



TAMING A DINOSAUR WITH JAVASCRIPT AND DOCKER

Linux Users' Group of Davis
Dennis Stevense







GNU GRUB version 0.97 (638K lower / 1045952K upper memory)

Gentoo Linux 2.6.36-r5

Use the ↑ and ↓ keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the
commands before booting, or 'c' for a command-line.

gentoo linux™



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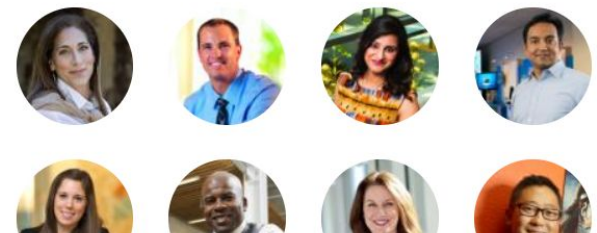
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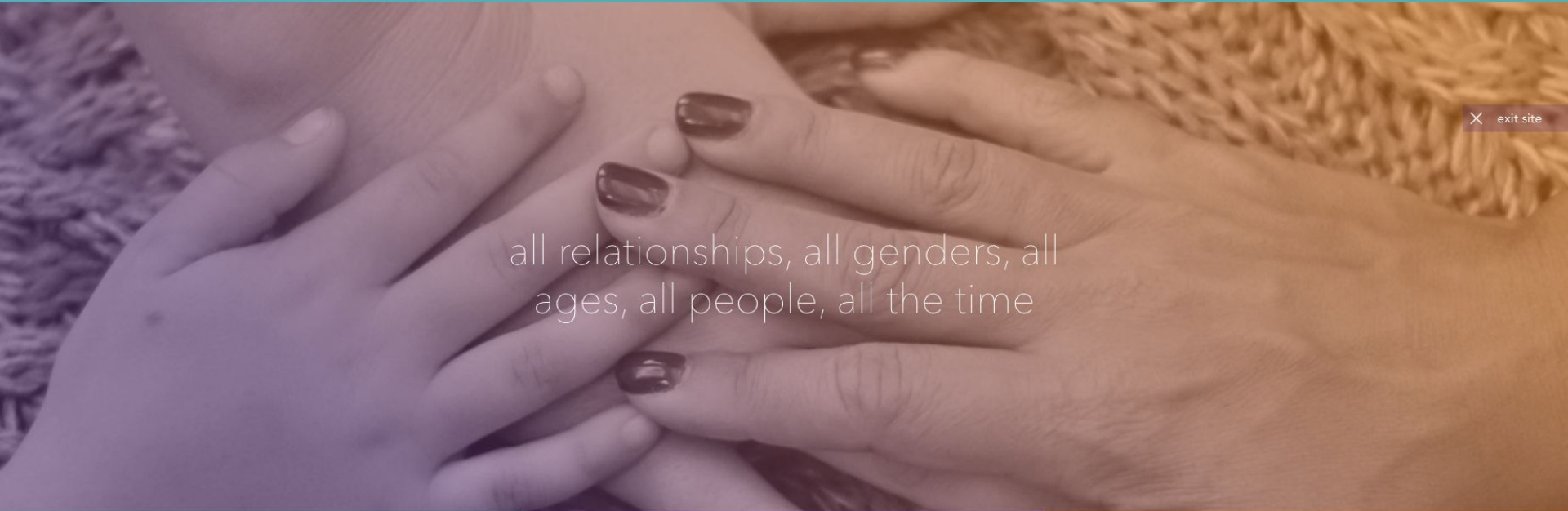
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ENCHAMBERED

LIVE ESCAPE ROOM ADVENTURE



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ABOUT US

What we do

- We empower communication and connect communities
 - “5-phase process”
 - “Standard Model,” our own Drupal 6 flavor/distribution
- We host about 200 sites
- We update all sites monthly as part of our SLA

