# Owning Your Stuff (Escaping from Development Dependency Hell)

Tim Sutton, Montreal (YUL)
Sauce Labs

### MAIS POURQUOI YUL?

Qui dit YUL, dit Montréal. Le code de l'aéroport est aussi branché à Montréal que LAX est pour Los Angeles, ces trois lettres sont presque devenues une <u>marque de commerce</u> en soi. Mais d'où vient ce YUL? Pourquoi l'aéroport international situé à Dorval porte-t-il cette désignation?

#### CATÉGORIES

Actualité

Histoire

toponymie

Urbanisme

#### ÉTIQUETTES

aéroport

Antenne

Beacon

Dorval

Kirkland

Mirabel



http://proposmontreal.com/index.php/mais-pourquoi-yul/











#### Montreal NDB UL - Kirkland, QC, Canada

in Ground Based Air Navigation Support Structures

Posted by: <a>8</a> <a href="decision-right">denben</a>

N 45° 27.606 W 073° 50.817

18T E 590147 N 5034710

Quick Description: Montreal NDB UL is located in Kirkland, an on-island suburb on the

Island of Montreal in southwestern Québec, Canada.

Location: Québec, Canada

**Date Posted:** 10/28/2017 9:22:56 AM

Waymark Code: WMWY12 **Published By:** § fi67

Views: 25

#### Download this waymark:







.KML File (Google Earth)

#### **Long Description:**

Radio aid to air navigation, this beacon continually emits the letters UL in morse (Dididah Didahdidit) on the LF frequency of 248 kHz.

It is owned and maintained by Nav Canada and is in a straight line with runway 10 at Montreal / Pierre Elliott Trudeau International Airport (YUL) (3.5 nautical miles from the runway threshold).

Name: Montreal NDB Identifier: UL (..- .-..) Frequency: 248 KHz

Location: 45.459999, -73.848297

Intended use: high- and low-level enroute navigation (medium power)

Country: Canada

Associated airport: Montreal / Pierre Elliott Trudeau International Airport

<u>llery</u>



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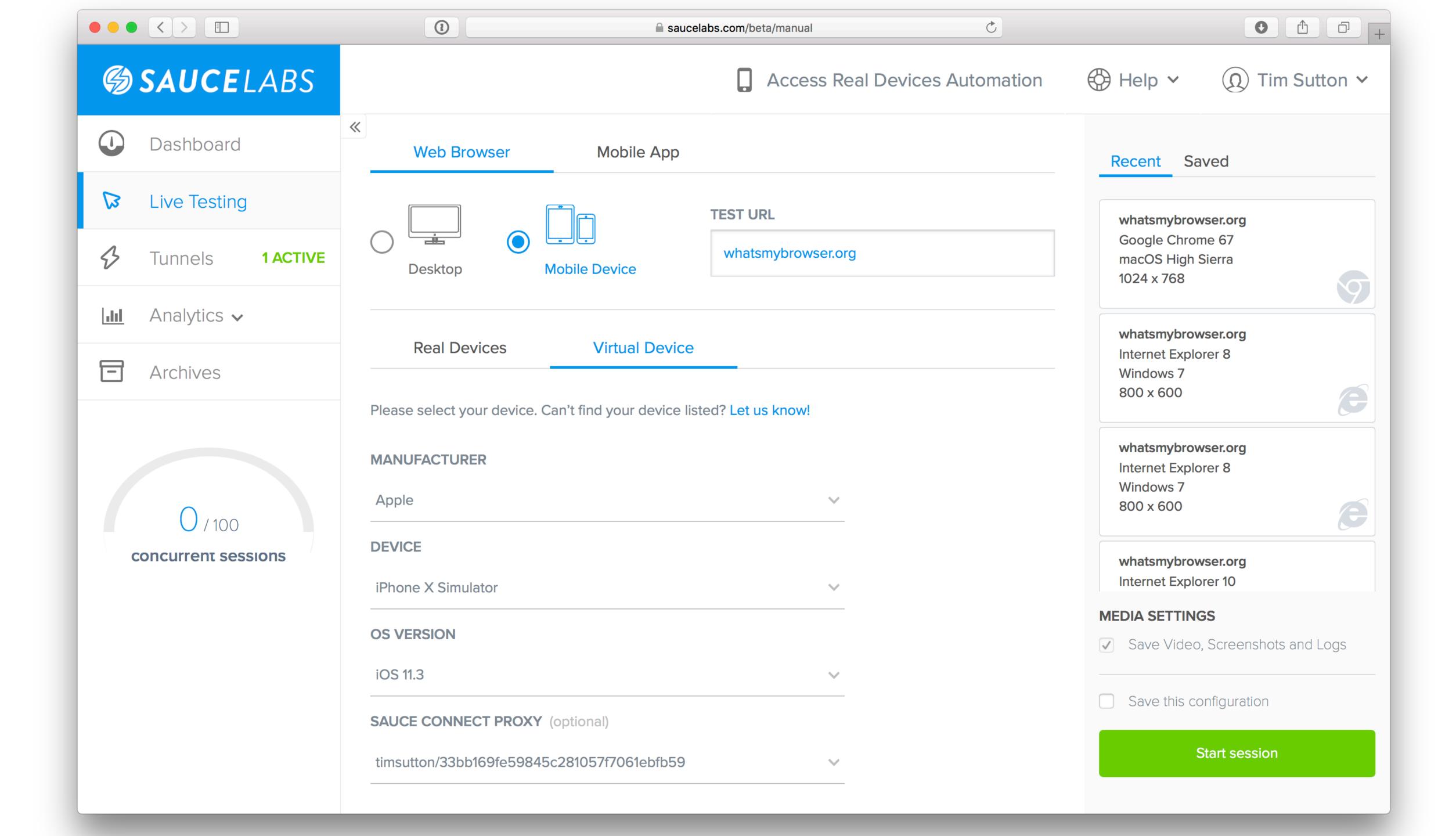
Waymark Code: WMWY12

