

Eliminating Developer Friction with Docker

ticketmaster[®]

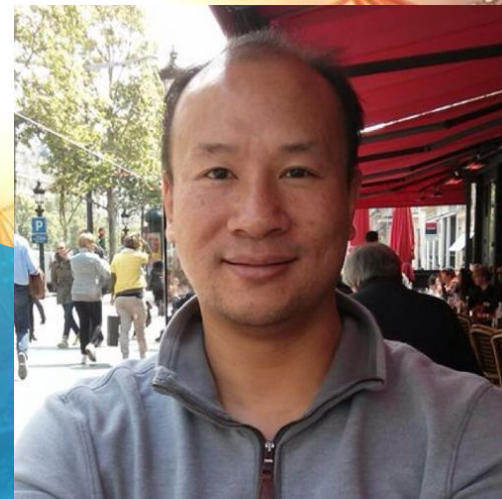
ticketmaster[®]

TEXT WEROCKYOU To 404040
FOR A CHANCE TO
WIN \$100
TICKETMASTER[®] TICKET CASH[®]

NO PURCHASE NECESSARY. Legal residents of U.S., 18+. Void where prohibited. All entries must be received between 7am PT on 3/3/17 and 6pm PT 3/5/17. See www.bit.ly/TMscale for rules or to enter without a mobile device. Msg & data rates may apply. Check your mobile carrier for rates. Available on participating carriers only. Text "HELP" to 404040 for more information. You may receive 2 text messages in response to your entry. Privacy Policy: <http://concerts.livenation.com/h/privacy.html>. Terms of Use: <http://lvntn.us/Ltexthelp@livenation.com>. SPONSOR: Ticketmaster

Andy Chan

- 2.5 Years in Ticketmaster
- Principal Architect, Systems
- Cloud Enablement Team (CET)
- **LinkedIn:** <https://www.linkedin.com/in/iceycake>
- **Twitter:** @iceycake



ticketmaster®

ABOUT US

History

- 1976 - Founded at Arizona State University
- 1996 - Ticketmaster.com Launched
- 2010 - Live Nation and Ticketmaster Join Forces to Power Live Experiences

- Publicly Traded Company (LYV)
- \$7.6B Revenue
- \$25B in GTV (Gross Transaction Value) in 2015
- One of the World's Top 10 eCommerce Sites

ticketmaster®

A person is captured mid-jump in the center of the frame, arms outstretched, wearing a dark jacket and jeans. They are surrounded by a massive shower of colorful confetti falling from above. The background shows a large, dark stadium filled with a crowd of people, some with their hands raised. Bright stage lights illuminate the scene, creating a vibrant and energetic atmosphere. The text is overlaid in the upper center of the image.

SOMEWHERE IN THE WORLD
EVERY 20 MINUTES
IS A LIVE NATION EVENT

The background of the image is a dark, blue-toned photograph of a person's silhouette sitting at a desk with a computer monitor, viewed from behind. The person appears to be working in a dimly lit office or control room. The Ticketmaster logo is centered in the upper half of the image.

ticketmaster[®]

THE WORLD'S LEADING TICKETING COMPANY

530,000,000

TICKETS

12,500

CLIENTS

27

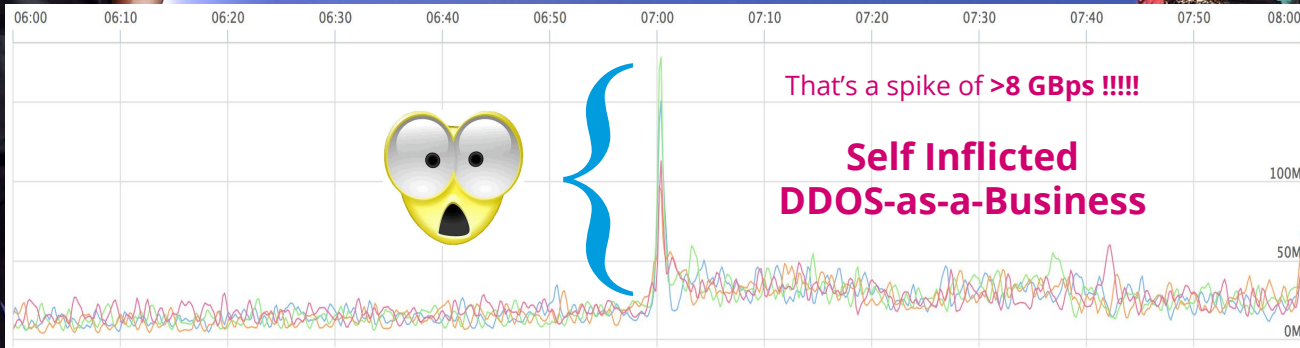
COUNTRIES


BIG SCALE, BIG CHALLENGES

Onsales = Black Friday every day!

- Huge spikes / demand for tickets
- Global company = across time zones
- Limited inventory (Beyonce Tickets!)
- Multiple sales channels

0 to 150M transactions in minutes!





