
DOCKER

Virtualizing Services

Introducing Docker

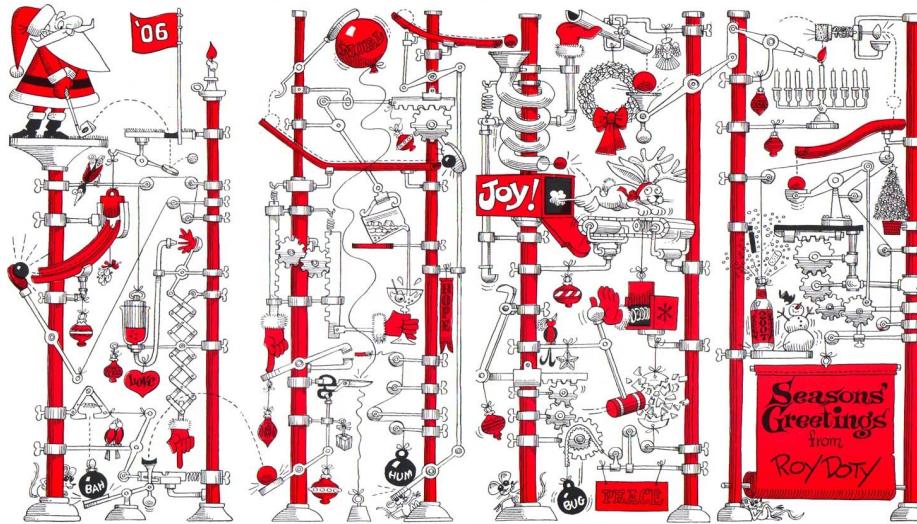
<https://www.docker.com/>

- Imagine that you could code servers, the same way you can code applications.

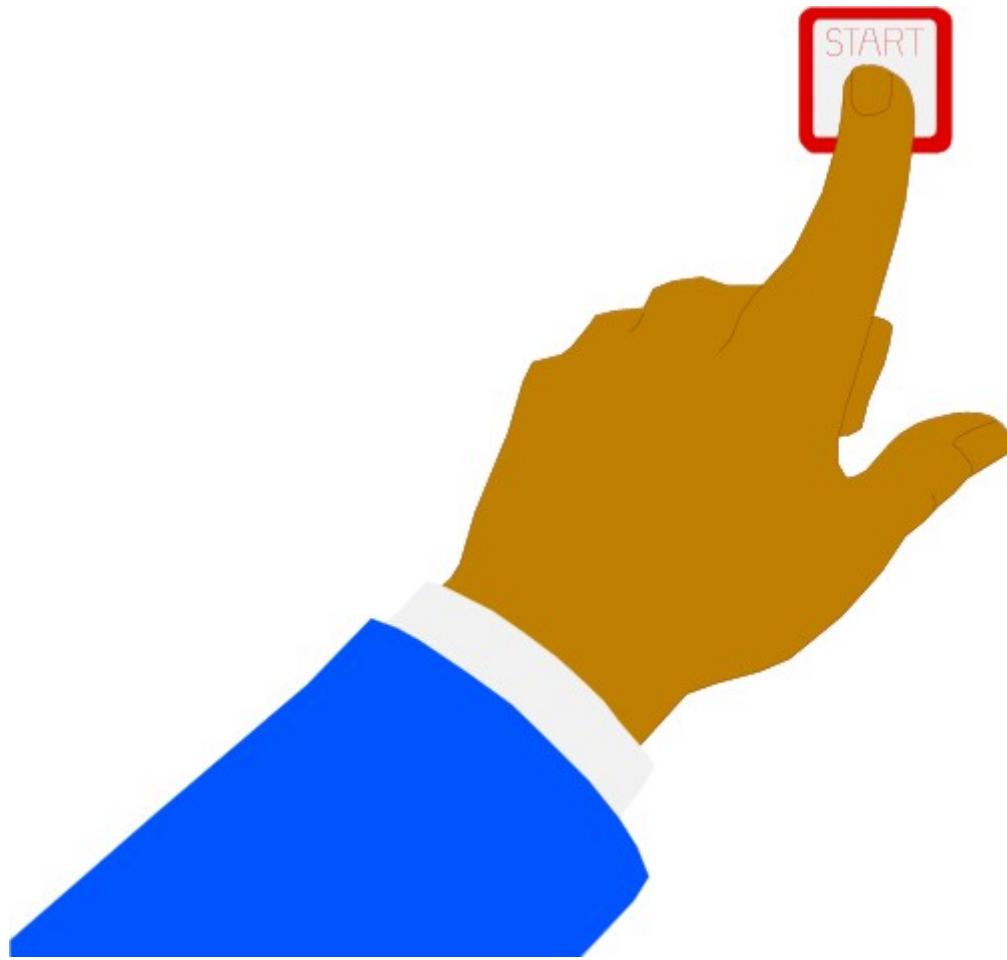


Deploying

- Installing applications is complex.
- Installing SOA can be *nightmare*.