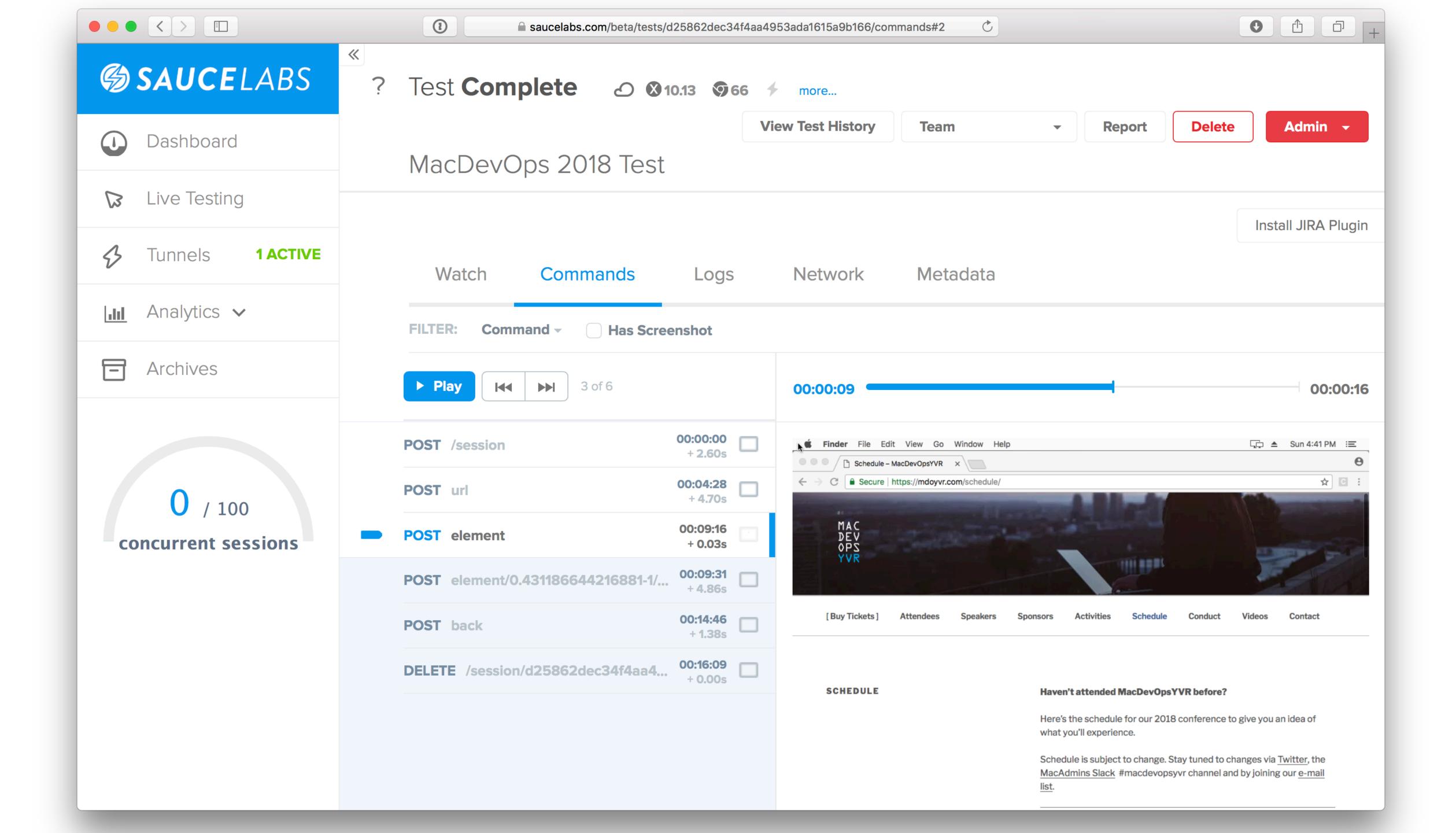
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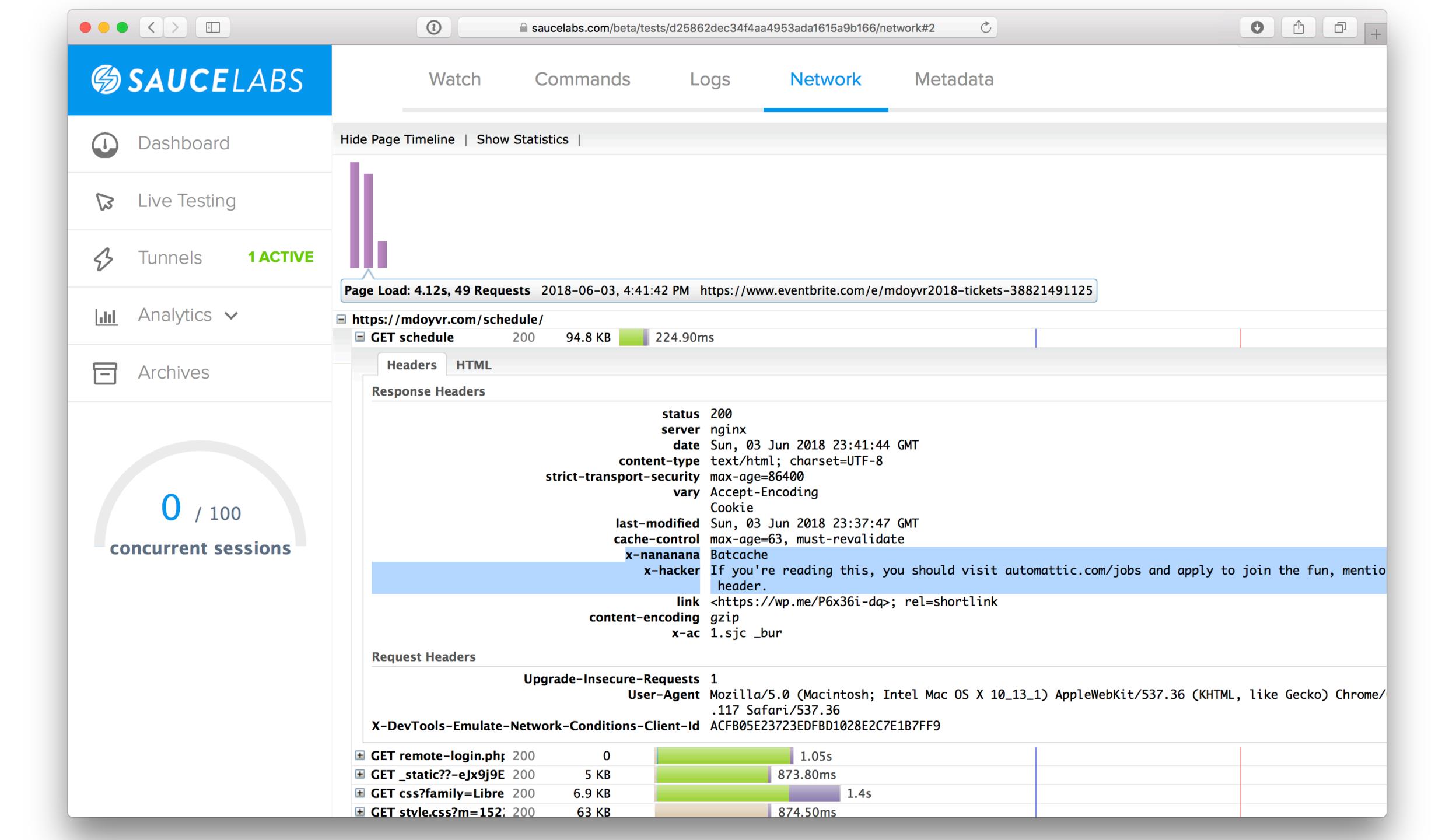
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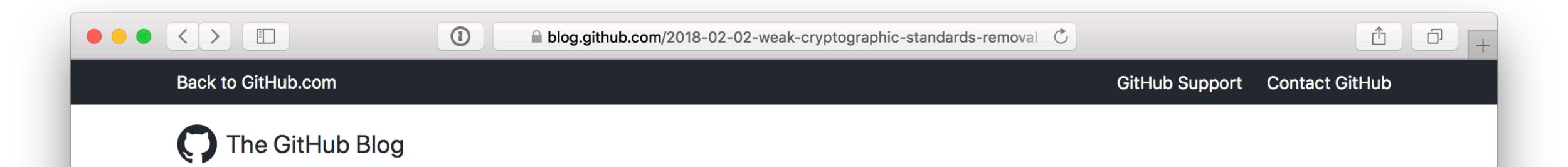


## Dependencies

# AutoPkg and GitHub TLSv1.0/1.1 removal (Feb 22, 2018)

#### #!/usr/bin/python

```
>>> platform.mac_ver()[0]
'10.11.6'
>>> ssl.OPENSSL_VERSION
'OpenSSL 0.9.8zh 14 Jan 2016'
>>> platform.mac_ver()[0]
'10.12.6'
>>> ssl.OPENSSL_VERSION
'OpenSSL 0.9.8zh 14 Jan 2016'
>>> platform.mac_ver()[0]
'10.13.4'
>>> ssl.OPENSSL_VERSION
'LibreSSL 2.2.7'
```



#### Weak cryptographic standards removal notice

Feb 02, 2018 ptoomey3 Engineering

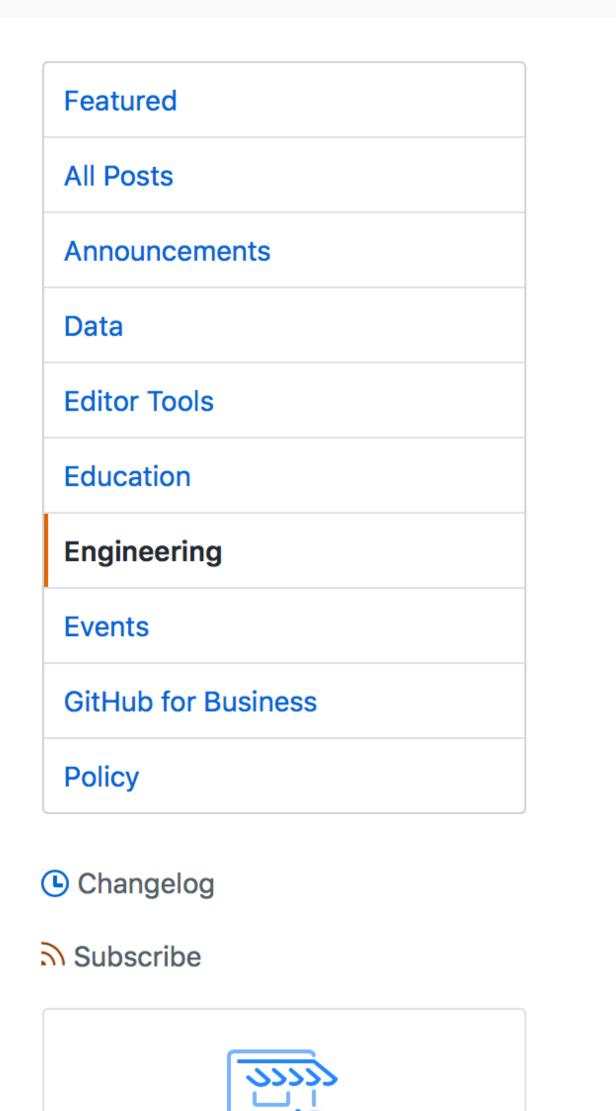
Last year we announced the deprecation of several weak cryptographic standards. Then we provided a status update toward the end of last year outlining some changes we'd made to make the transition easier for clients. We quickly approached the February 1, 2018 cutoff date we mentioned in previous posts and, as a result, pushed back our schedule by one week. On February 8, 2018 we'll start disabling the following:

- TLSv1 / TLSv1.1: This applies to all HTTPS connections, including web, API, and git connections to https://github.com and https://api.github.com.
- diffie-hellman-group1-sha1: This applies to all SSH connections to github.com
- diffie-hellman-group14-sha1: This applies to all SSH connections to github.com

We'll disable the algorithms in two stages:

- February 8, 2018 19:00 UTC (11:00 am PST): Disable deprecated algorithms for one hour
- February 22, 2018 19:00 UTC (11:00 am PST): Permanently disable deprecated algorithms

For more details, head to the Engineering Blog.



