

Velociraptor

an open-source app deployment system by YouGov

YouGov

- Top 25 research company
- Based in London
- Global offices
- Gathers beliefs and behaviors from millions
- Data + expertise → What the World Thinks™
- Heavily invested in Python

motivation

- repeatable deployment
- developer driven
- language agnostic
- Python
- PaaS

eggmonster

- Setuptools multi-installed packages
- Managed by central config server
- YAML configs with inherited properties
- Violated repeatability
 - one app might update another's packages
- No GUI
- Fixed ports and manual routing

Consideration

- Juju
- ActiveState Stackato
 - Based on CloudFoundry and Docker

Inspiration

- Heroku!
- 12-Factor Methodology
 - <http://12factor.net>
- Buildpacks
- Docker (Ixc)

Implementation

- Django
 - GUI
 - Postgres database models
 - TastyPie API
- MongoDB
 - Images
 - Slugs
- Celery workers
- Supervisor to host processes (procs)
- Command-line Interface

Features

- Zero downtime deployment
- Pluggable Balancers
- Managed Config
- Repeatable Deployments
 - Uptests!

Platform

- Stacks / Images
- Buildpacks
- Apps
- Squads
- Ingredients (config)
- Builds
- Releases
- Swarms

Stacks

- Runtime environment
- Akin to Heroku stacks
- Linux images
 - base
 - provisioning script
- Images built through GUI

Buildpacks

- Inspired by Heroku
- Industry standard for building apps
- Simple protocol (detect, compile, release)
- Supports many languages and techniques

Apps

- **Repository (Git or Mercurial)**
- **Relevant buildpack (autodetection)**
- **Relevant stack**

Squads

- Pool of hosts
- Commodity
- Identically provisioned
- Colocated

Config Ingredients

- Re-usable Application Config
- YAML

Builds

- Buildpack output
- Freezes dependencies
- Slug without config
- Combine with config to create a Release (slug)

Swarms

- Primary target for Velociraptor
- Logical combination of
 - a Process
 - within an App
 - at a Tag (designates build)
 - with Config (ingredients + direct)
 - targeting a Squad
 - routed in a Balancer

Balancers

- Internet-facing hosts
- Route traffic to procs in Pools
- Supports:
 - Nginx
 - Varnish
 - Stingray
- Pluggable, extensible

Uptests

- **Sanity check**
- **Arbitrary executable**
- **Guard routing until proc validated**

Demo

Getting Started

- walkthrough
 - Vagrant + Virtualbox
 - Mercurial
- test suite
 - py.test

Production Deployment

- Create hosts with supervisord and proc_publisher.
- Create a virtualenv for bootstrapping (similar to development model).
- Configure and provision production databases.
- Use bootstrap instance to build/deploy a production instance of Velociraptor.

Alternatives

- ActiveState Stackato (<http://www.activestate.com/stackato>)
- Google Kubernetes (<http://kubernetes.io>)
- Ansible Tower (<http://www.ansible.com/home>)
- Gilliam (<http://gilliam.github.io/>)
- Tsuru (<http://docs.tsuru.io/en/latest/>)
- openroku (<https://github.com/openruko>)

Questions?

Why not Docker?

- Docker is opinionated about its process management role.
- Conflicts with use of supervisord.
- <https://github.com/docker/docker/issues/503>

Advanced Features

- Shell in application context.
- Volume mounts.

References

- Repository <https://bitbucket.org/yougov/velociraptor>