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
node 'myserver.domain.org' {
  file { '/tmp/hello.txt':
    ensure => present,
    content => 'Hello from Puppet'
  }
}
package { "openssh-server":
    ensure => installed
}

service { "sshd":
    ensure => "running",
    enable => "true",
    require => Package["openssh-server"]
}

file { "/etc/ssh/sshd_config":
    mode => 600,
    owner => "root",
    group => "root",
    require => Package["openssh-server"],
    notify => Service["sshd"] # Restart ssh server if being updated
}
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 ...
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
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
(defprotocol HelloProtocol
  (hello [_ name]))

(defservice hello-service
  HelloProtocol
  (hello [_ name]
    (str "Howdy, " name)))

(defservice another-service
  [[[:HelloService hello]]
   (start [_ context]
     (let [foo (hello "FOSDEM")]
       (assoc context :message foo)))))
A VERY QUICK BRAG

Trending Clojure repositories on GitHub this week

<table>
<thead>
<tr>
<th>Repositories</th>
<th>Developers</th>
<th>Trending: this week</th>
</tr>
</thead>
<tbody>
<tr>
<td>puppetlabs/trapperkeeper</td>
<td>Clojure</td>
<td>289 stars</td>
</tr>
<tr>
<td>swannodette/om</td>
<td>Clojure</td>
<td>40 stars</td>
</tr>
</tbody>
</table>

Languages:
- All languages
- Unknown languages
- Clojure
- Haskell
- Java
- Objective-C
- Ruby
- Rust
- Shell
- Other: Languages
(let [puppet-server ...}
CLOJURE

- 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
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?

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ON GITHUB

• puppetlabs/puppet-server
• puppetlabs/trapperkeeeeper

CREDITS

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