#### github.com/clburlison/vendored





The goal of this repo is to make it easy to "vendor" your own frameworks and programming languages in an automated fashion.

Once this project is complete you will be able to have own version of python with custom pip modules included, ruby, OpenSSL, and more all in one nice big package or multiple smaller packages for easy deployment.

#### Clay Caviness - Securing Management Tools - MacADUK 2017



Clay Caviness - Securing Management Tools

98 views

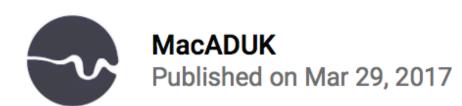












What is so hard? It's just `pip install`?

## NPM (part 1) (Feb 21, 2018)

## Library Package Managers (LPMs)

#### Critical Linux filesystem permissions are being changed by latest version #19883



(F) Closed Crunkle opened this issue on Feb 21 · 121 comments



Crunkle	commented	on Feb 2	1 • edited 🕶
---------	-----------	----------	--------------

#### I'm opening this issue because:

- npm is crashing.
- npm is producing an incorrect install.
- ✓ npm is doing something I don't understand.
- ✓ Other (see below for feature requests):

#### What's going wrong?

This issue has been happening ever since 5.7.0 was released a few hours ago. It seems to have completely broken my filesystem permissions and caused me to have to manually fix the permissions of critical files and folders. I believe that it is related to the commit 94227e1 which is traversing and running chown on the wrong, often critical, filesystem files and folders.

By running sudo npm under a non-root user (root users do not have the same effect), filesystem permissions are being heavily modified. For example, if I run sudo npm --help or sudo npm update g, both commands cause my filesystem to change ownership of directories such as /etc, /usr, /boot , and other directories needed for running the system. It appears that the ownership is recursively changed to the user currently running npm.

I found that a selection of directories in / were owned by a non-root user after running sudo npm and many binaries in /usr/bin stopped working as their permissions were changed. People experiencing this bug will likely have to fully reinstall their system due to this update.

#### npm update -g as root:

No output, all packages up to date. Likely still causes a chown to be run silently to root: root. drwxr-xr-x 10 root root 129 Feb 22 03:39 /usr

#### **Assignees**

No one assigned

#### Labels

None yet

#### **Projects**

None yet

#### Milestone

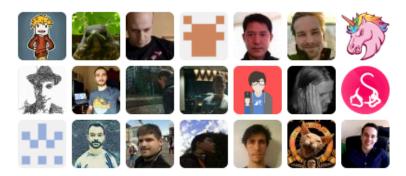
No milestone

#### **Notifications**

#### **◄**® Subscribe

You're not receiving notifications from this thread.

#### 78 participants



and others

✓ Other (see below for feature requests):

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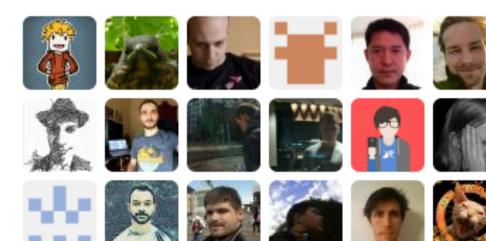
No milestone

#### **Notifications**

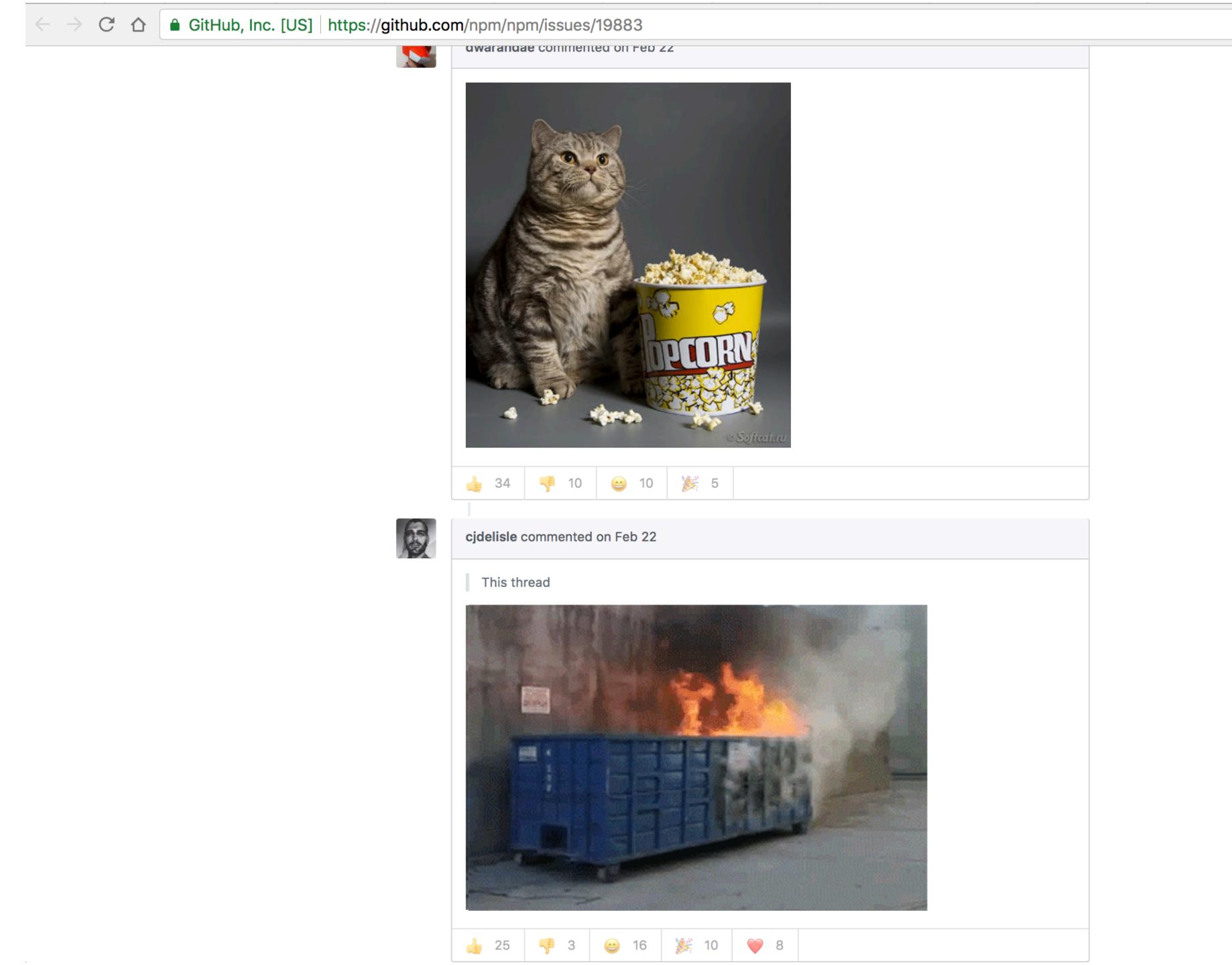


You're not receiving notificat from this thread.

