

Learning as We Go

Decomposing Dev Environments with Lando

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CDL Tech-X condensed version of a Code4Lib post-conference workshop

<https://git.io/JqLaG>



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Decomposition: “Bringing Order to Chaos”

“When designing a complex software system, it is essential to **decompose it into smaller and smaller parts**, each of which we may then refine independently...

...to understand any given level of a system, we need only comprehend a few parts (rather than all parts) at once.”

-- Grady Booch, *Object-Oriented Analysis and Design 2nd Edition*, pg 14

Dev Environment Chaos

Wiki page of detailed instructions,
Was working at time of writing

Vagrant

Docker

Docker-Compose

Lando



"Good luck, kid"

Wiki page of steps hastily written
from memory, as yet untested

Docker: containers are handy



- Docker is a collection of products that work together to deliver software in packages called **containers**
- Containers allow us to decompose a development environment into the parts we require
 - A Database
 - A Job Queue
 - A Search Index
 - An Application server

Docker is both awesome, and awful

Awesome

- it gives you the building blocks for a development environment
- it can run on modest hardware

Awful

- the commands required to do useful things with it are complicated
- getting details right is hard, and requires deep knowledge of the system

The Peril of Cathedrals

- “Perfect” may not be attainable
- Searching for perfection has a cost
- Docker can be used to build cathedrals
- We will not be building cathedrals
- We will be building dev environments



Docker Cathedrals

- You *can* use the same docker image...
 - in a development environment
 - in staging
 - in prod
- We will not be building production-ready containers
- Please do not try to use Lando in production
- If you want this, Lando is probably the wrong tool for you, but there are options



What's the point?

- Wanting a container you can run in production and in development is *scope creep*
- We're here to build development environments
- We should get to work

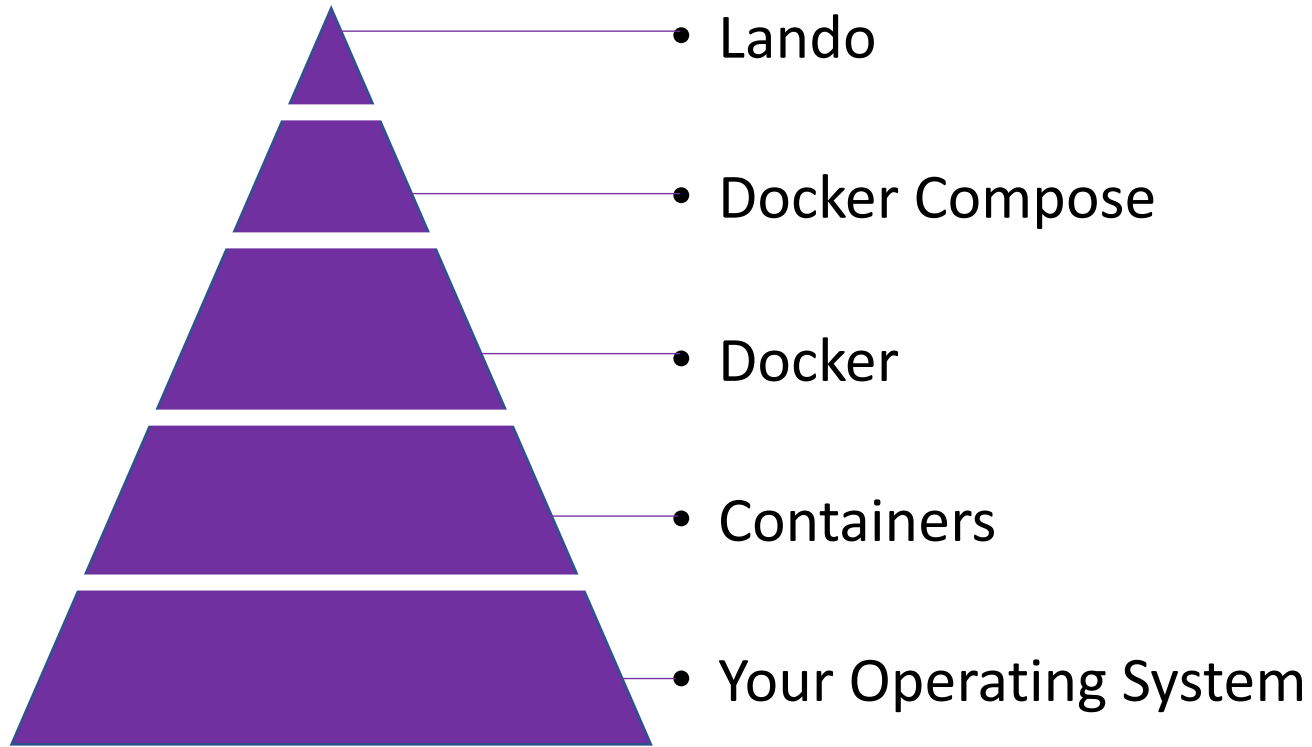
Lando is

Per app, single config file, containerized everything, local dev tool



- Simple in repo config file: `.lando.yml`
- Use basic preconfigured stacks
- Add in additional services eg solr
- Add in additional tools eg node
- Build and automation steps
- Hosting integrations (Panthreon)
- Docker compose abstraction layers
- Cross platform
- **Local dev dependency management**