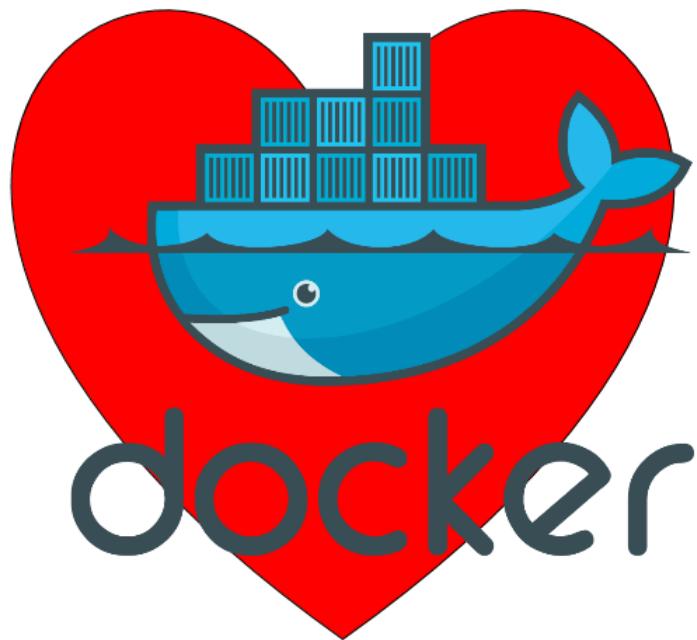
This Is Possible



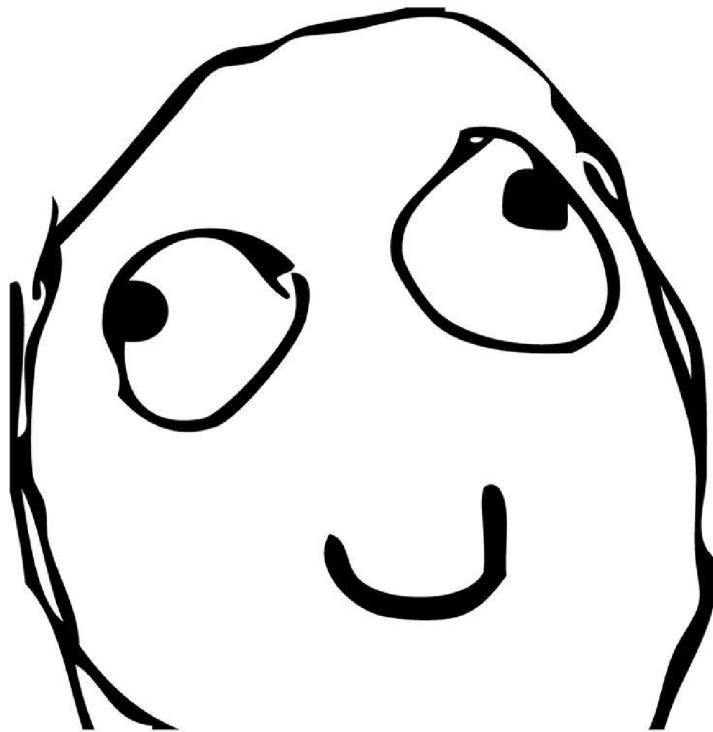
How?



Why Developers *Love* Docker



**You are starting a
new project**



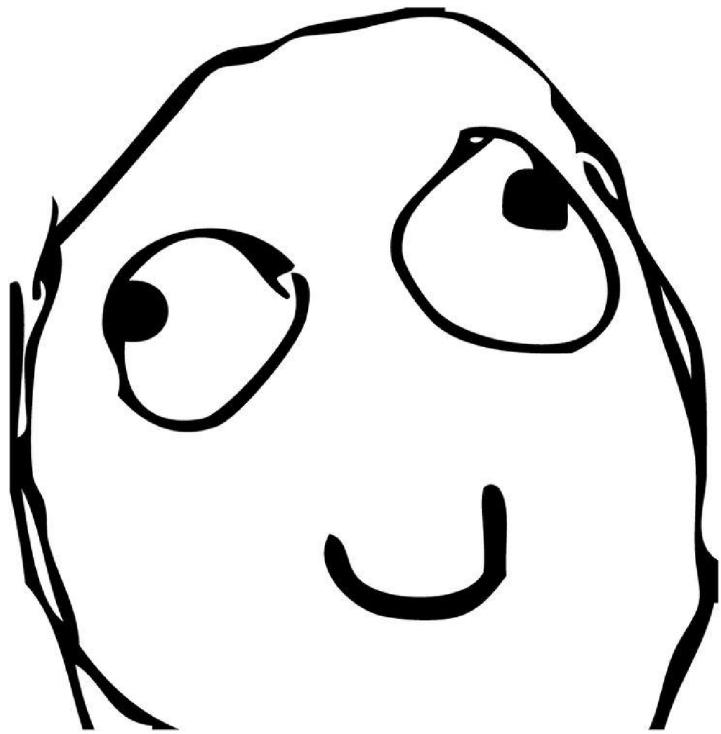
I know, I'll use Ruby on Rails!

```
> gem install rails
```

```
> gem install rails
Fetching: i18n-0.7.0.gem (100%)
Fetching: json-1.8.3.gem (100%)
Building native extensions. This could take a while...
ERROR: Error installing rails:
ERROR: Failed to build gem native extension.
```

```
      /usr/bin/ruby1.9.1 extconf.rb
creating Makefile
```

```
make
sh: 1: make: not found
```



Ah, I just need to install make

```
> sudo apt-get install make  
...  
Success!
```

```
> gem install rails
```

```
> gem install rails
Fetching: nokogiri-1.6.7.2.gem (100%)
Building native extensions. This could take a while...
ERROR: Error installing rails:
ERROR: Failed to build gem native extension.
```

```
/usr/bin/ruby1.9.1 extconf.rb
checking if the C compiler accepts ... yes
Building nokogiri using packaged libraries.
Using mini_portile version 2.0.0.rc2
checking for gzopen() in -lz... no
zlib is missing; necessary for building libxml2
*** extconf.rb failed ***
```



Hmm. Time to visit StackOverflow.

```
> sudo apt-get install zlib1g-dev  
...  
Success!
```

```
> gem install rails
```

```
> gem install rails  
Building native extensions. This could take a while...  
ERROR: Error installing rails:  
ERROR: Failed to build gem native extension.
```

```
      /usr/bin/ruby1.9.1 extconf.rb  
checking if the C compiler accepts ... yes  
Building nokogiri using packaged libraries.  
Using mini_portile version 2.0.0.rc2  
checking for gzdopen() in -lz... yes  
checking for iconv... yes  
  
Extracting libxml2-2.9.2.tar.gz into tmp/x86_64-pc-linux-gnu/ports/libxml2/2.9.2... OK  
*** extconf.rb failed ***
```