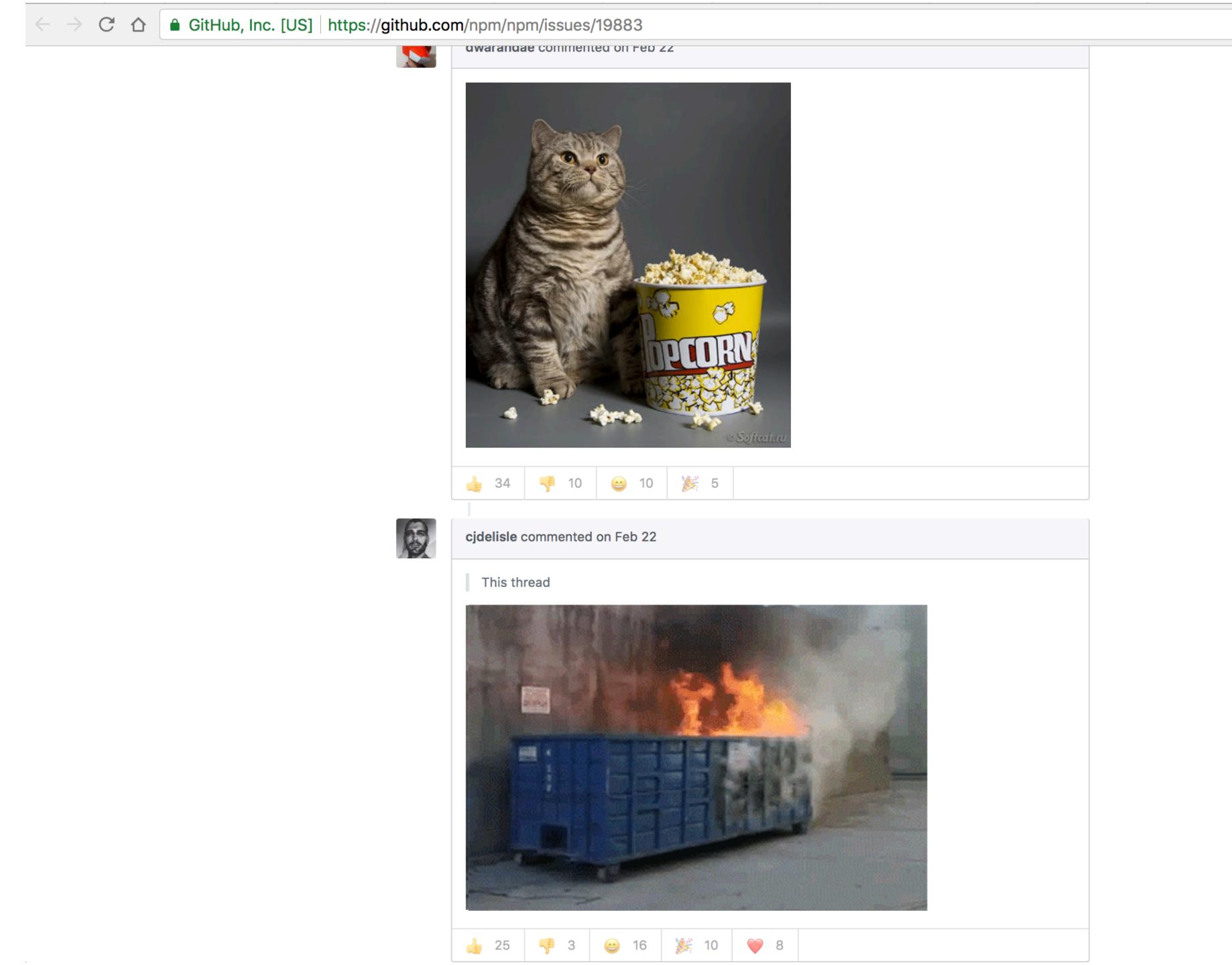
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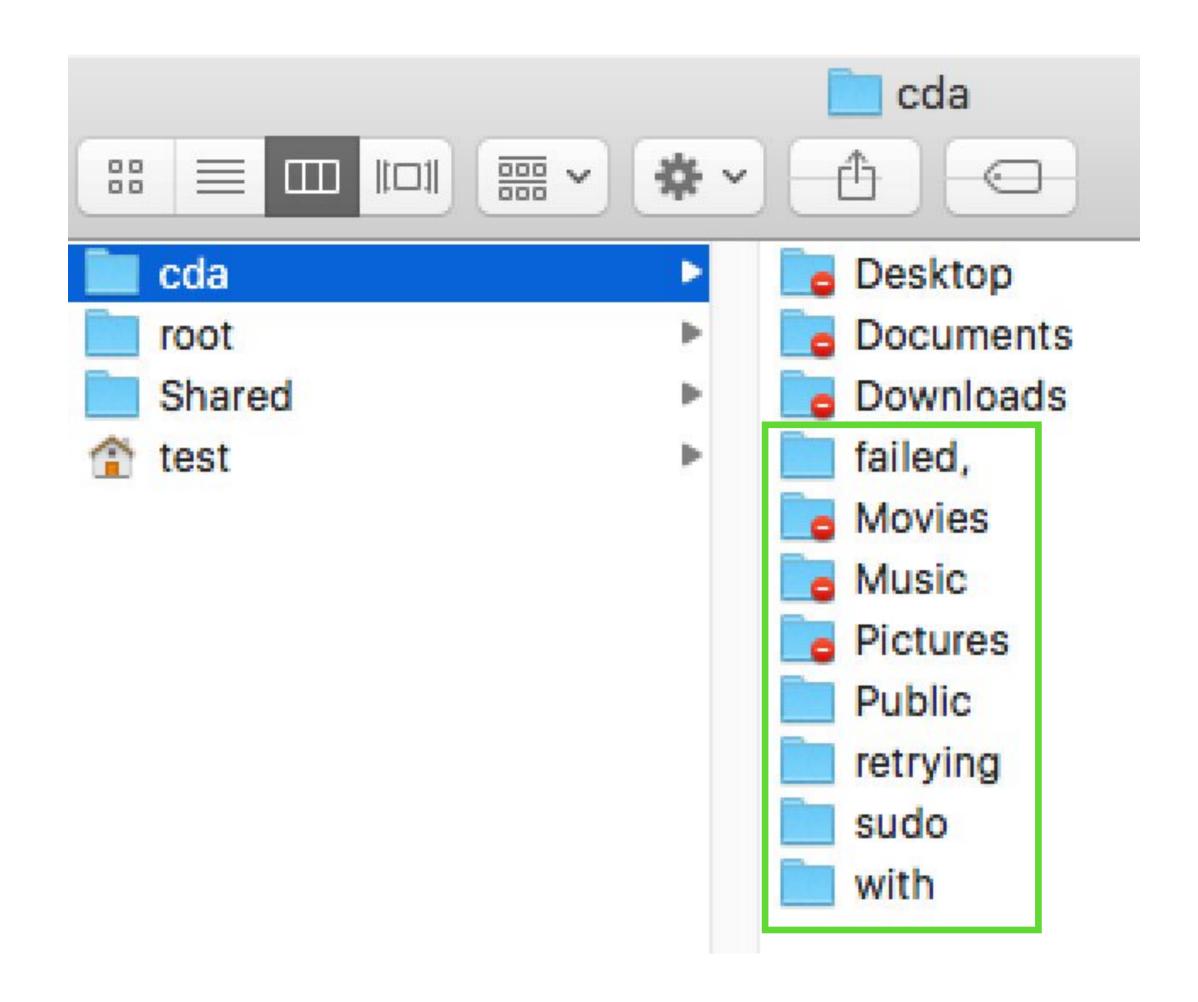
and others