Stacks on Stacks on Racks (docs.lando.dev)



Core services/languages supported

- Ruby
- PHP
- Python
- Node
- Go
- MySQL
- PostgreSQL
- Solr
- Elasticsearch
- Tomcat

More Services! (configurable and swappable)

- Apache
- Mailhog
- Memcached
- MongoDB
- Nginx
- PHPmyAdmin
- Redis
- Varnish

Pre-baked **recipe** start states

- Backdrop
- LAMP/LEMP
- MEAN
- Drupal 6/7/8
- Pantheon
- Wordpress
- Laravel
- Joomla

Installing Lando: one-click installers for Windows, OSX, Linux

- Download: <https://github.com/lando/lando/releases>
- Docs: <https://docs.lando.dev/basics/installation.html>
- Installers include Docker and Docker-Compose
- You do not have to reinstall Docker/Compose/Desktop
- Check your version numbers!

.lando.yml (The Landofile)

- One config file
- Specifies all the services your app needs for development
- Goes in your project code repository next to all your source code
- It's small and hidden, it won't get in the way


```
---
name: demo-project
env_file:
keys:
services:
  appserver:
    type: ruby:2.5
    volumes:
    ports:
      - '3000:3000'
    overrides:
    command:
    build_as_root:
```



```
  build:
    run:
    run_as_root:

  db:
    type: mysql
    portforward: true
    creds:
      user: dba
      password: random
      database: sample

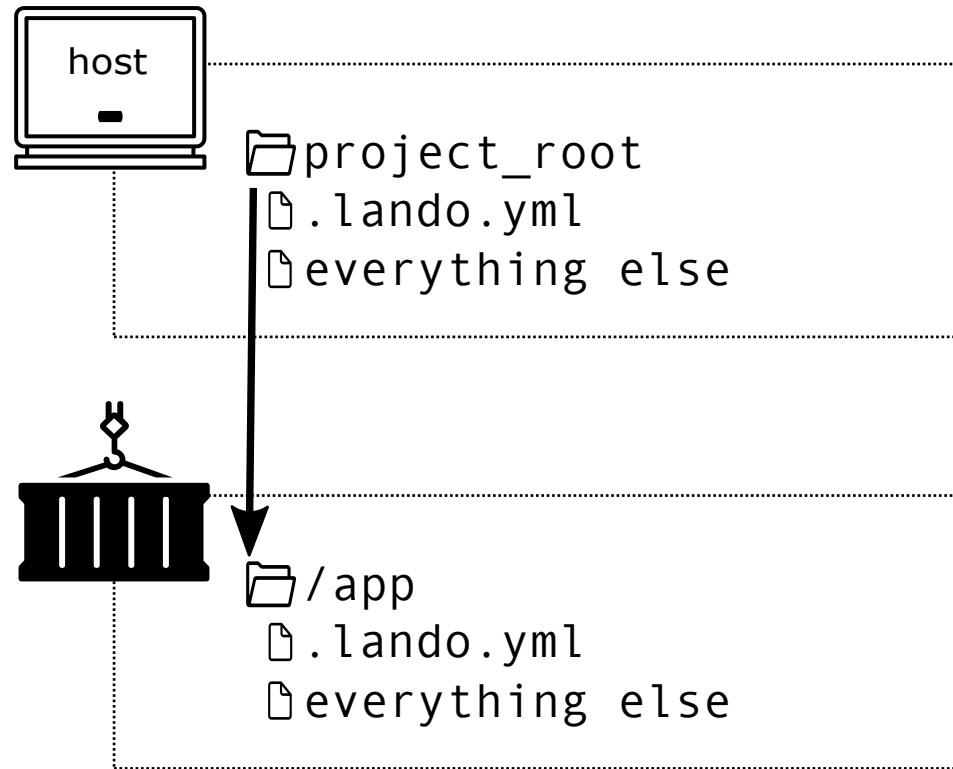
  tooling:
    ruby:
      service: appserver
```

Inside the **.lando.yml** file

```
---  
name: demo-lamp-project  
recipe: lamp  
config:  
  php: 5.6  
  webroot: web  
  database: mysql:5.7
```

Inside the
.lando.yml file
(recipe version)

Lando Cheat Sheet: <https://git.io/JqLaI>



Is this even real? Who even uses Lando?

- **CDL**

<https://github.com/eScholarship/jschol/blob/master/.lando.yml>

- **Janeway**

<https://github.com/BirkbeckCTP/janeway/blob/master/.lando.yml>

- **Princeton**

<https://github.com/pulibrary/pulfalight/blob/main/.lando.yml>

- **Every Landofile in GitHub**

<https://github.com/search?q=filename%3A.lando.yml&type=Code>

One quick demo: A MySQL environment

```
lando init --full  
    #Lie about using LAMP  
    #delete all the PHP stuff  
    #forward the MySQL port  
lando info
```

Questions?

Credits

- *tangle* by Trinity
- *sagrada família: more cranes* by cygnair
- *Temple Expiatori de la Sagrada Família* by PHOTOGRAPHRdotNET
- *Computer* created by Med Marki from the Noun Project
- *Container* created by ProSymbols from the Noun Project
- *Folder* created by Landon Lloyd from the Noun Project
- *File* created by Ranah Pixel Studio from the Noun Project