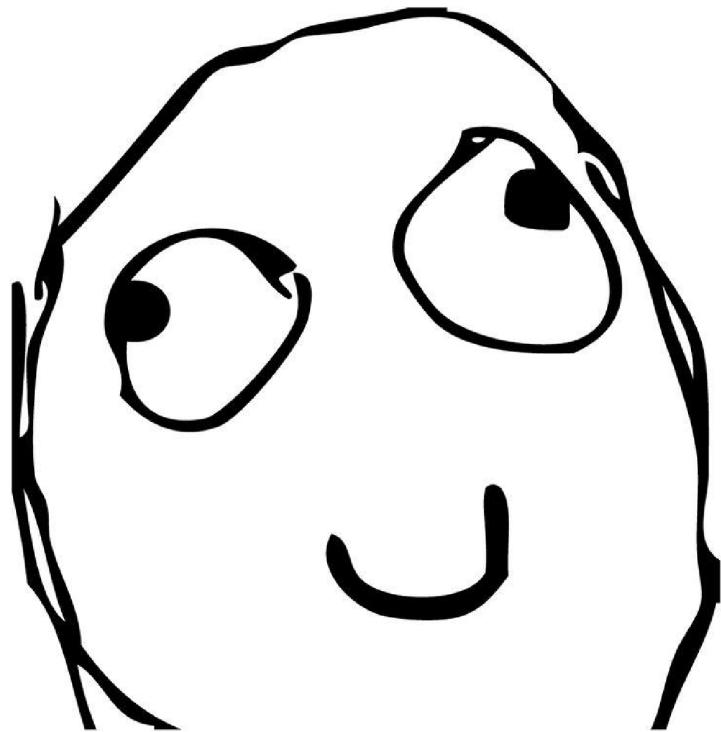


nokogiri y u never install correctly?

**(Spend 2 hours trying random
StackOverflow suggestions)**

```
> gem install rails
```

```
> gem install rails  
...  
Success!
```

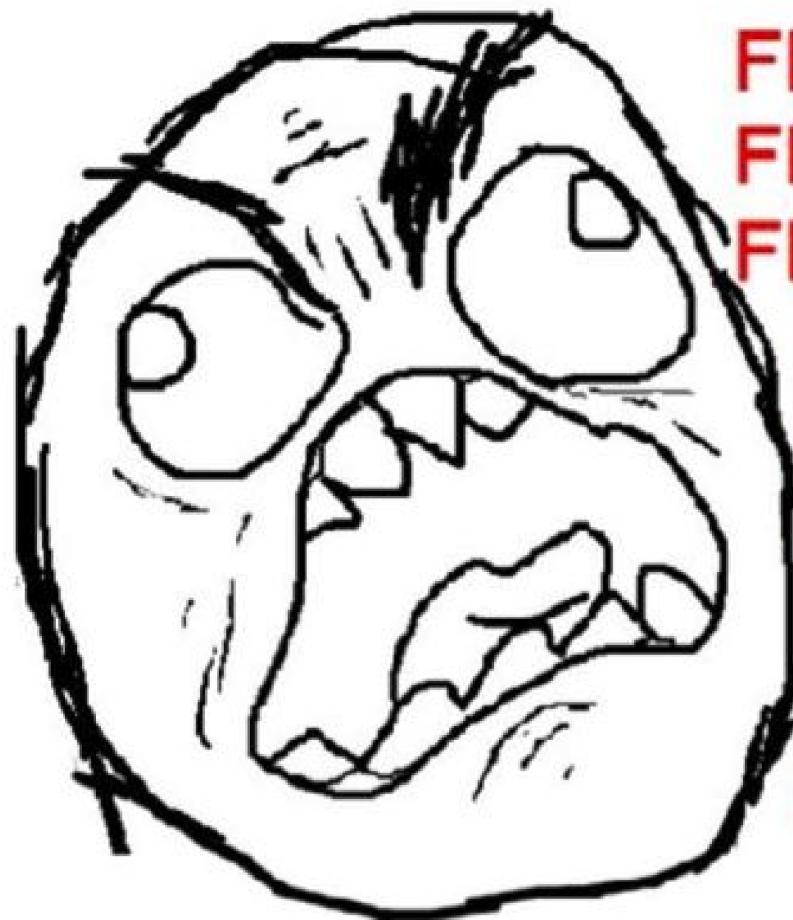


Finally!

```
> rails new my-project  
> cd my-project  
> rails start
```

```
> rails new my-project  
> cd my-project  
> rails start
```

```
/source/my-project/bin/spring:11:in `<top (required)>'::  
undefined method `path_separator' for Gem::Module  
(NoMethodError)  
from bin/rails:3:in `load'  
from bin/rails:3:in `<main>'
```



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Eventually, you get it working

**Now you have to deploy your
Rails app in production**

AWS Services | Edit | Yevgeniy Brikman

Amazon Web Services

Compute

- EC2** Virtual Servers in the Cloud
- EC2 Container Service** Run and Manage Docker Containers
- Elastic Beanstalk** Run and Manage Web Apps
- Lambda** Run Code in Response to Events

Storage & Content Delivery

- S3** Scalable Storage in the Cloud
- CloudFront** Global Content Delivery Network
- Elastic File System** PREVIEW Fully Managed File System for EC2
- Glacier** Archive Storage in the Cloud
- Import/Export Snowball** Large Scale Data Transport
- Storage Gateway** Hybrid Storage Integration

Database

- RDS** Managed Relational Database Service
- DynamoDB** Managed NoSQL Database
- ElastiCache**

Redshift

DMS PREVIEW

Networking

- VPC** Isolated Cloud Resources
- Direct Connect** Dedicated Network Connection to AWS
- Route 53** Scalable DNS and Domain Name Resolution

Developer Tools

- CodeCommit** Store Code in Private Git Repositories
- CodeDeploy** Automate Code Deployments
- CodePipeline** Release Software using Continuous Delivery