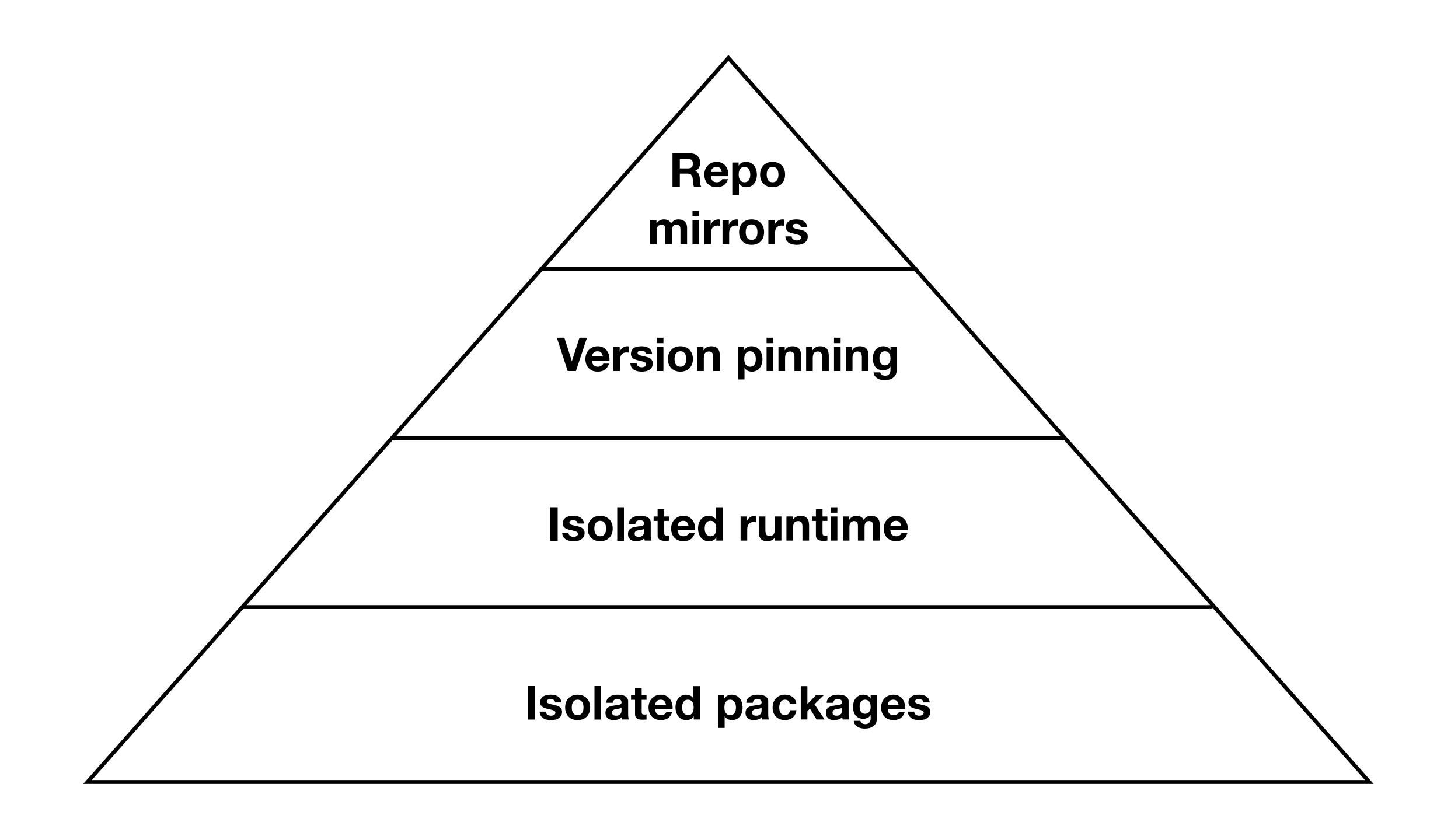


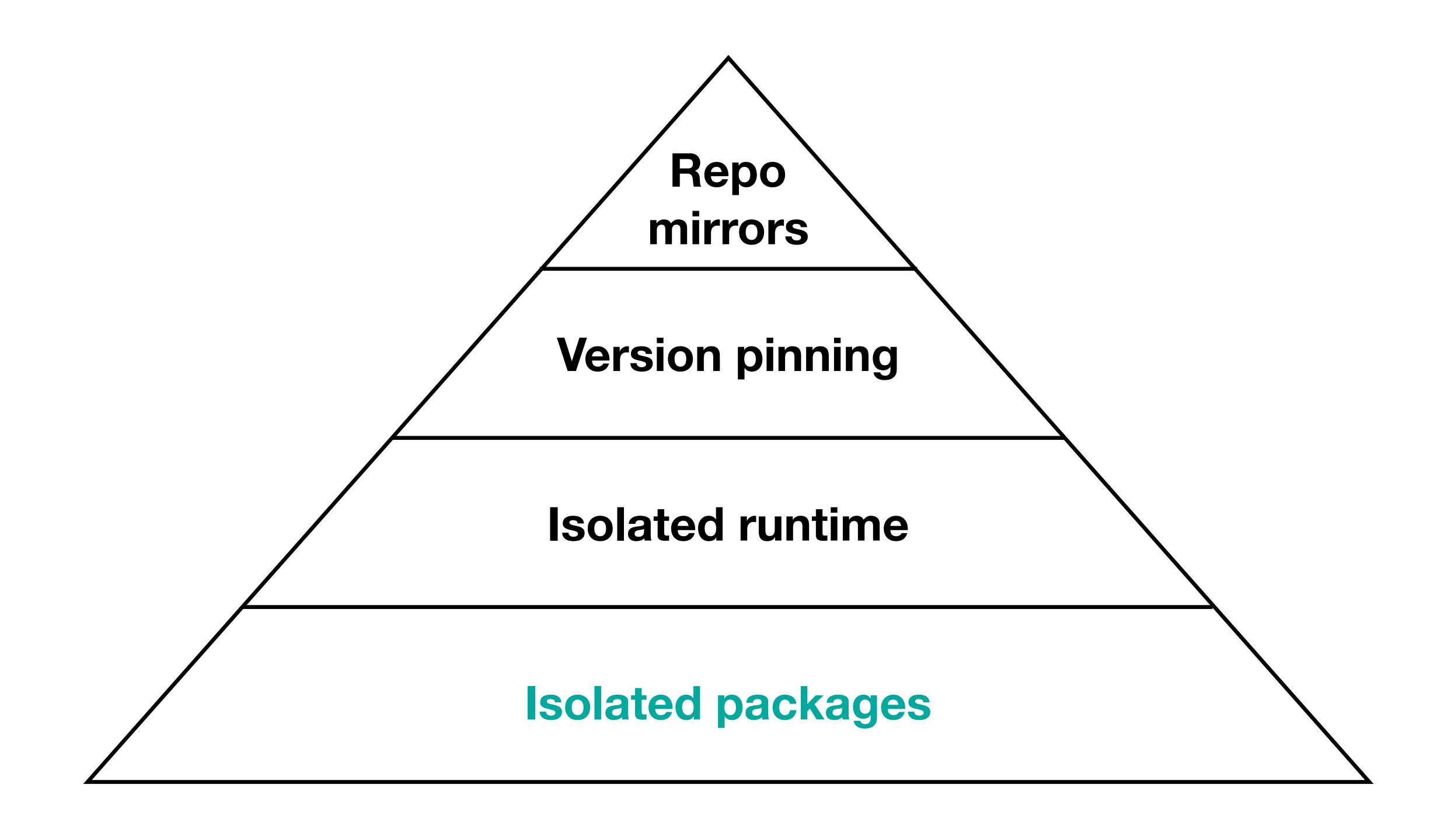
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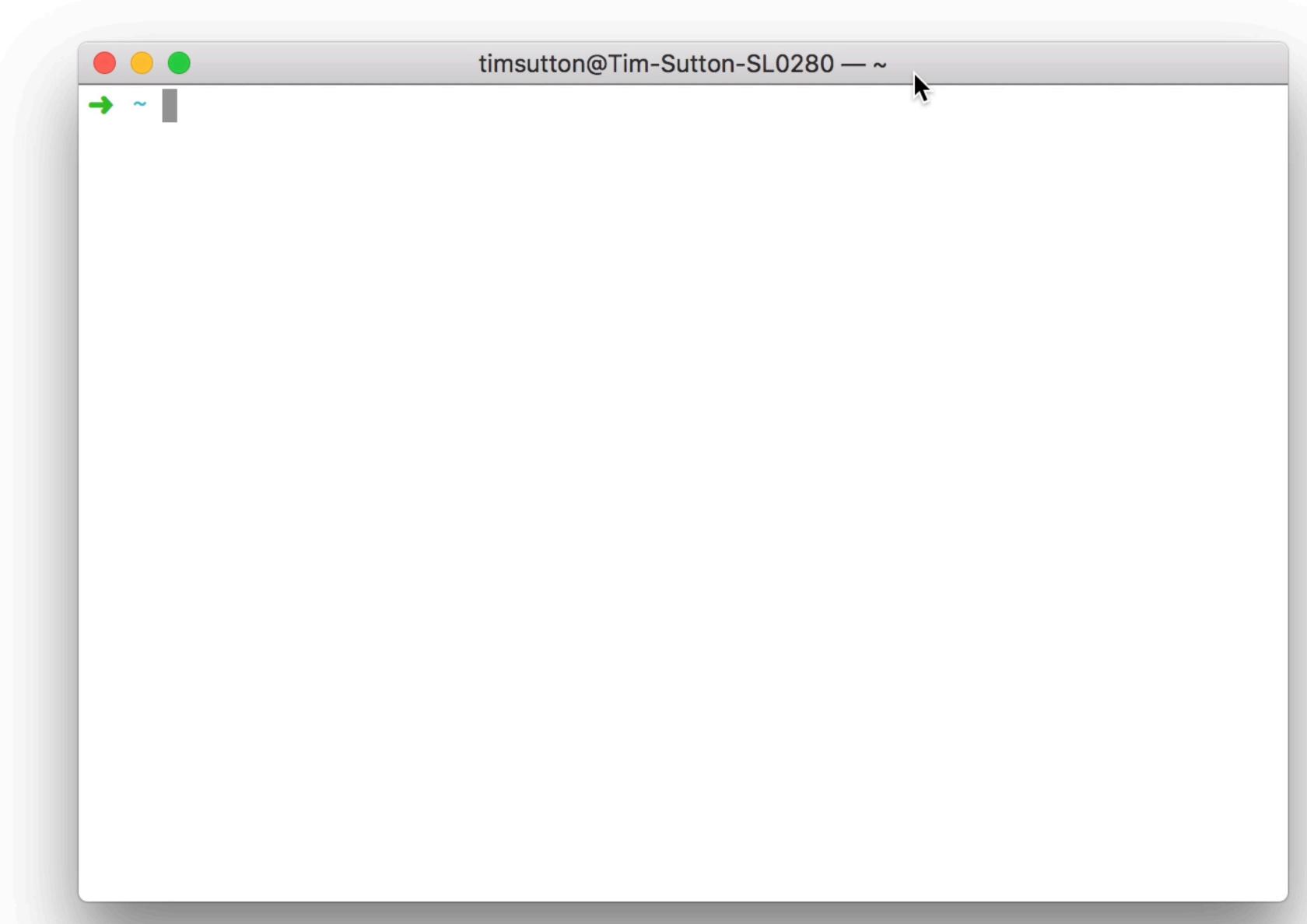
### Isolate packages

