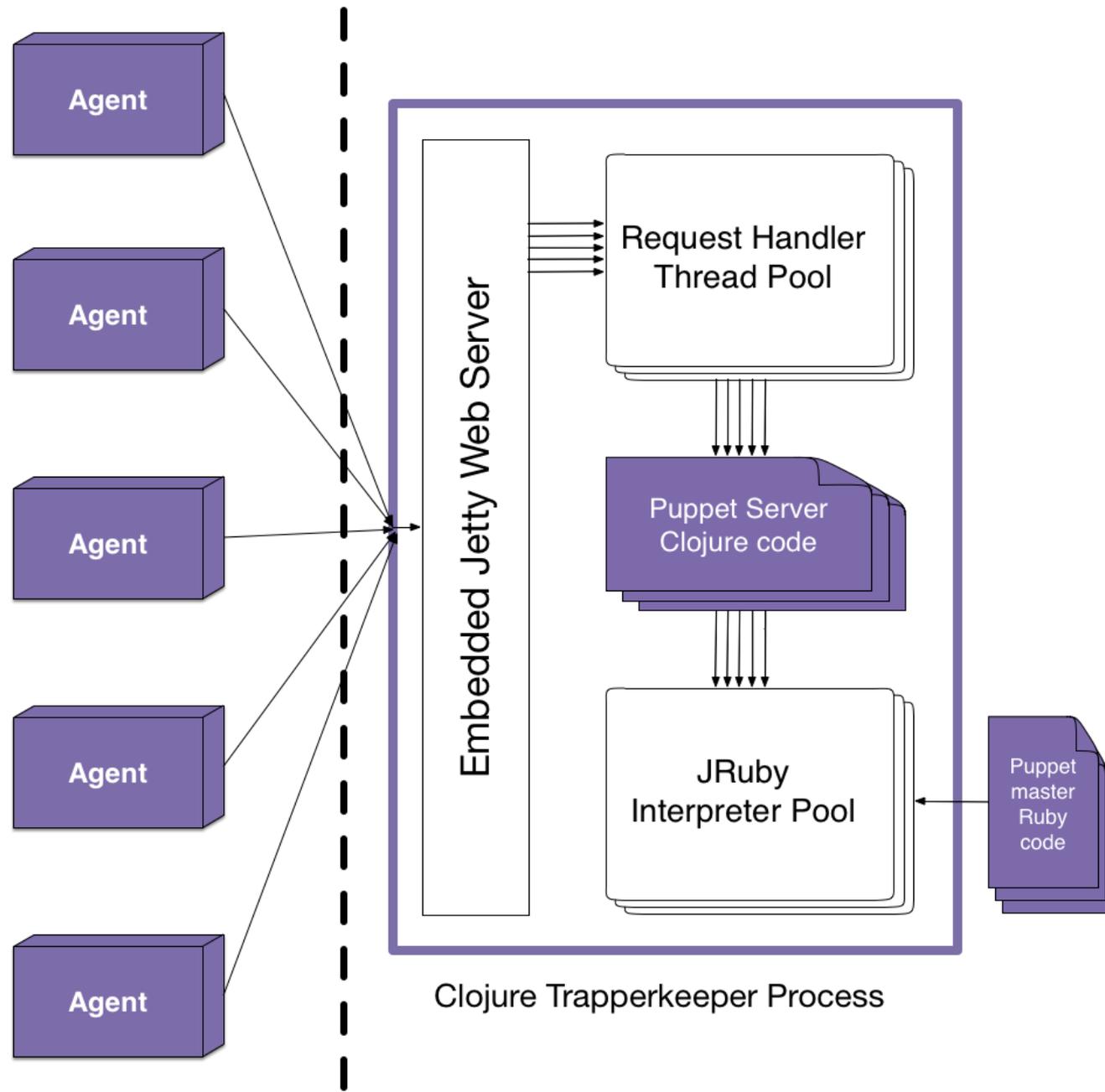
```
(let [puppet-server ...
```



jetty://

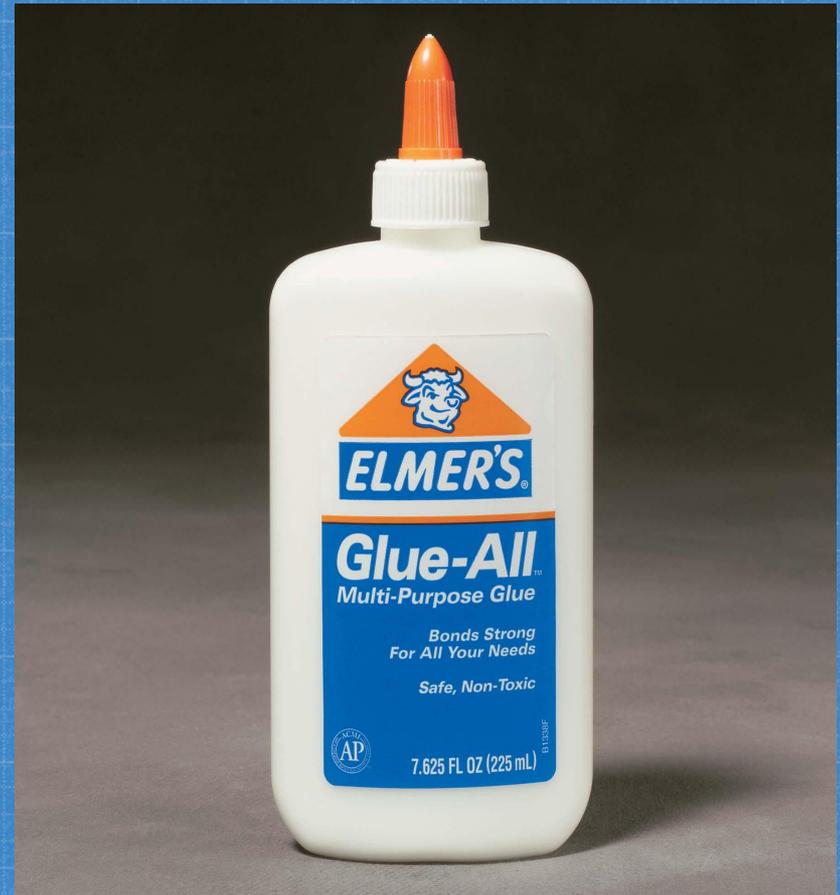






CLOSURE

- glue
- Certificate Authority
- initialization
- HTTP
- future:
incremental re-write
- new features



OUR EXPERIENCE WITH CLOJURE

- good
 - simplicity, immutability
 - developers love it
 - REPL-driven development, “reloaded” workflow
 - easy to hire for
 - surprisingly easy to learn
 - active community
- less than good
 - slow startup time
 - long stacktraces
 - not as easy as Ruby

TRAPPERKEEPER

We got the Big Idea right.

We've gotten lots of mileage standardized solutions for a handful of incidental concerns.