Management Tools

- CloudWatch** Monitor Resources and Applications
- CloudFormation** Create and Manage Resources with Templates
- CloudTrail** Track User Activity and API Usage
- Config** Track Resource Inventory and Changes
- OpsWorks** Automate Operations with Chef
- Service Catalog** Create and Use Standardized Products
- Trusted Advisor** Optimize Performance and Security

Security & Identity

- Identity & Access Management** Manage User Access and Encryption Keys
- Directory Service** Host and Manage Active Directory
- Inspector** PREVIEW

WAF

Certificate Manager

Machine Learning

Internet of Things

- AWS IoT** Connect Devices to the Cloud

Mobile Services

- Mobile Hub** BETA Build, Test, and Monitor Mobile Apps
- Cognito** User Identity and App Data Synchronization
- Device Farm** Test Android, FireOS, and iOS Apps on Real Devices in the Cloud
- Mobile Analytics** Collect, View and Export App Analytics
- SNS** Push Notification Service

Application Services

- API Gateway** Build, Deploy and Manage APIs
- AppStream** Low Latency Application Streaming
- CloudSearch** Managed Search Service
- Elastic Transcoder** Easy-to-Use Scalable Media Transcoding
- SES** Email Sending and Receiving Service
- SQS** Message Queue Service
- SWF** Scalable Work Flow Infrastructure

Enterprise Applications

- WorkSpaces**
- WorkMail**
- WorkLink**
- WorkDocs**
- Workfront**
- Workplace**
- Business Events and Calendering Service**

Resource Groups

A resource group is a collection of resources or more tags. Create a group for each environment in your account.

Create a Group Tag Editor

Additional Resources

Getting Started

AWS Console Mobile App

AWS Marketplace

AWS re:Invent Announcements

Service Health

All services operating normally

Updated: Jan 31 2016 18:27:00 GMT-0500

View the Health Dashboard

You use the AWS Console to deploy an EC2 instance

```
> ssh ec2-user@ec2-12-34-56-78.compute-1.amazonaws.com
```



```
[ec2-user@ip-172-31-61-204 ~]$ gem install rails
```

```
> ssh ec2-user@ec2-12-34-56-78.compute-1.amazonaws.com
```

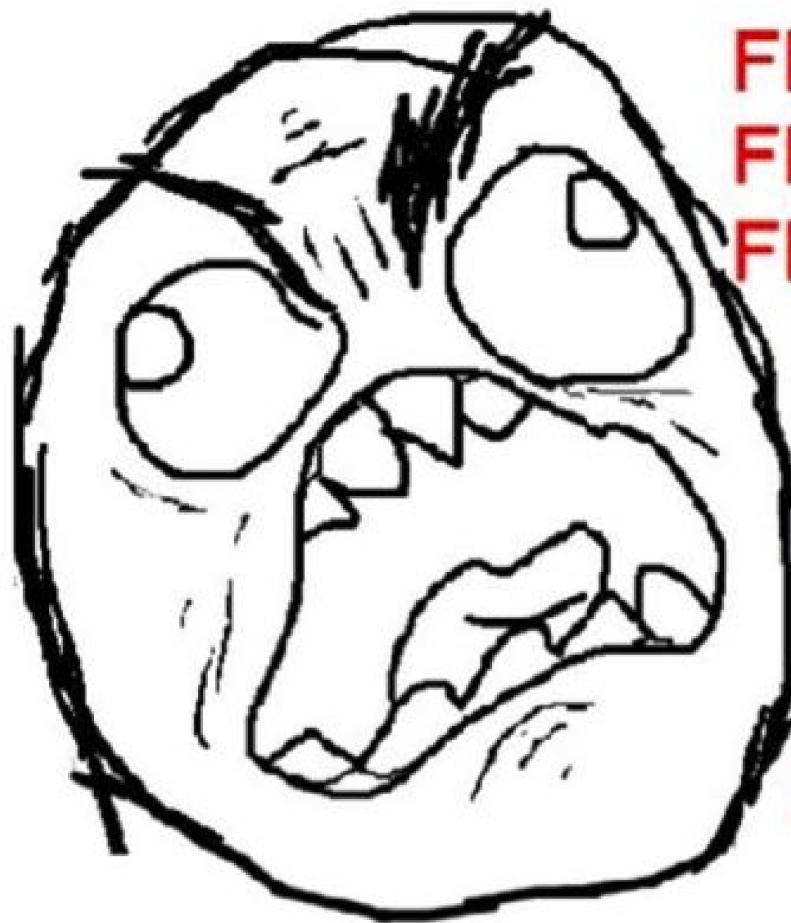


```
[ec2-user@ip-172-31-61-204 ~]$ gem install rails
```

```
ERROR: Error installing rails:
```

```
ERROR: Failed to build gem native extension.
```

```
/usr/bin/ruby1.9.1 extconf.rb
```



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Eventually you get it working

Critical Ruby On Rails Issue Threatens 240,000 Websites

Bug allows attackers to execute arbitrary code on any version of Ruby published in the last six years.

All versions of the open source Ruby on Rails Web application framework released in the past six years have a critical vulnerability that an attacker could exploit to execute arbitrary code, steal information from databases and crash servers. As a result, all Ruby users should immediately upgrade to a newly released, patched version of the software.

That warning was sounded Tuesday in a [Google Groups](#) post made by Aaron Patterson, a key Ruby programmer. "Due to the critical nature of this vulnerability, and the fact that portions of it have been disclosed publicly, all users running an affected release should either upgrade or use one of the work arounds immediately," he wrote. The patched versions of Ruby on Rails (RoR) are 3.2.11, 3.1.10, 3.0.19 and 2.3.15.