- Don't sudo <pip|gem|npm> install anything
- Eliminates contamination of OS managed/supplied packages
- Your project's environment lives independently of any other projects and packages
- (Mostly) portable to any other OS / environment

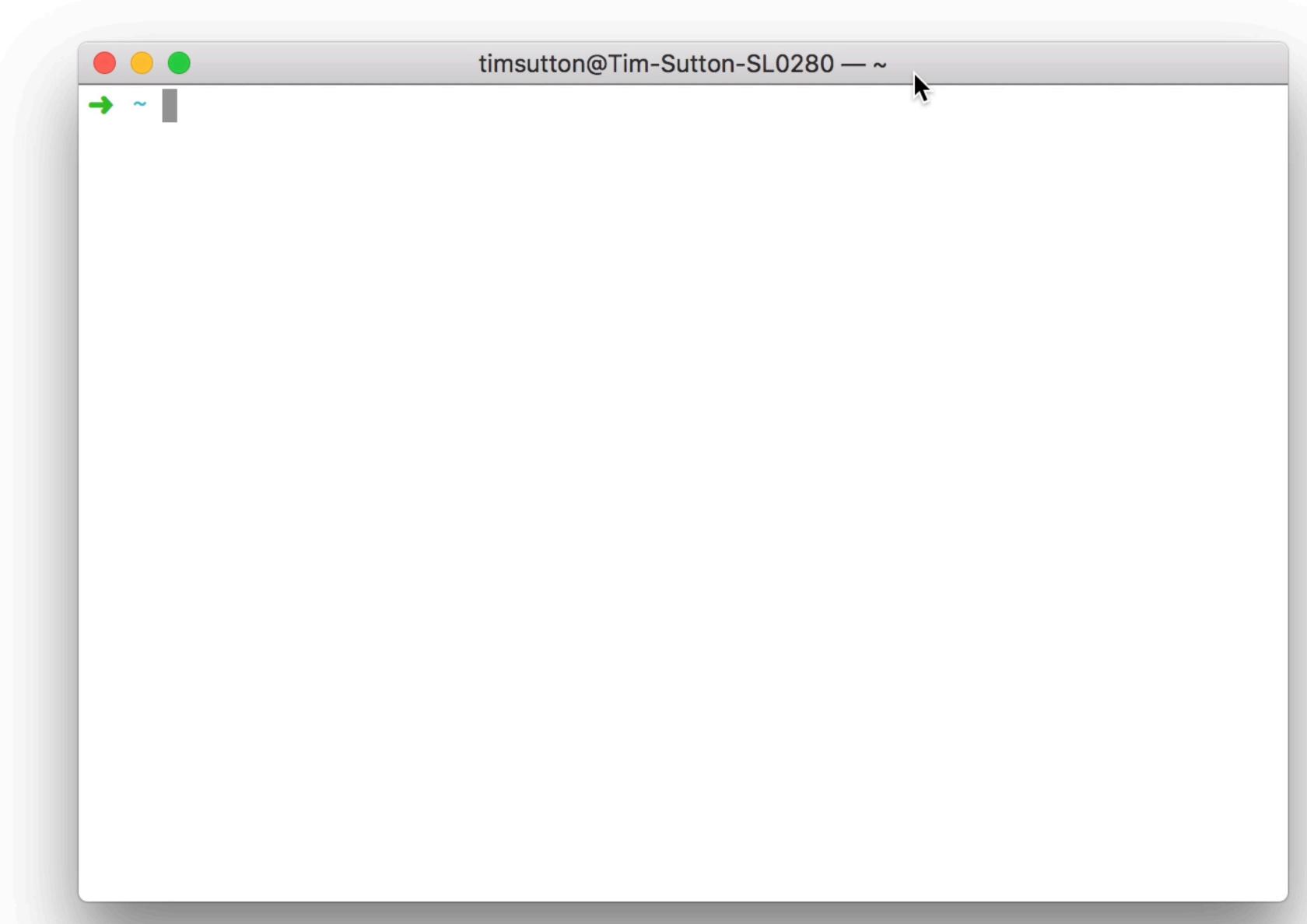
## Isolate packages (Python)

- Install virtualenv once (and ideally virtualenvwrapper or similar)
- virtualenv / mkvirtualenv -p to specify which Python you want to use when creating
- Use workon to easily switch between environments
- pip install, then pip freeze to save a requirements.txt

## Isolate packages (Python)



## Isolate packages (Python)



- Install Bundler
- Define project gems in Gemfile, constrain versions as you wish
- bundle update to resolve and "freeze" the constraints to Gemfile.lock
- Now any bundle install will only install the exact versions from Gemfile.lock - check both files into version control
- Run bundle update to update it later
- Run things via bundle exec <command>

#### Gemfile

```
gem "sinatra", "~> 1"
```

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#### Gemfile.lock

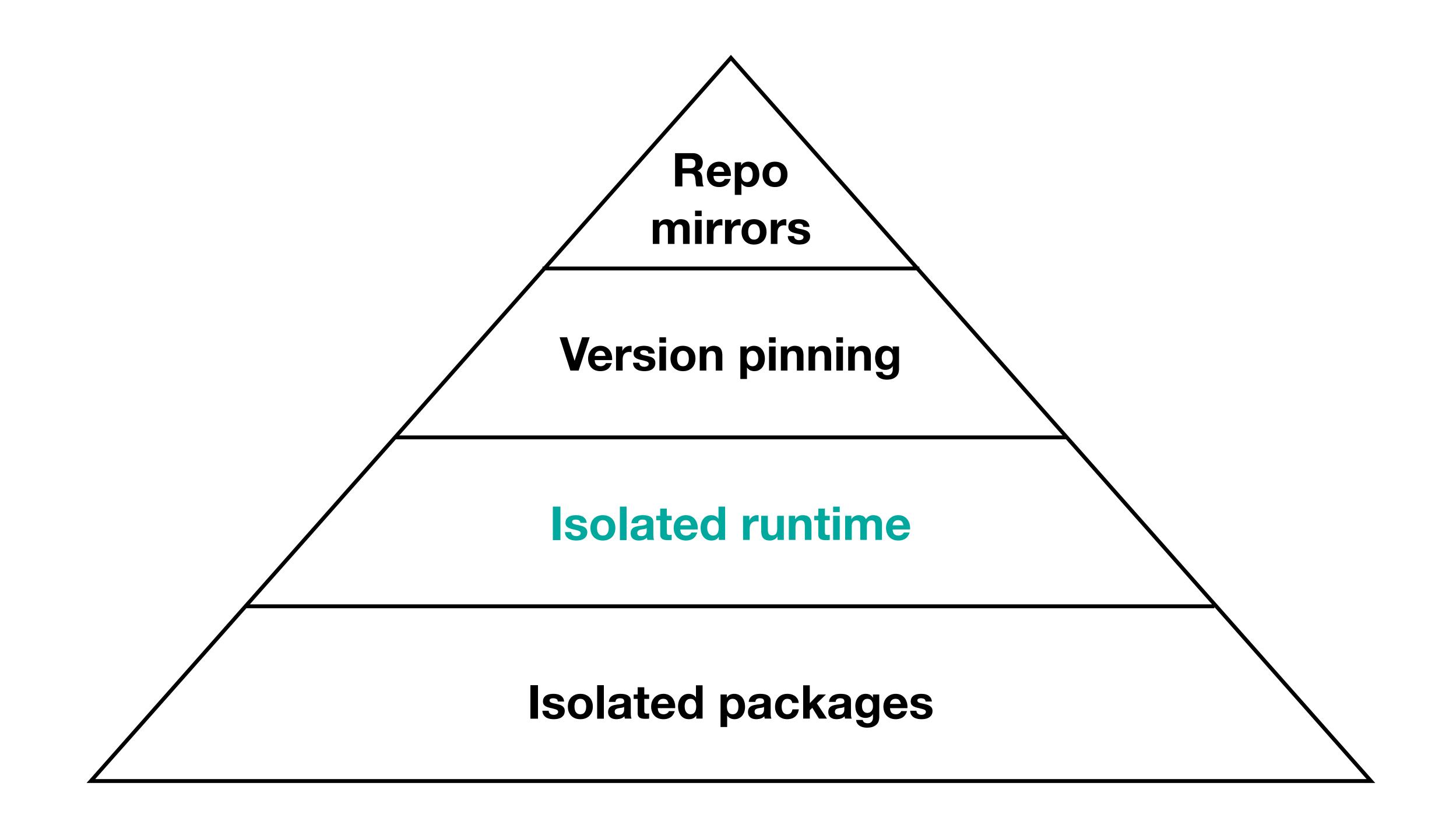
```
GEM
  specs:
    rack (1.6.10)
    rack-protection (1.5.5)
      rack
    sinatra (1.4.8)
      rack (~> 1.5)
      rack-protection (~> 1.4)
      tilt (>= 1.3, < 3)
    tilt (2.0.8)
PLATFORMS
  ruby
DEPENDENCIES
  sinatra (~> 1)
```