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ABOUT US

Our hosting stack

- “LEMP stack”
 - CentOS
 - Varnish
 - NGINX
 - PHP-FPM
 - MySQL (Percona)
- Drupal 6



EQ3 Furniture



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THE PROBLEM

Taming a Drupal 6 codebase

https://www.youtube.com/watch?v=_dcojg8MFPo

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THE PROBLEM

Digital Deployment “Standard Model”

- Our Drupal 6 flavor/distribution
 - Drupal 6 released in 2008
 - Drupal 6 EOL in 2016
 - Only minimal unit tests
- Used to run about 200 sites
 - All sites updated monthly as part of our SLA
 - Each site has a unique theme

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THE PROBLEM

Updating 200 sites from Drupal 6 to 8

- Commitment to quality and client confidence
- Digital Deployment-specific features
 - Functional regression testing
- Site-specific themes
 - Visual regression testing

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THE PROBLEM

Testing requirements

- Fast test resets
 - Because test independence
- Consistent screenshots
 - Because visual regression testing is key
- Framework and stack agnostic
 - Because we're upgrading the framework and stack
- Continuous integration
 - Because humans

A futuristic cityscape at night, featuring numerous tall, illuminated skyscrapers. The sky is dark blue with a large, glowing planet or moon in the background, and a faint nebula or galaxy visible. The city lights are reflected in the water in the foreground.

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OUR SOLUTION

JavaScript and Docker to the rescue

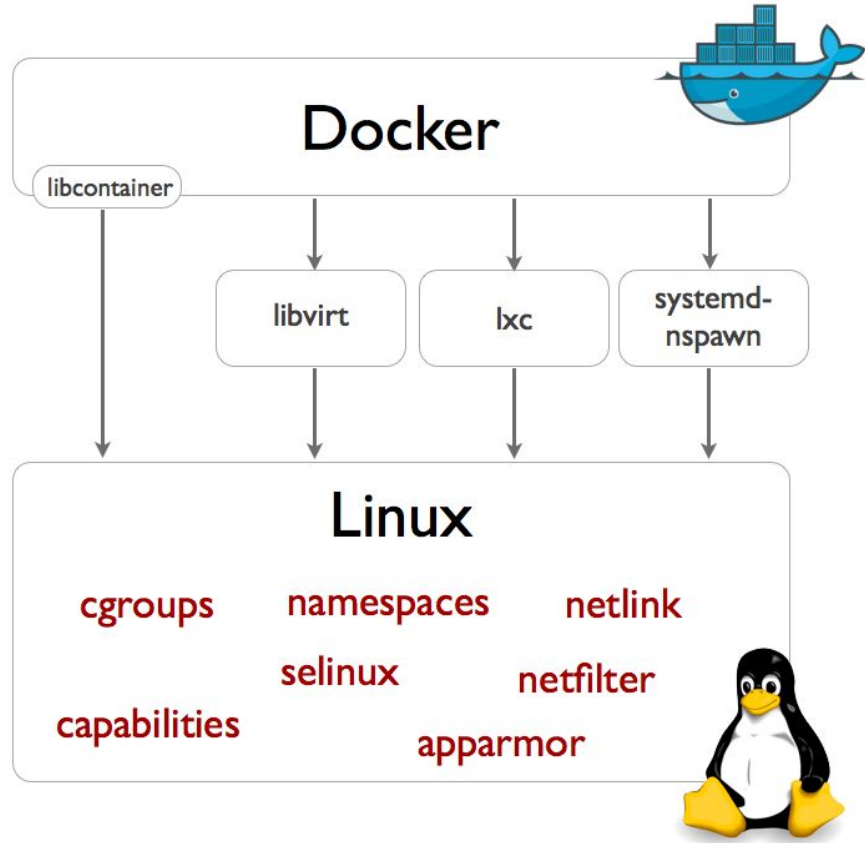
<https://www.youtube.com/watch?v=AHAVptS87rs>

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Operating-system-level virtualization

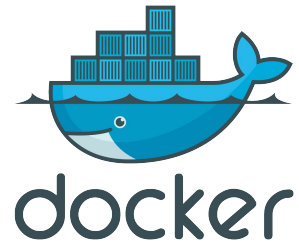
- Virtualize without running a separate kernel
- File system isolation
- Copy-on-write
- System resource limits
- Network isolation
- ...