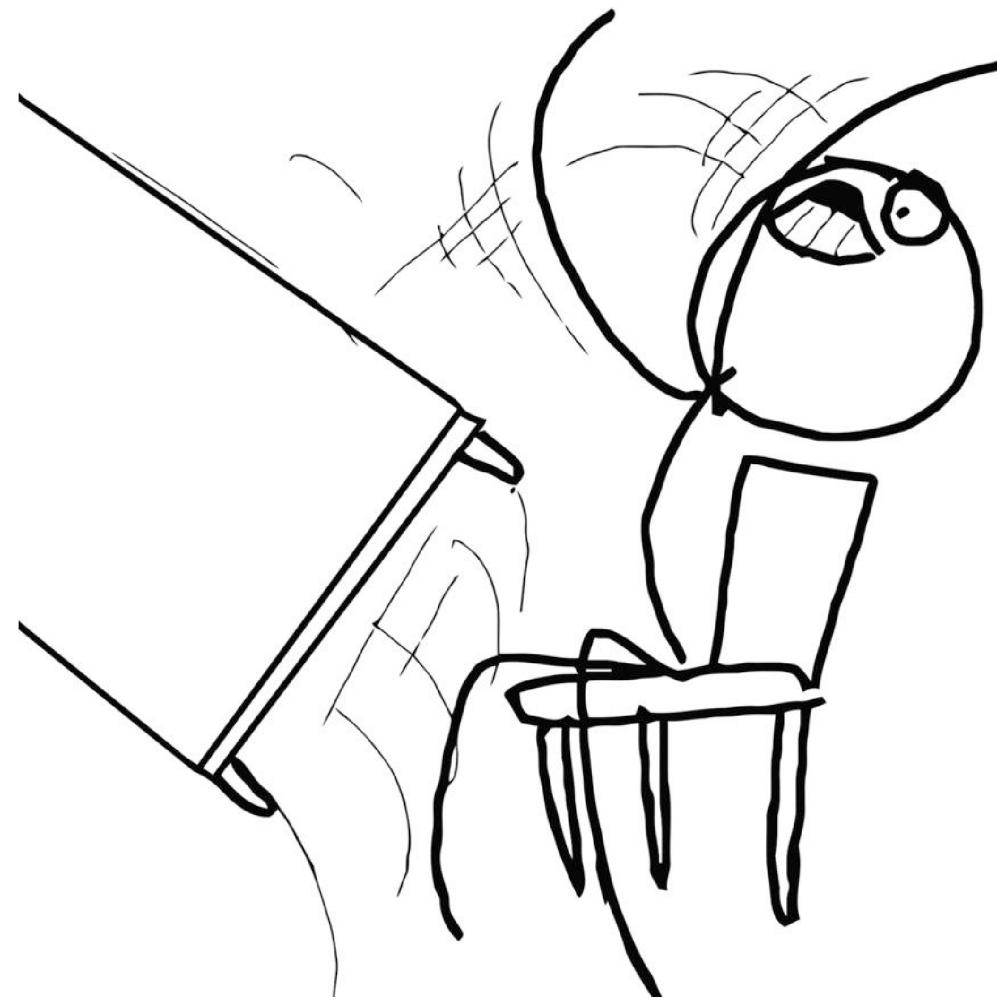
As a result, [more than 240,000 websites](#) that use Ruby on Rails Web applications are at risk of being exploited by attackers. [High-profile websites](#)

**Now you urgently have to
update all your Rails installs**

```
> bundle update rails
```

```
> bundle update rails  
Building native extensions. This could take a while...  
ERROR: Error installing rails:  
ERROR: Failed to build gem native extension.
```

```
      /usr/bin/ruby1.9.1 extconf.rb  
checking if the C compiler accepts ... yes  
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Extracting libxml2-2.9.2.tar.gz into tmp/x86_64-pc-linux-gnu/ports/libxml2/2.9.2... OK  
*** extconf.rb failed ***
```



The problem isn't Rails

```
> ssh ec2-user@ec2-12-34-56-78.compute-1.amazonaws.com
```



```
[ec2-user@ip-172-31-61-204 ~]$ gem install rails
```

**The problem is that you're
configuring servers manually**

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Redshift Fast, Simple, Cost-Effective Data Warehousing

DMS PREVIEW Managed Database Migration Service

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Create a Group Tag Editor

Additional Resources

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AWS Marketplace

Find and buy software, launch with 1-Click.

AWS re:Invent Announcements

Explore the next generation of AWS cloud services and what's new.