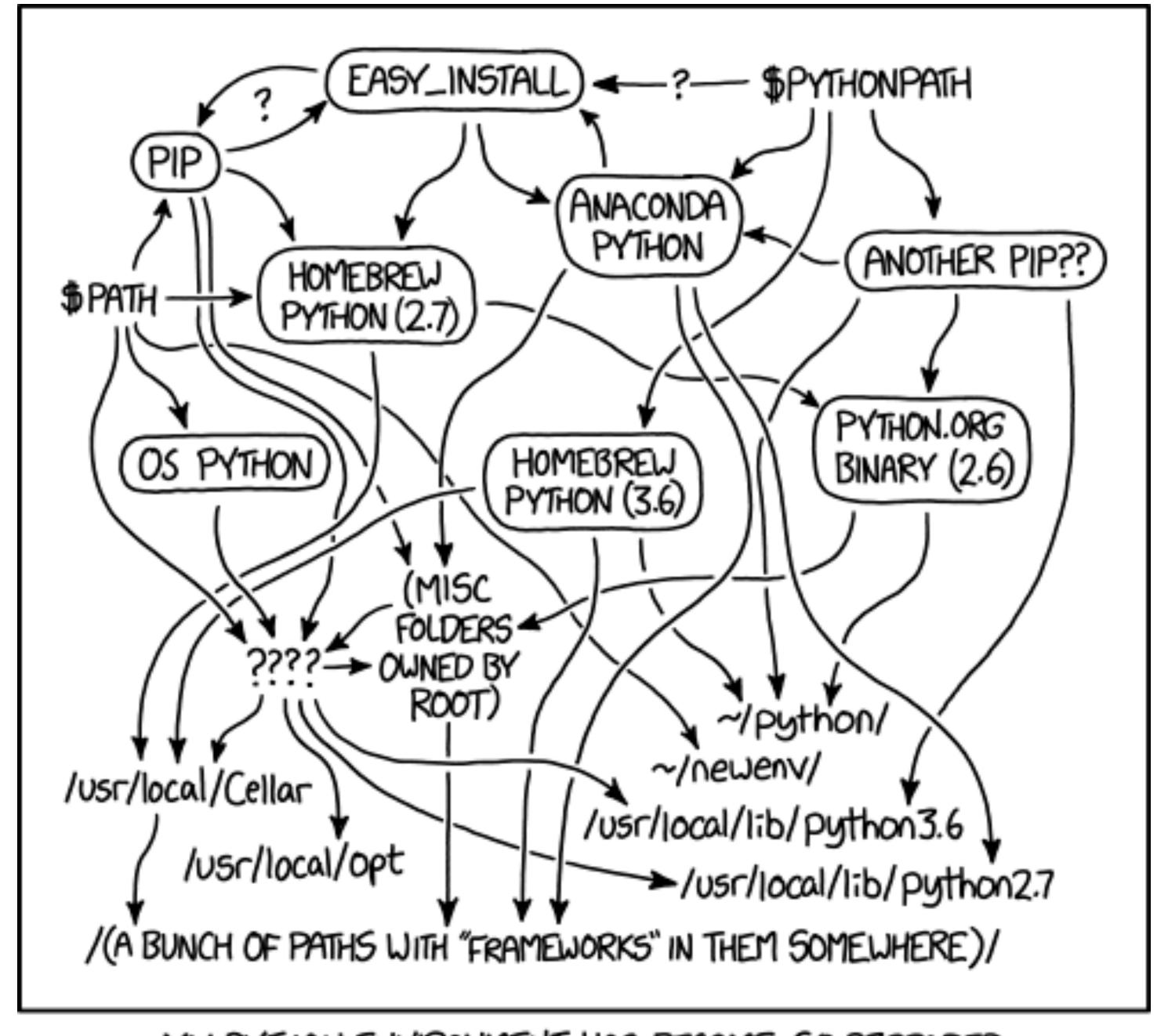
#### Gemfile

```
gem "sinatra", "~> 2"
```

#### Gemfile

```
gem "sinatra", "~> 2"
→ bundle update
Fetching gem metadata from https://rubygems.org/.....
Resolving dependencies...
Using bundler 1.16.1
Fetching mustermann 1.0.2
Installing mustermann 1.0.2
Fetching rack 2.0.5 (was 1.6.10)
Installing rack 2.0.5 (was 1.6.10)
Fetching rack-protection 2.0.2 (was 1.5.5)
Installing rack-protection 2.0.2 (was 1.5.5)
Using tilt 2.0.8
Fetching sinatra 2.0.2 (was 1.4.8)
Installing sinatra 2.0.2 (was 1.4.8)
Bundle updated!
```





MY PYTHON ENVIRONMENT HAS BECOME SO DEGRADED THAT MY LAPTOP HAS BEEN DECLARED A SUPERFUND SITE.

Text	Explanation		
\$PATH	\$PATH refers to the PATH environment variable, which determines where to search for executable files. In this case, it indicates that the pip, Homebrew Python (2.7), and OSX's pre-installed Python are accessible on path, with ~/newenv/ and a mysterious ???? as part of PATH.		
pip	pip is the Python package management system, and is used to install and manage python packages. As it is written in Python, it requires Python to run. It leads to easy_install, Homebrew Python (2.7), "(misc folders owned by root)", and ????.		
Homebrew Python (2.7)	Homebrew is the de facto standard third-party OSX package manager. Homebrew Python (2.7) is the Python 2 version installed through Homebrew. This leads to Python.org binary (2.6) and /usr/local/Cellar.		
OS Python	Apple bundles an (out of date) version of Python with OSX. This only leads to ????.		
????			
easy_install	easy_install, much like pip, is a cpan-like tool to download and install Python packages. As of the creation of the comic, many people discourage its use. (e.g., this question on stack exchange.		
Anaconda Python	Anaconda is a Python distribution for data science and machine learning related applications.		
Homebrew Python (3.6)	As of the creation of the comic, Python 3.6 is the current stable version of Python.		
Python.org binary (2.6)			
(Misc folders owned by root)			
/usr/local/Cellar			
/usr/local/opt	Both /usr/local and /opt are directories that store files that do not belong to a Unix-like operating system. Usually, files in /usr/local were created with a make command, and files in /opt are unbundled packages. The joke is that /usr/local/opt should really, really not exist.		
/(A bunch of items with "Frameworks" in them somewhere)/	The system-included Python distribution in macOS resides in /System/Library/Frameworks		
\$PYTHONPATH			
Another pip??	There should only be one PIP (package management system) in place. More that one would lead to them contradicting each other. Randall is confused as to how the second one got there.		
~/python/			

#### https://www.explainxkcd.com/wiki/index.php/1987:\_Python\_Environment

virtualenv's Python instances, while more common packages are still referenced via the system Python paths.