TECH COMPLEXITY

ticketmaster[®]

PRE-MODERN TECHNOLOGY

- Every era of software, many not ready for containers and cloud
- 1970s: Custom VMS OS on Emulated VAX (The Host)
- 2000s: Xen Cloud, Big-Iron Filers, NFS, custom built infrastructure



Our Infrastructure Today



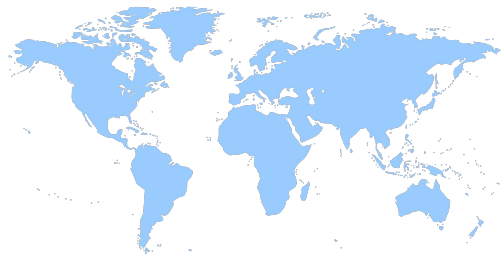
22,000 Private
Cloud VMs
60% VMs Growth in
2015



21 Ticketing Systems
250+ Products
Different Technology
Stacks

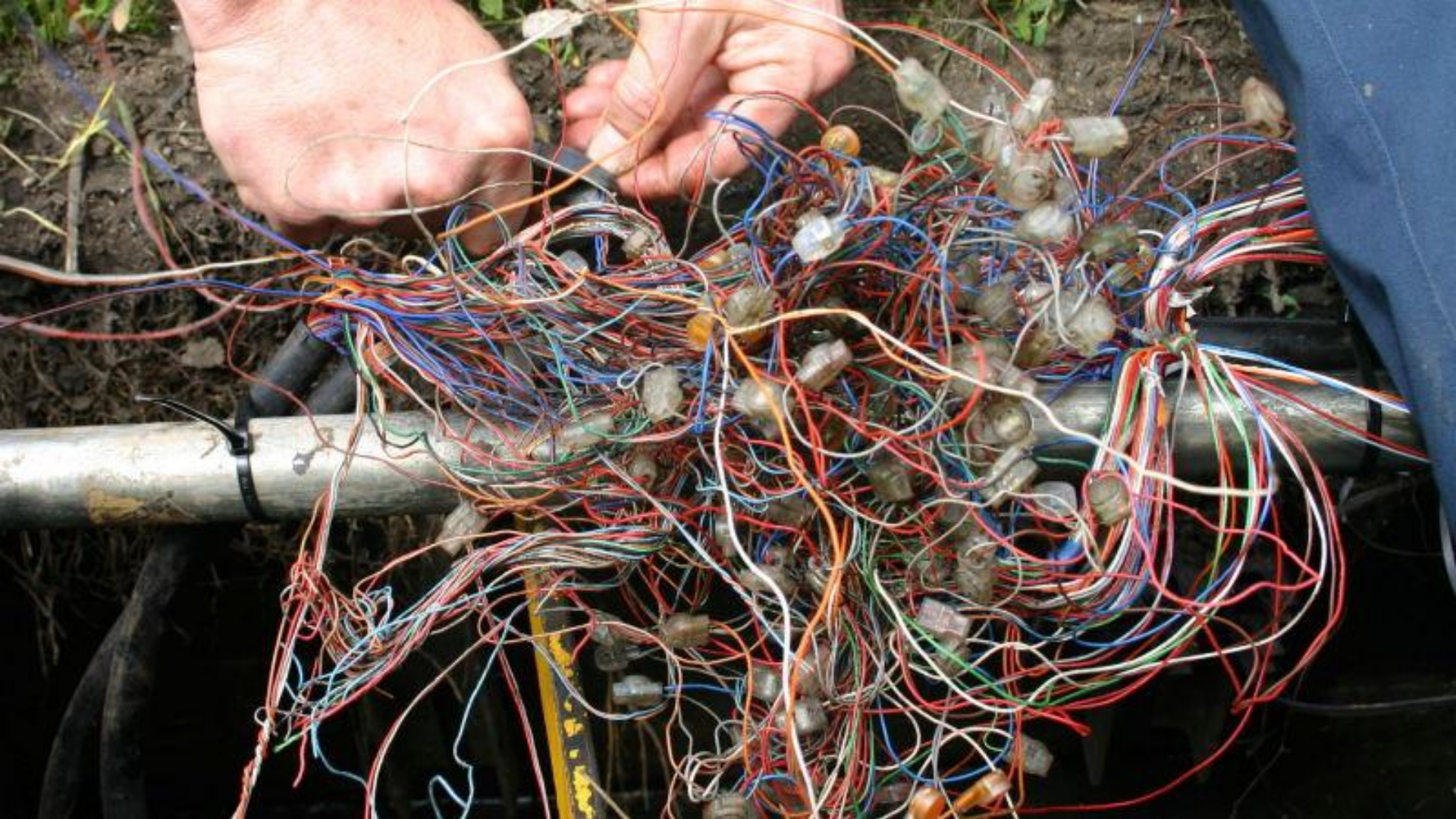


More than 1,000
Databases



7 DCs Globally





Public Cloud Migration

Amazon Web Service (AWS) Preferred Public Cloud Provider

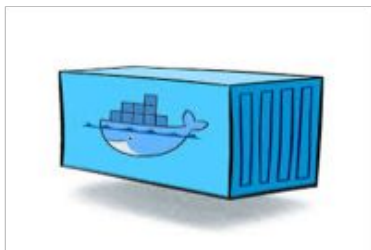


Public Cloud Migration

- Raise Tech Maturity
- Containerize and Retool Apps
- Migrating themselves to the cloud



Public Cloud Migration



Public Cloud Migration



Public Cloud Migration - Cloud Enablement Team



Public Cloud Migration - Cloud Enablement Team

- Small team (5) of experts dedicated to developing:
 - Future state architecture
 - Path to Public Cloud
 - Cloud Native Solution Patterns
 - Cure us of our on-prem addiction
 - (NFS, Always scaled, HW reliance, SW trees, etc)

Public Cloud Migration - Cloud Enablement Team

- Self Migration Toolkit
 - Online Documentation
 - General Guidelines
 - Common Software/System Design Patterns
 - Migration Solutions/Templates
 - Utilities and Tools
 - CI/CD Pipeline