Service Health

All services operating normally

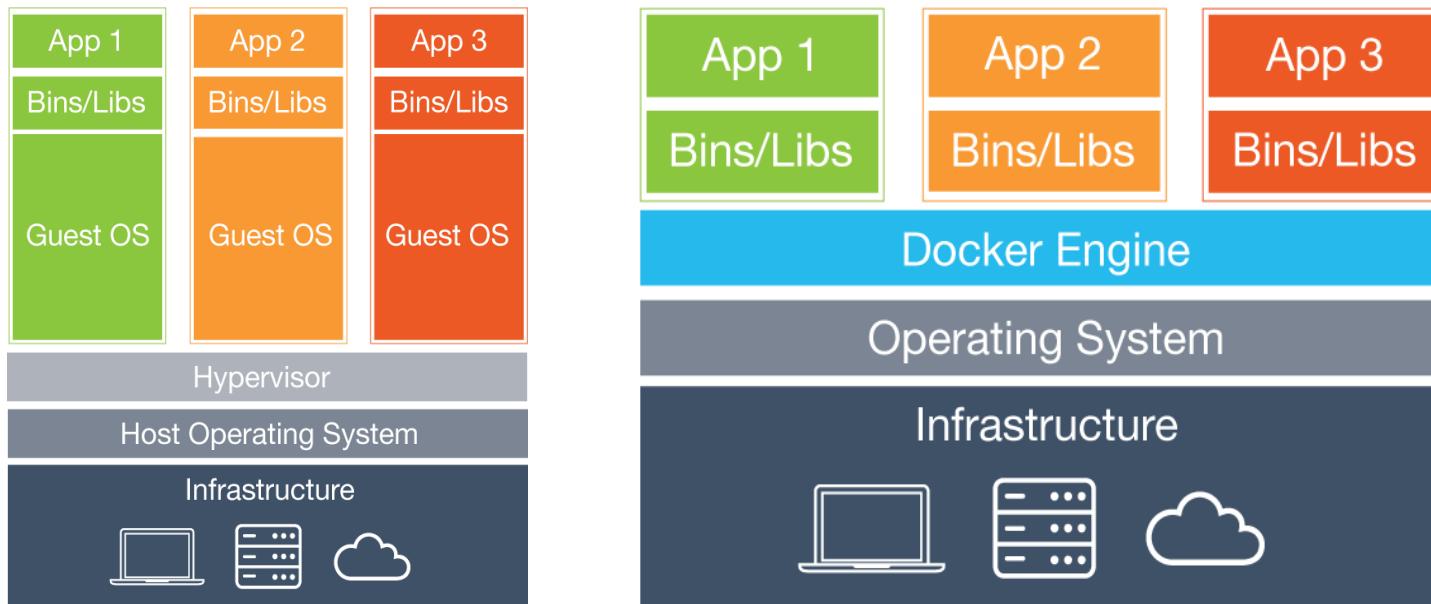
Updated: Jan 31 2018 18:27:00 GMT-0500

View Service Health Dashboard

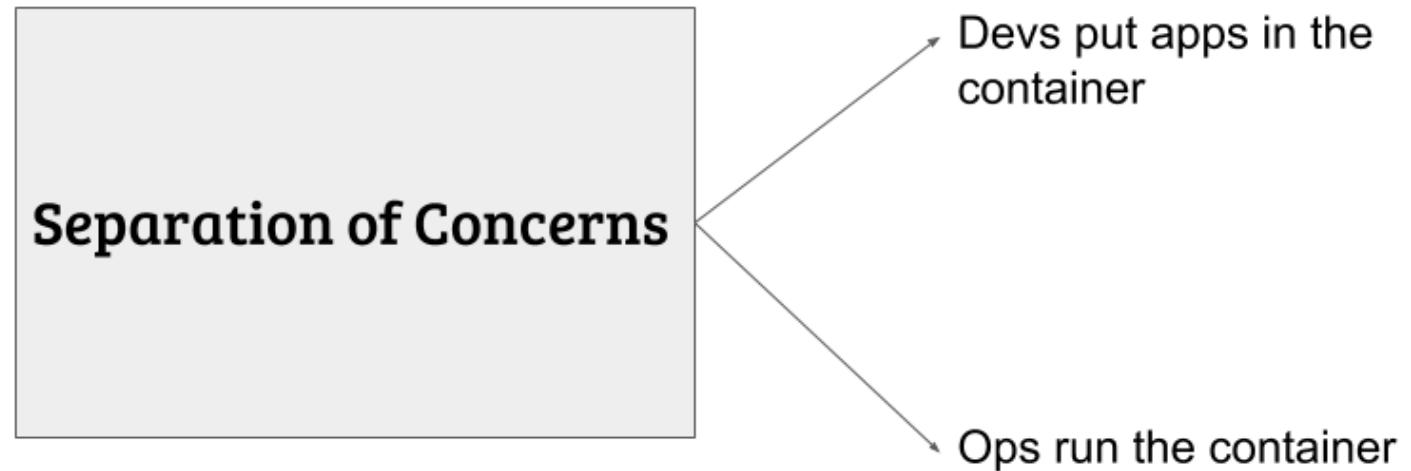
And that you're deploying infrastructure manually

**A better alternative:
infrastructure-as-code**

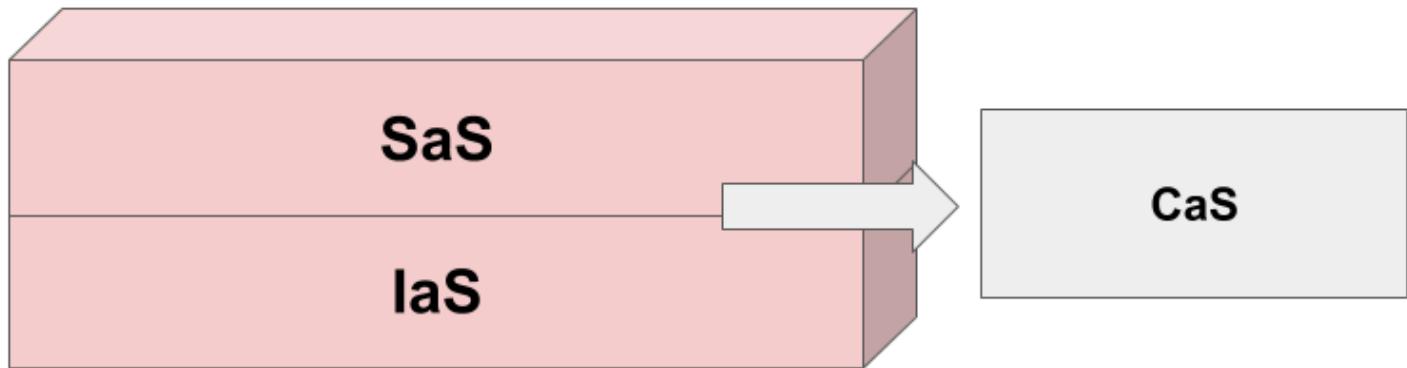
How Different Are Containers From VMs?