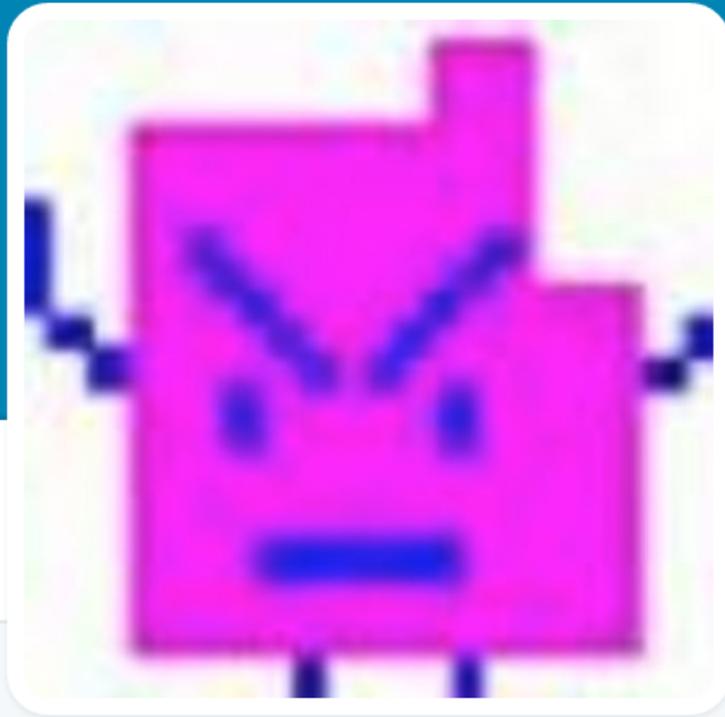
Let us know how you're using it!

Jetty

- embedded!
- fast, reliable
- lots of knobs
- right choice
- pure-Clojure web server would be nice

Puppet <3 JRuby

- biggest risk
- huge success!
- the JRuby devs have been awesome



chris price

@cprice404 FOLLOWS YOU

Expert password changer. I **really** love Ruby.

questions?

Kevin Corcoran
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ON GITHUB

- [puppetlabs/puppet-server](#)
- [puppetlabs/trapperkeeper](#)

CREDITS

- [Busy Icons](#) by Olly Holovchenko
- [Portland photo](#) by Amateria1121 via Wikipedia