Developers Challenges

- Multiple Steep Learning Curves
 - Cloud Native Software Development
 - Cloud System Design Patterns
 - AWS / AWS SDK
 - **Self Migration Toolkit**
- Time Constraints
- Business as Usual (Supporting Existing On-Prem Systems)



Self Migration Toolkit Requirements

- Command Line First (Automation)
- Cross Platform
 - Linux, Windows, Mac
- Easy to Distribute/Upgrade/Rollback
 - Change Frequently
- Easy to Use/Learn

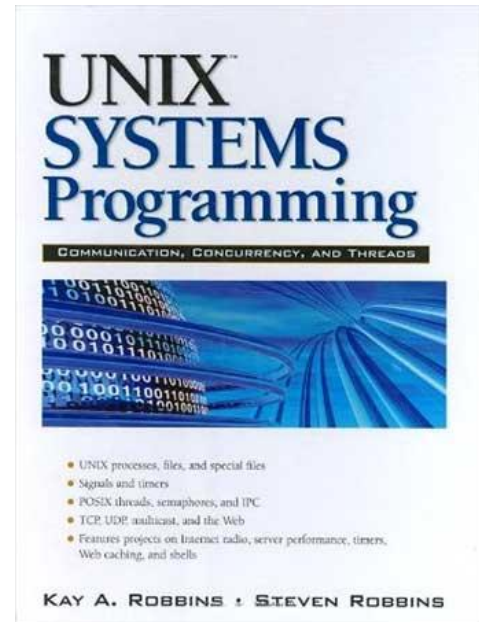


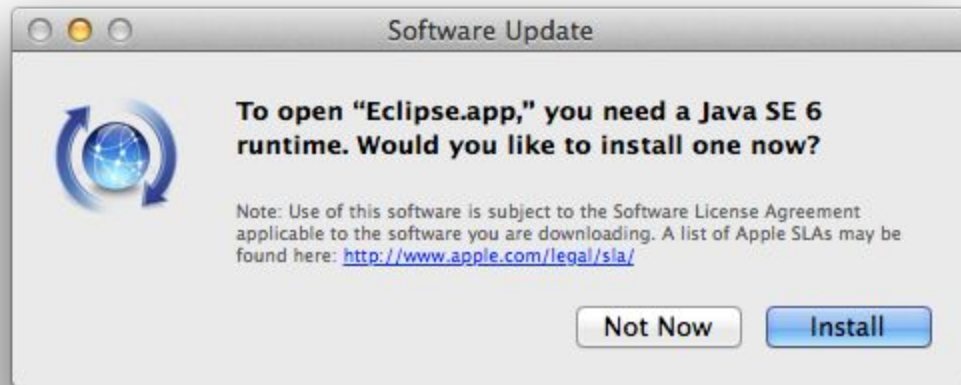
“Write Once Run Everywhere”

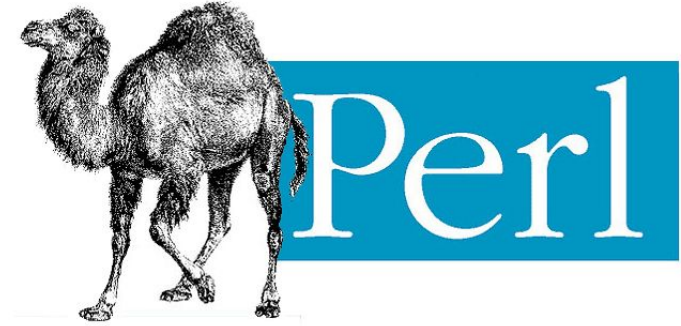
3 Billion Devices Run Java

Computers, Printers, Routers, Cell Phones, BlackBerry, Kindle, Parking Meters, Public Transportation Passes, ATMs, Credit Cards, Home Security Systems, Cable Boxes, TVs...