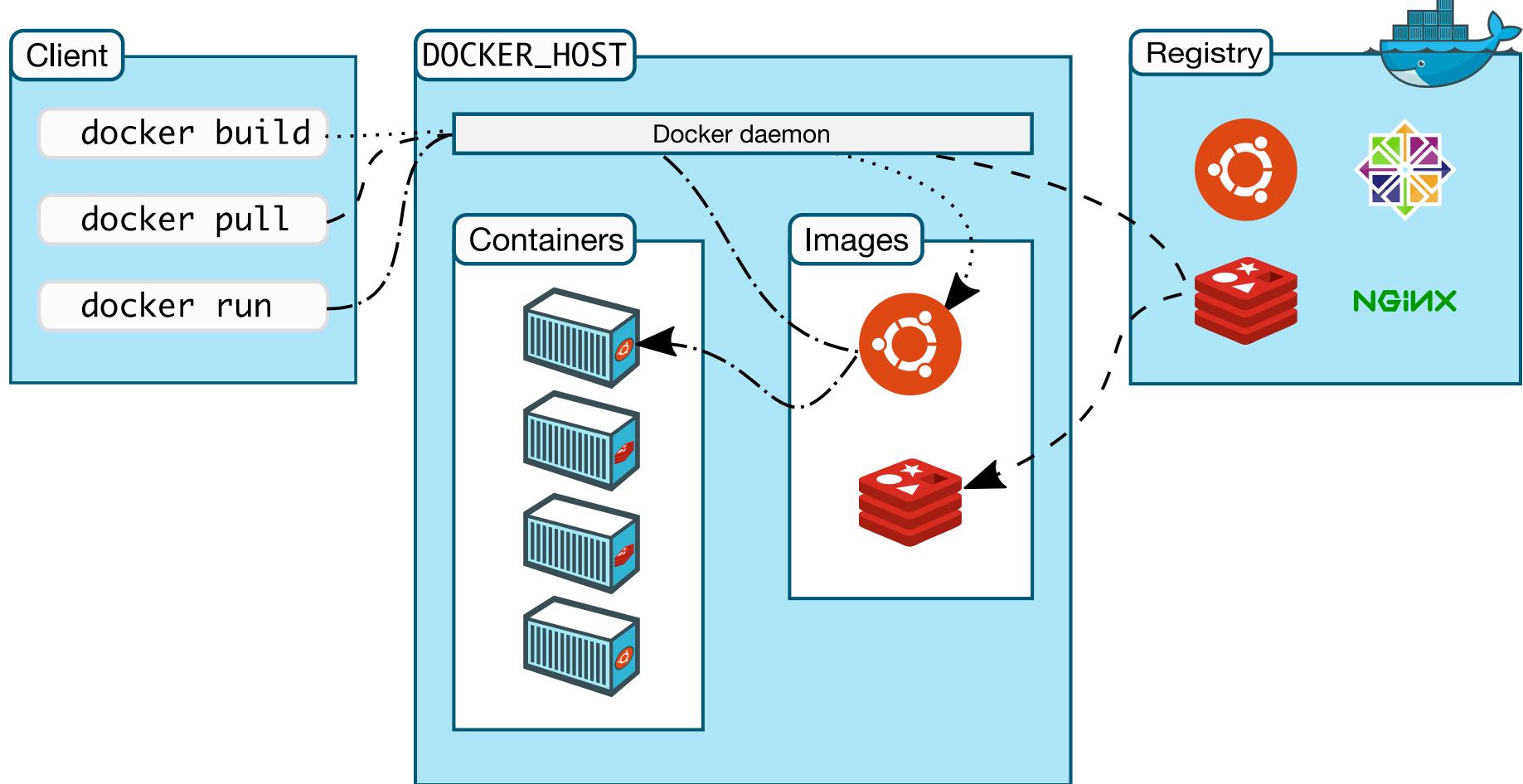
SoC



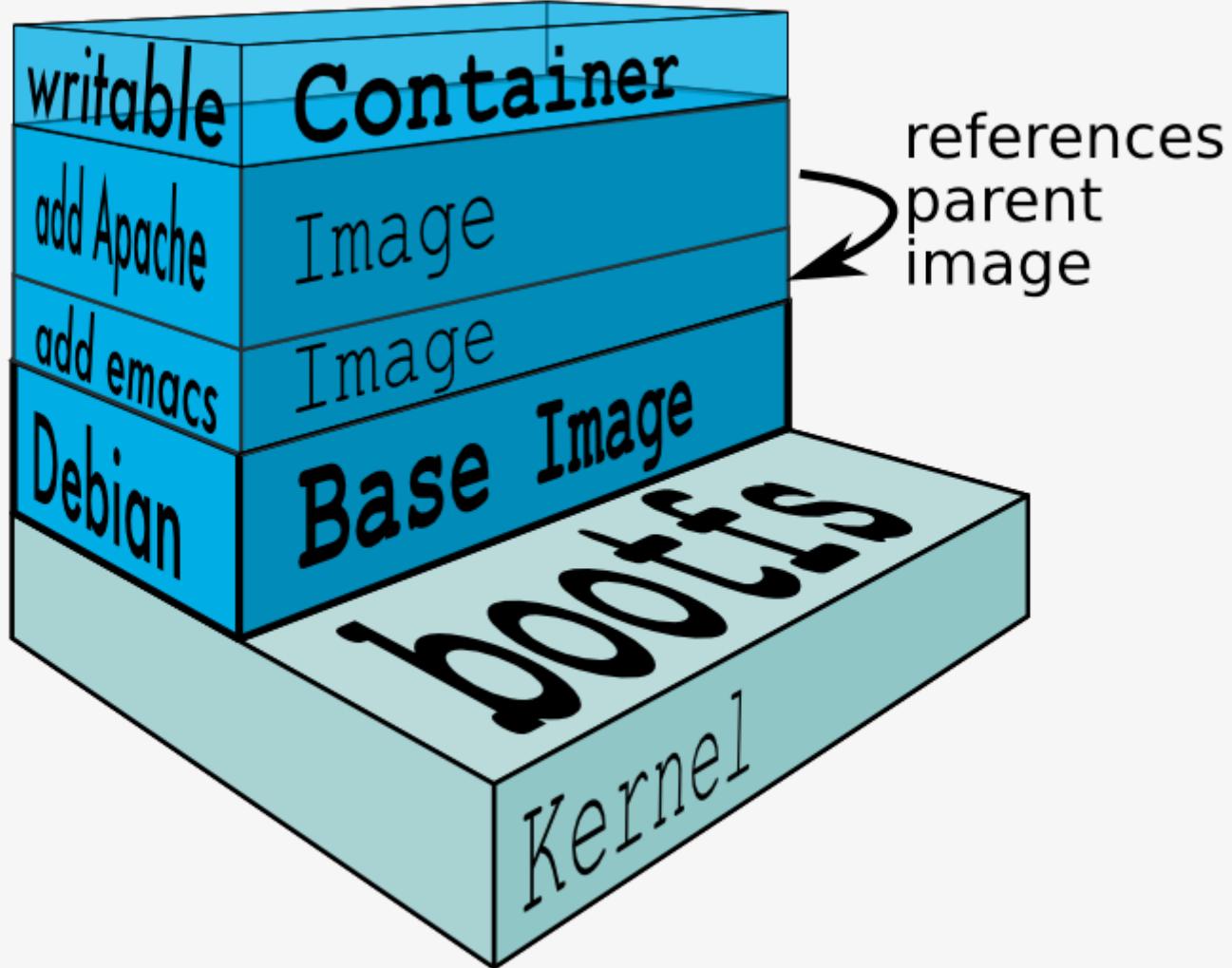
Containers



How Does It Work?

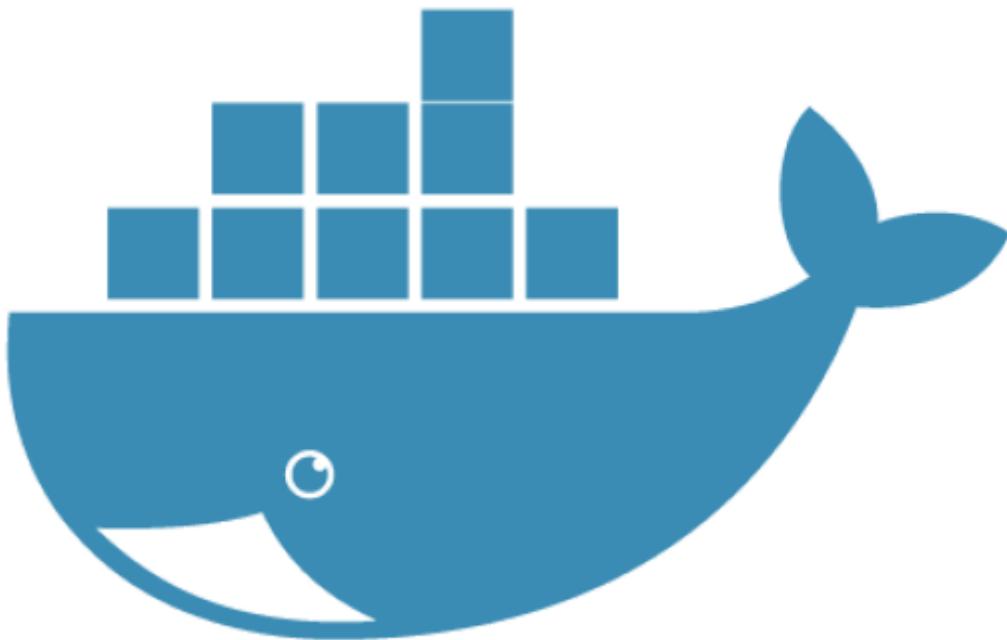


Container



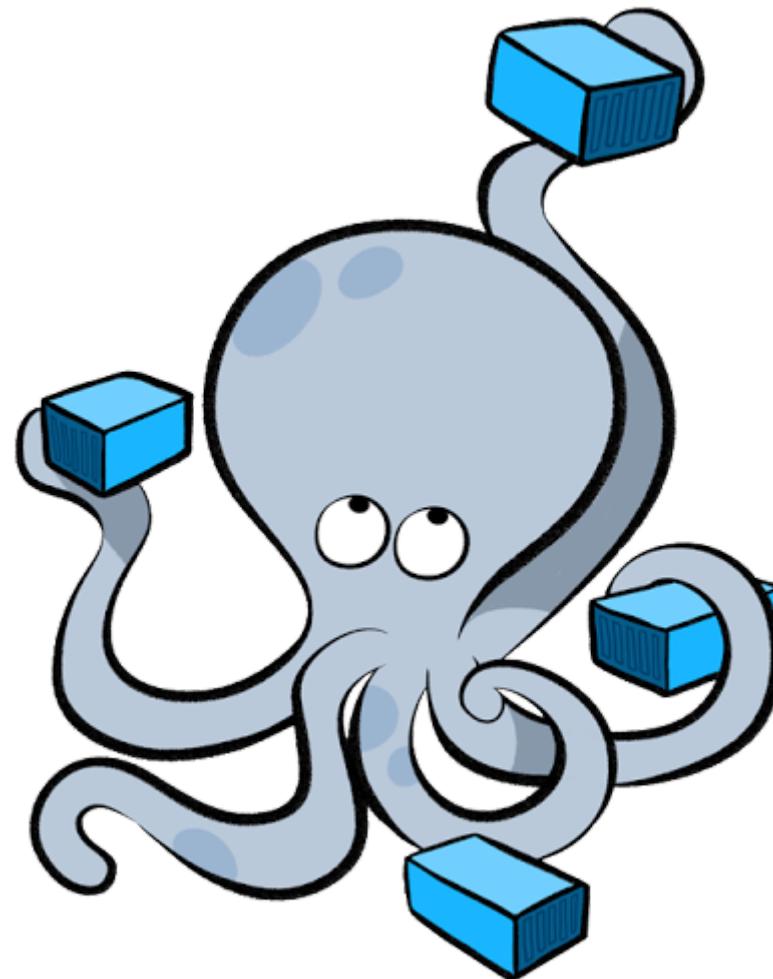
Docker Hub

<https://hub.docker.com/>



Docker-Compose

Multi-container applications



Ready To See An Example?



Try It!

<https://labs.play-with-docker.com/>

Install It!

<https://docs.docker.com/engine/install/>

<https://docs.docker.com/compose/install/>

Learn It!

<https://training.play-with-docker.com/>

This presentation was created using [Reveal.js](#), the
HTML presentation framework. Fork it at:
<https://github.com/CodeOp-tech/docker>

```
npx reveal.js-online
```