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Docker

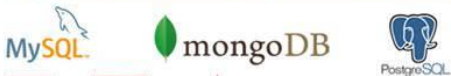
- Docker **container**
 - Light-weight equivalent of a virtual machine
- Docker **image**
 - File system snapshot to start new containers
 - Built from a **Dockerfile**
 - Pulled from Docker Hub



Service Providers



Official Repositories



Operating Systems



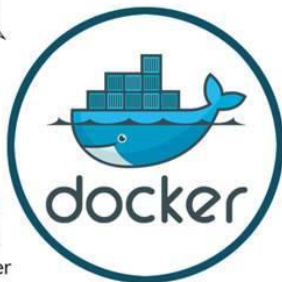
Configuration Management



Big Data



Service Discovery



Orchestration



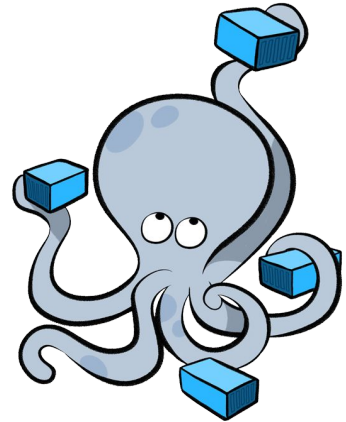
System Integrators



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Docker Compose

- Define multi-container Docker application
 - `docker-compose.yml`



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OUR SOLUTION

Fast test resets

- Build Docker images for all the things
 - Site files
 - MySQL w/ site database preloaded
 - NGINX/PHP-FPM
- Run with Docker Compose
- Re-create Docker containers for every test

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Dockerfile

```
1 #
2 # Builds an image containing Nginx similar to our Lightcrest app servers.
3 #
4
5 FROM alpine:3.4
6
7 RUN apk add --update curl build-base pcre pcre-dev zlib zlib-dev openssl openssl-dev && \
8     cd /root && \
9     curl -L http://nginx.org/download/nginx-1.8.0.tar.gz | tar -xz && \
10    cd nginx-* && \
11    ./configure \
12        --prefix=/etc/nginx \
13        --sbin-path=/usr/sbin/nginx \
14        --conf-path=/etc/nginx/nginx.conf \
15        --pid-path=/var/run/nginx.pid \
16        --error-log-path=/var/log/nginx/error.log \
17        --http-log-path=/var/log/nginx/access.log && \
18    make && \
19    make install && \
20    cd .. && \
21    rm -rf nginx-* && \
22    apk del curl build-base pcre-dev zlib-dev openssl-dev && \
23    rm -rf /var/cache/apk/*
24
25 RUN ln -sf /dev/stdout /var/log/nginx/access.log && \
26     ln -sf /dev/stderr /var/log/nginx/error.log
27
28 COPY nginx.conf /etc/nginx/
29
30 EXPOSE 80 81
31
32 CMD ["nginx", "-g", "daemon off;"]
33
```