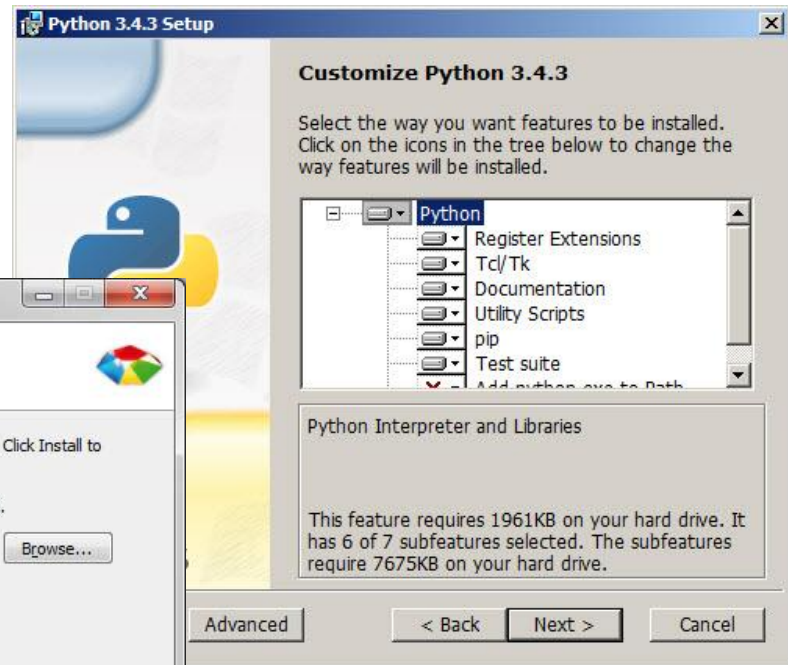
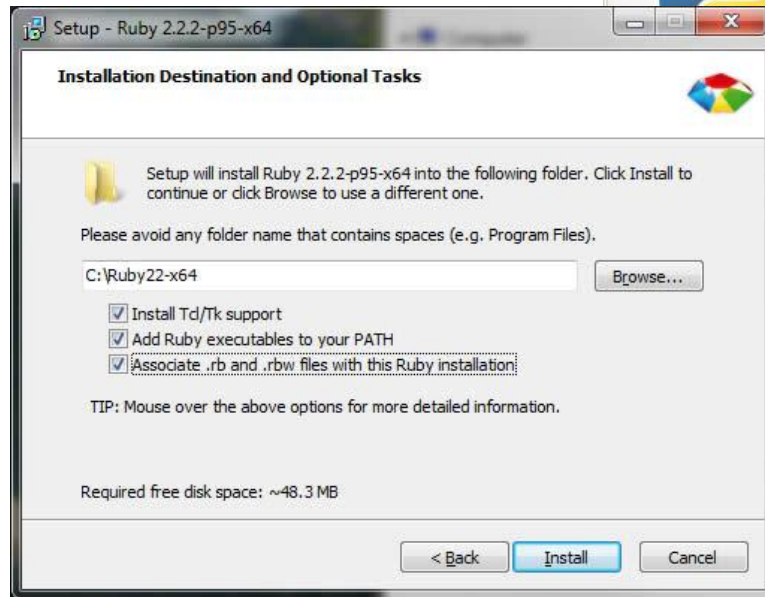
ORACLE®







Ruby





Go





Docker

- Can run **ALMOST** anywhere
- Windows 7, 8 (Docker Toolbox)
- Windows 10 (native with Hyper-V, Docker for Windows)
- Mac OS (native with HyperKit, Docker for Mac)
- Linux Distros (dockerd)



Docker - Distribution/Upgrade/Rollback

```
$ docker pull myregistry/cet/terraformer:latest
```

```
$ docker pull myregistry/cet/jana:latest
```

```
$ docker pull myregistry/cet/credtools:latest
```

```
$ docker pull myregistry/cet/credtools:experiment
```

```
$ docker pull myregistry/cet/credtools:1.0.7
```

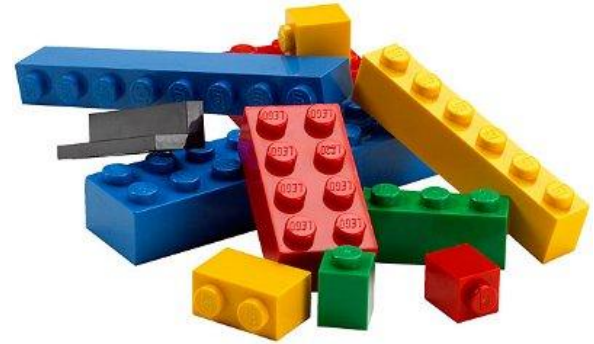

Docker

- Almost **ANY** Programming Languages
- On almost **ANY** modern Linux Distro
- Abstraction: **ZERO** Impact to Developers when Rewriting/Refactoring Tools



Docker

- Combining multiple open-sourced tools into a single tool
- Easy to extend functionality from existing distributed binaries.
- Multiple Docker based tools can chain together easily by developers
- Gitlab-CI (CI/CD pipeline)





Case Study

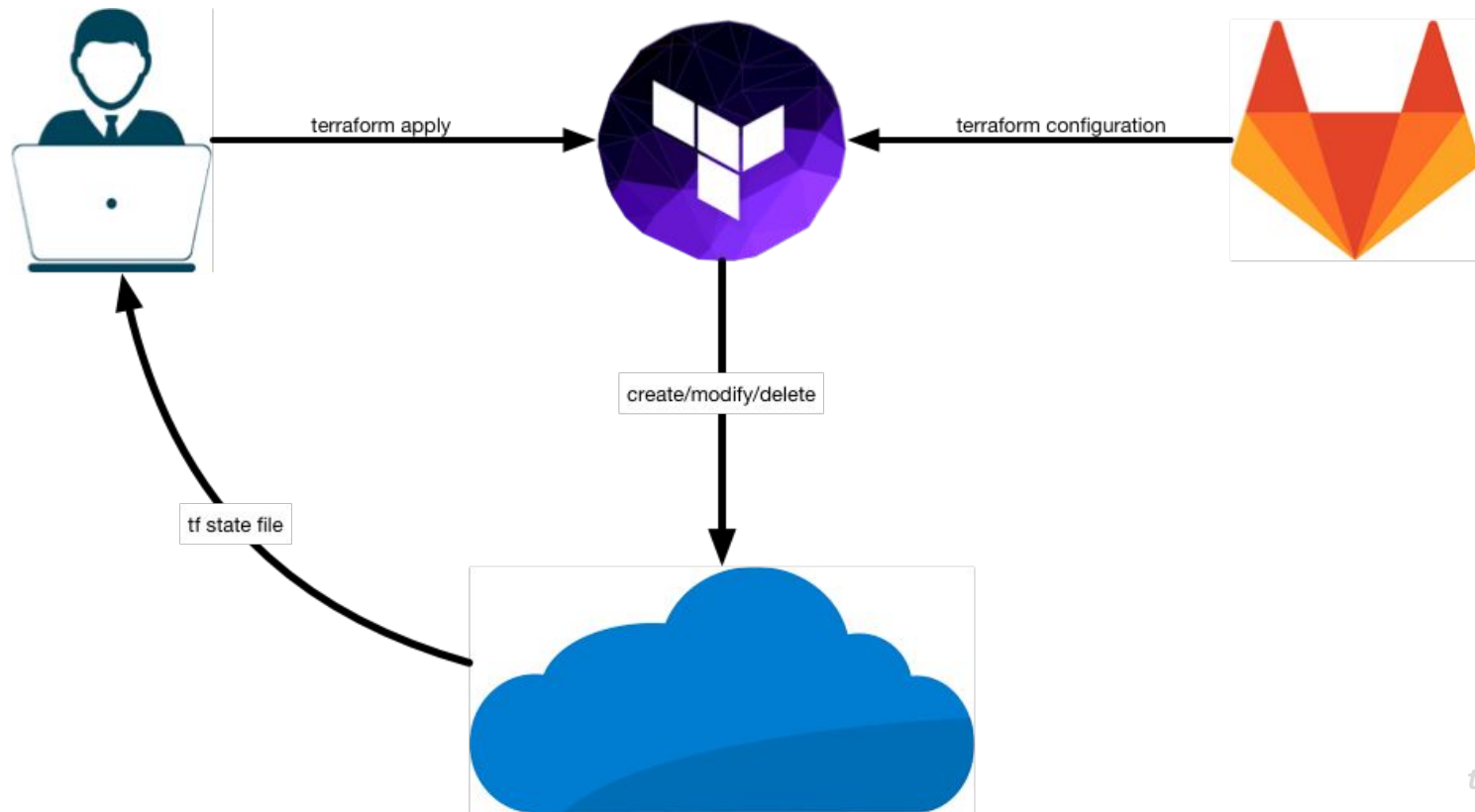
ticketmaster®

Hashicorp Terraform

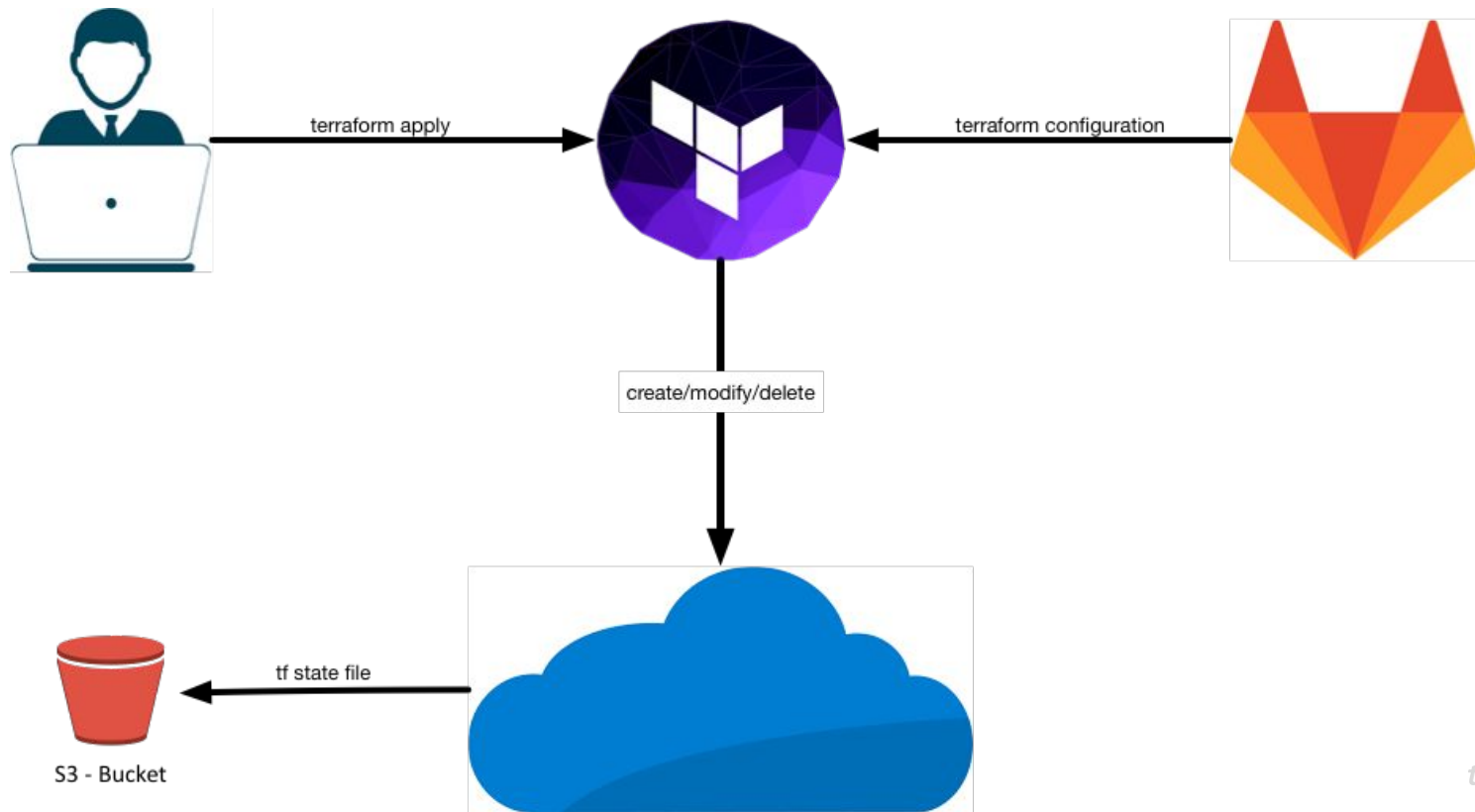
- Open Source
- Supports AWS, Google Cloud Platform, Azure
- Better DSL vs Cloud Formation (JSON)