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docker-compose.yml

```
1 version: '2'
2
3 services:
4   # This image has the site data in /var/data, and we create a data-only
5   # container from it that we can throw away to reset quickly.
6   data:
7     image: $DATA_IMAGE
8     volumes:
9       - /var/data/files
10      - /var/data/modules
11      - /var/data/themes
12   # This image has MySQL with the site database pre-loaded, so we can reset
13   # quickly by re-creating the container.
14   db:
15     image: $DB_IMAGE
16   php:
17     image: 597943232345.dkr.ecr.us-west-2.amazonaws.com/model/php:lightcrest-20161115
18     environment:
19       - XHPROF_ENABLE
20     volumes:
21       - ./:/var/www:ro
22       - ./docker/sites-default:/var/www/sites/default:ro
23     volumes_from:
24       - data
25     links:
26       - db
27   nginx:
28     image: 597943232345.dkr.ecr.us-west-2.amazonaws.com/model/nginx:lightcrest-20161115
29     volumes:
30       - ./:/var/www:ro
31       - ./docker/sites-default:/var/www/sites/default:ro
32     volumes_from:
33       - data
34     links:
```

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OUR SOLUTION

Consistent screenshots

- Selenium Docker images
 - <https://hub.docker.com/r/selenium/>
 - Includes Selenium Server
 - Includes browser
 - Consistent font rendering, form fields, etc.

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OUR SOLUTION

Framework and stack agnostic

- Node.js / JavaScript
- Mocha test framework
 - `$ npm test`
- Control arbitrary Docker containers
 - `child_process`
 - `stream`
- Selenium
 - `selenium-webdriver`

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OUR SOLUTION

Continuous integration

- **CircleCI** automatically tests subset of sites every time we push to **GitHub**

0 (14.45)

Add Containers +

- ✓ has none for robust-webform (4652ms)
- ✓ has none for classes-library (8301ms)
- ✓ has none for embed-images (4511ms)
- ✓ has none for headings-waterfall (2385ms)
- ✓ has none for accordions (2900ms)
- ✓ has none for photo-gallery (3155ms)
- ✓ has none for file-attachments (2314ms)
- ✓ has none for various-html-elements (2403ms)
- ✓ has none for directory (3102ms)
- ✓ has none for search-results (2995ms)

haleycorina

post editing

- ✓ lets me create a new post (30376ms)
- ✓ lets me do other stuff (8026ms)

visual regression

- ✓ has none for homepage (11090ms)

ccahn

post editing

- ✓ lets me create a new post (24052ms)
- ✓ lets me do other stuff (6704ms)

visual regression

- ✓ has none for homepage (8873ms)
- ✓ has none for ca-state-resources (3317ms)

rceb

post editing

- ✓ lets me create a new post (29091ms)
- ✓ lets me do other stuff (8740ms)

visual regression

- ✓ has none for homepage (10327ms)
- ✓ has none for transparency-and-public-information (2949ms)
- ✓ has none for performance (2704ms)
- ✓ has none for purchase-service-data (2974ms)

35 passing (11m)

TEARDOWN

Collect test metadata

00:05

Collect artifacts

00:29

Disable SSH



LOG OUT

HTTP-based microservice for taking screenshots of sites using Selenium. — Edit

6 commits 1 branch 0 releases 1 contributor MIT

Branch: master New pull request Create new file Upload files Find file Clone or download

Table of commit history with columns for file name, commit message, and time ago.

README.md

camera

This is a simple webservice for taking screenshots of sites using a real browser using Selenium. It's meant to be a building block for setting up your own visual regression testing. Features:

- Automatically restarts the browser when necessary for basic error recovery.
Takes screenshots by hiding scrollbars, scaling images consistently using nearest neighbor, and taking into account browser chrome/UI dimensions.
Attempts to resize the browser window height to fit the webpage.

Currently it's provided as a Docker image that depends on the Selenium Docker image, but in the future we'd like to extract some of the browser control logic into a node package so it can more easily be incorporated in existing JavaScript-based test suites.

Getting started

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```
# https://docs.docker.com/engine/installation/  
# https://docs.docker.com/compose/install/  
git clone https://github.com/digitaldeployment/camera.git  
cd camera/  
docker-compose up -d  
curl "http://localhost:3000/capture?url=http://www.lugod.org/" > screenshot.png
```

dennis@digitaldeployment.com
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