Hashicorp Terraform (< 0.9.0)



Hashicorp Terraform (< 0.9.0)



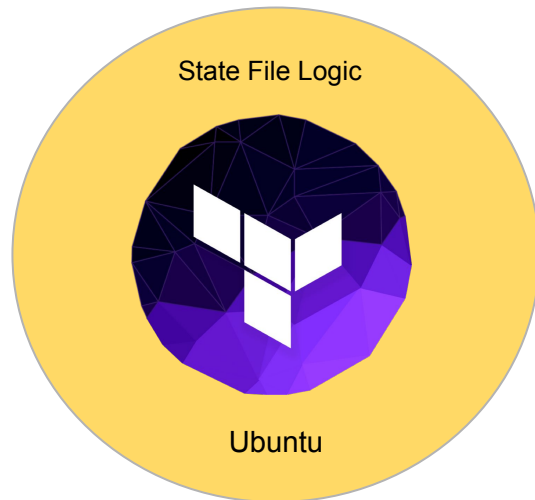
HashiCorp Terraform

```
$ rm -rf .terraform/

$ terraform remote config \
> -backend=s3 -backend-config="bucket=terraform.bucket" \
> -backend-config="key=PRD99999999/dev1/terraform.tfstate" \
> --profile tm-sandbox-Ops-Techops \
> --region us-east-1

$ terraform apply -var-file=sandbox/andy/terraform.tfvars
```

Ticketmaster Terraformer (Docker Container)

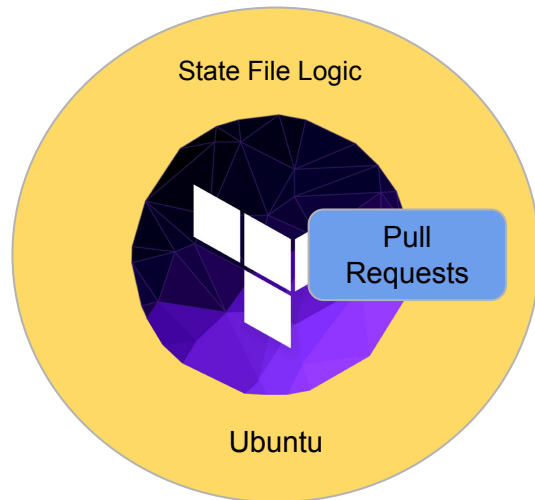


Ticketmaster Terraformer

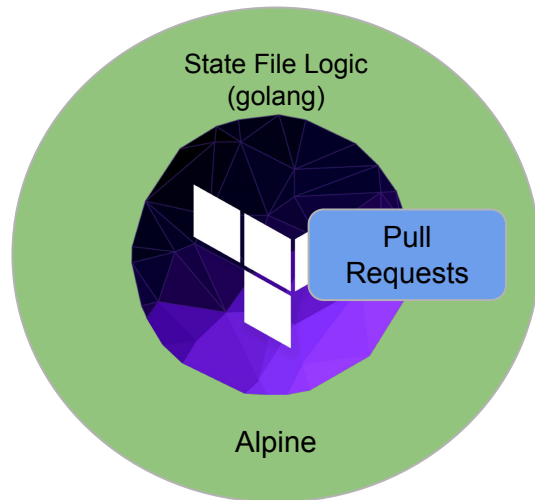
```
$ docker run --rm -it -v $(pwd):/cfg -v ~/.aws:/.aws/ \
  myregistry/cet/terraformer:latest tm-sandbox/dev1 apply

$ cat ~/.bash_profile
:
:
:
terraformer() {
  docker run --rm -it -v $(pwd):/cfg -v ~/.aws:/.aws/ myregistry/cet/terraformer:latest "$@";
}
:
:
:
$ terraformer tm-sandbox/dev1 apply
```

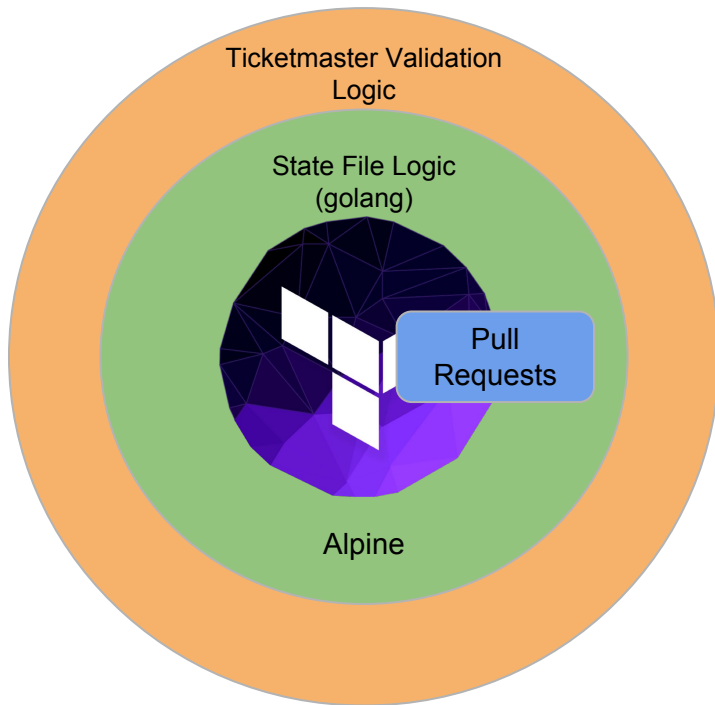
Ticketmaster Terraformer (Docker Container)



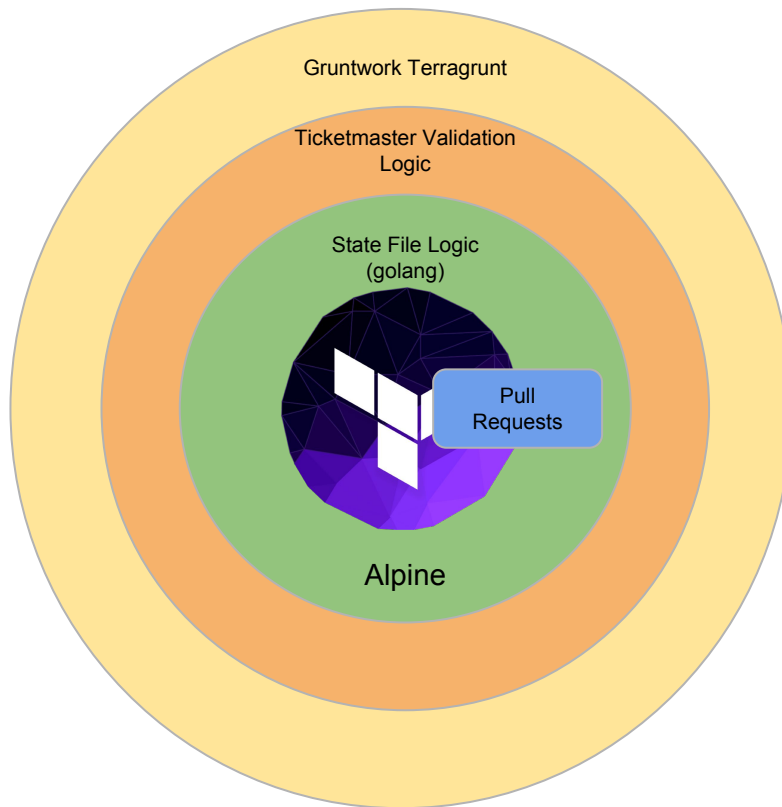
Ticketmaster Terraformer (Docker Container)



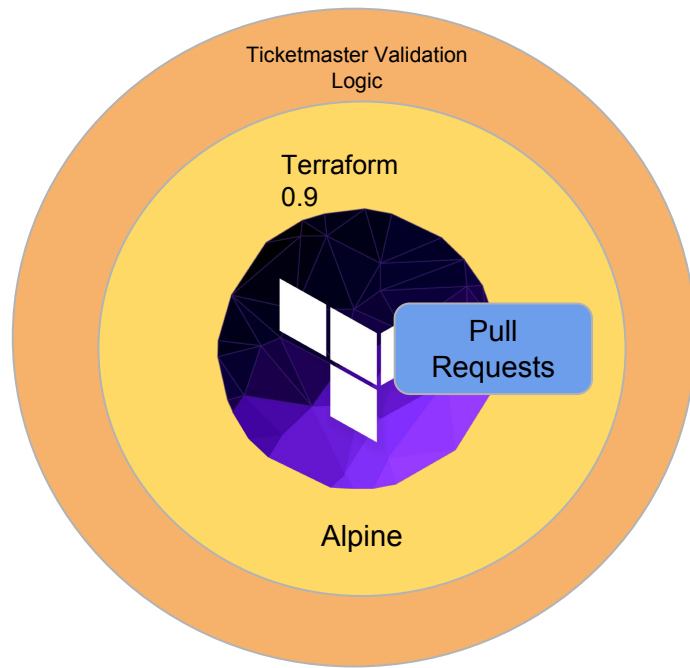
Ticketmaster Terraformer (Docker Container)



Ticketmaster Terraformer (Docker Container)



Ticketmaster Terraformer (Docker Container)

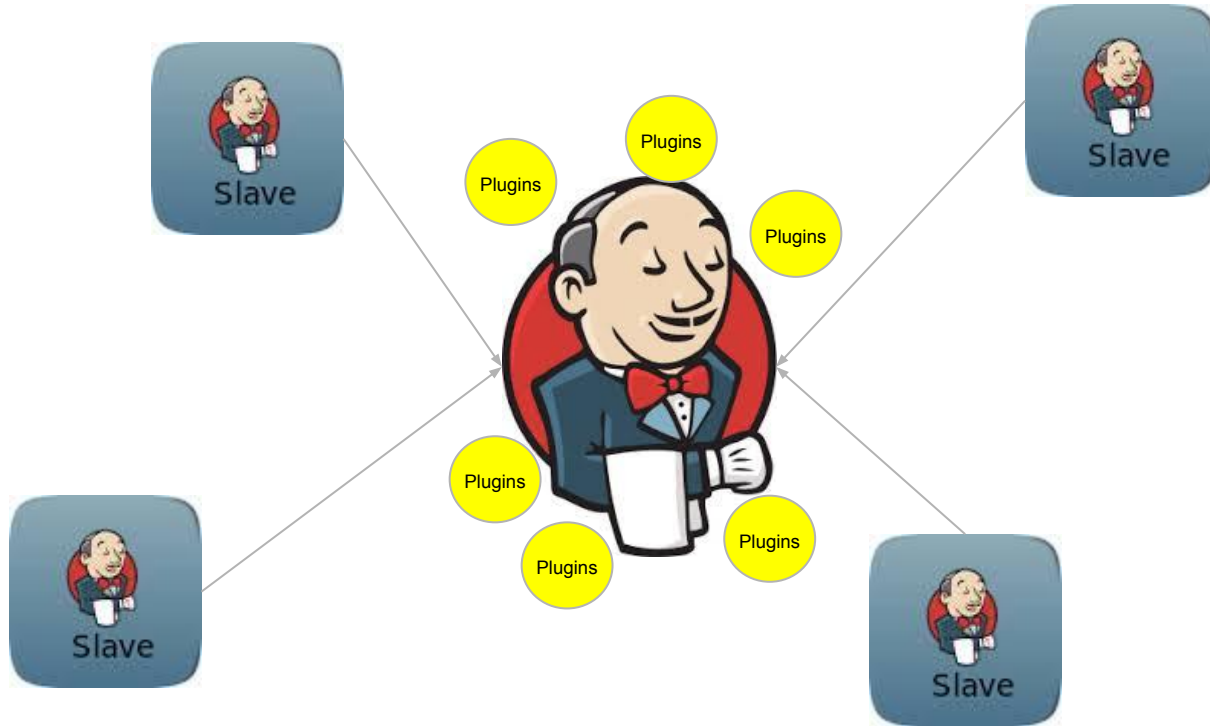


GitLab CI

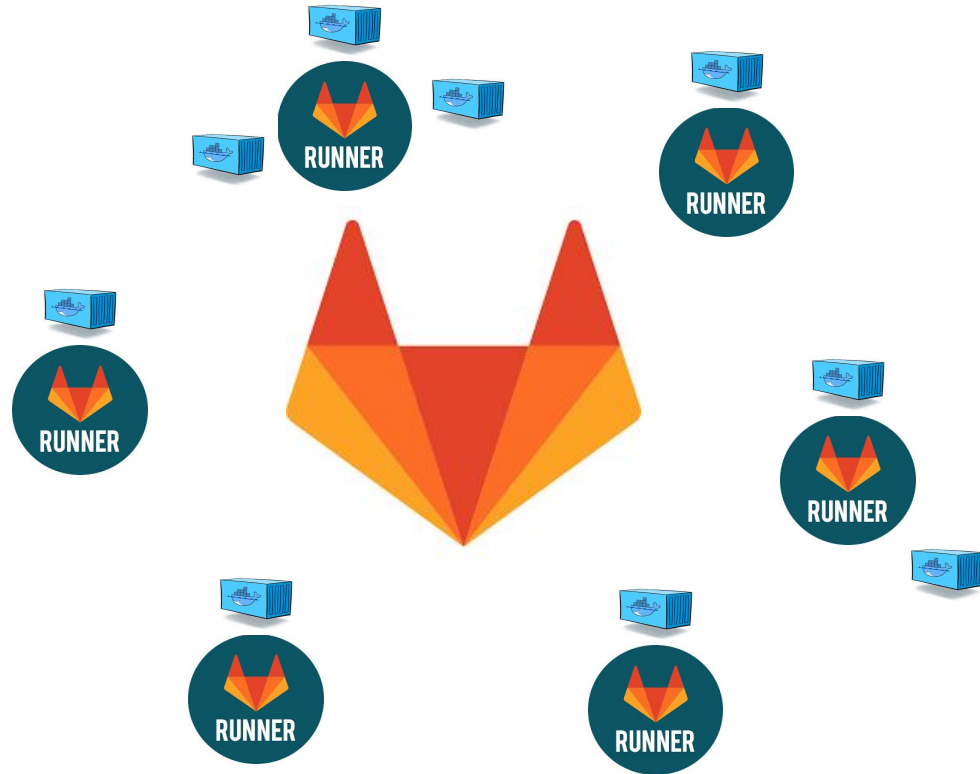
- Community Edition Open Source
- Source Code Management (SCM)
- CI/CD Pipeline
- Runner Executor
 - Shell, SSH, PowerShell
 - Docker, Docker Machine



GitLab CI



GitLab CI



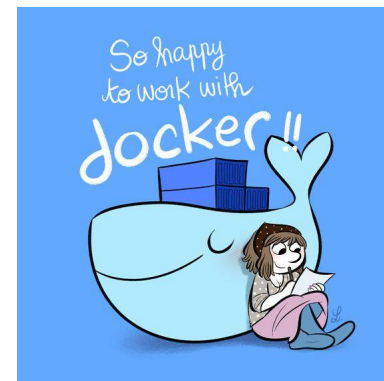
The background of the slide is a photograph of a large football stadium, likely Wembley, filled with spectators. The scene is captured at sunset or sunrise, with a warm, golden light from the sun low on the right side of the frame. A large, semi-transparent blue diagonal overlay covers the left and central portions of the image, creating a modern, digital aesthetic. The word "Summary" is centered in white text over the blue area.

Summary

ticketmaster[®]

:)

- Easy to upgrade (docker pull latest)
- Abstract from Developers/Users
- Almost Cross Platforms
 - Mac, Windows, Linux Desktop / Server Side



:(

- Still Frictions with Windows
 - Bugs
 - Symlinks Not Quite Working
 - Difficult to Setup
 - Git BASH Profile to Work with Powershell
 - Local User Account for Setup Docker Volume
- Windows Container?



Questions?