- Remove variables in the OS which limits supported OSes for your project
  - Apple: Python/Ruby linked to OpenSSL until 10.13 (switched to LibreSSL)
    - Ruby versions included on macOS make large jumps in versions
  - Linux: runtime provided by the OS may be too old
    - Needing to ever change switch base OS flavours could change your runtime version
  - Windows: Never came with Python

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  - Windows: Never came with Python
- Isolating the runtime also makes it easier to isolate packages

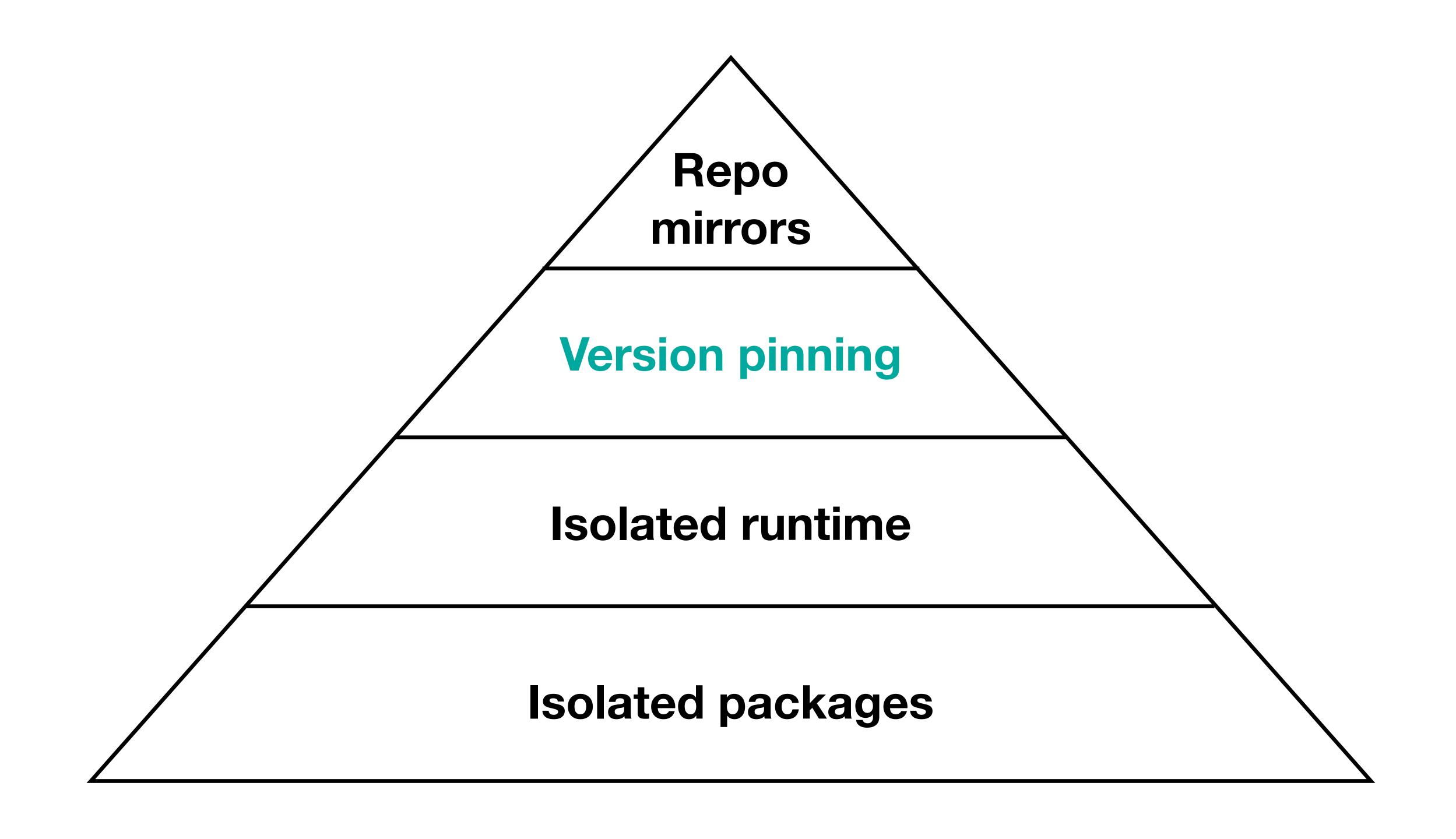
- Python
  - pyenv

- Python
  - pyenv
- Ruby
  - RVM
  - rbenv
  - ruby-install + chruby

- Python
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- Ruby
  - RVM
  - rbenv
  - ruby-install + chruby
- Node
  - NVM

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  - pyenv
- Ruby
  - RVM
  - rbenv
  - ruby-install + chruby
- Node
  - NVM
- Go
  - GVM

- Python
  - pyenv
- Ruby
  - RVM
  - rbenv
  - ruby-install + chruby
- Node
  - NVM
- Go
  - GVM
- Or... Docker



- No >=1.2, only ==1.2.3
- Remove all surprises about versions
- Every version update becomes intentional
  - Easier to correlate via Git history any bugs or regressions, and understand context of why a package was updated
- Can also pin to specific forks, internal or patched versions of libraries

- With Bundler (Ruby) you'll get this for free
- pip (Python) also lets you specify exact package versions (==), although pip doesn't have a true dependency resolver
- Resist the urge to define Python dependencies loosely, even if it is more tedious to update requirements files

pip install --upgrade pip?

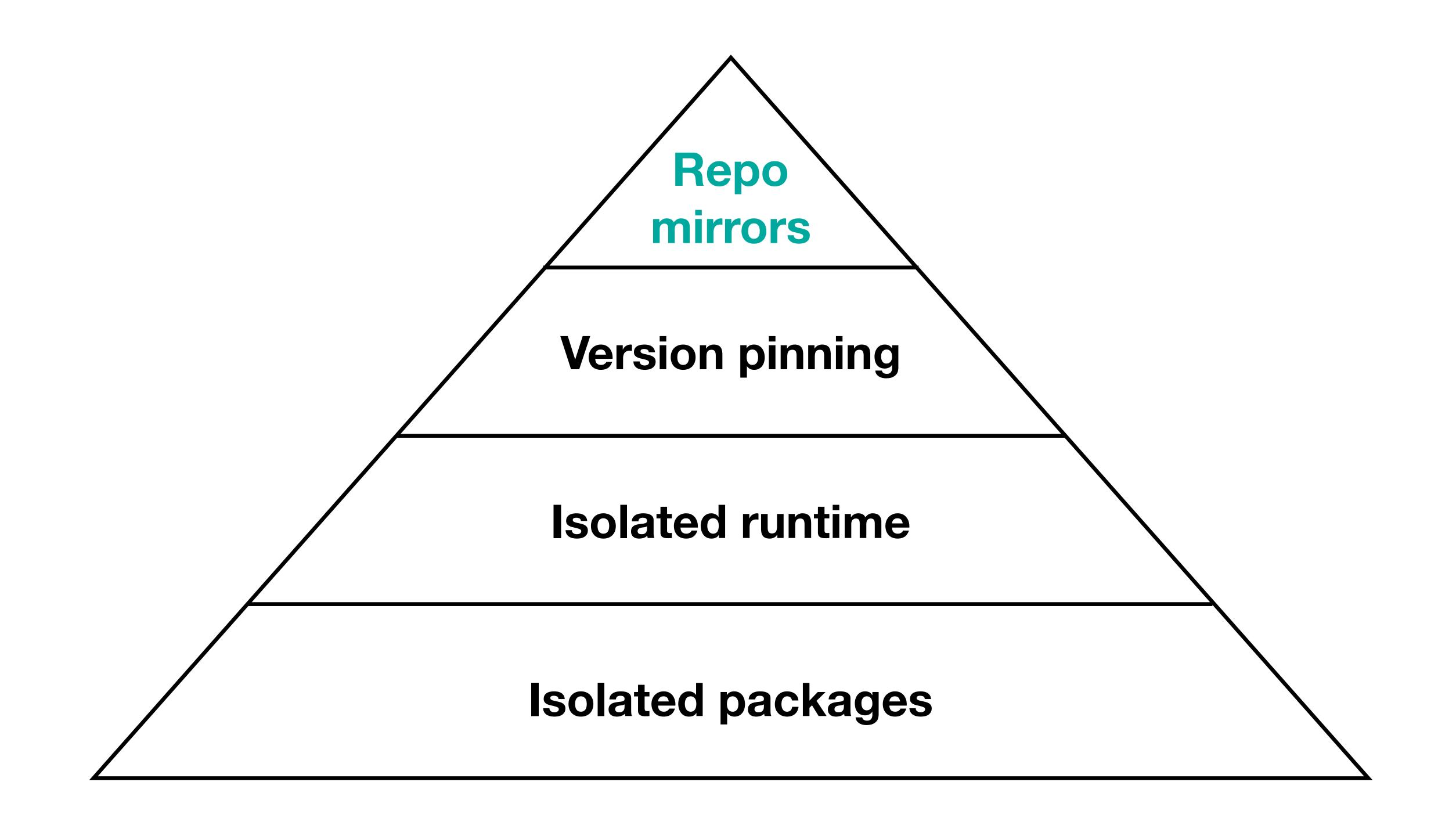
#### pip install --upgrade pip?

```
>>> pip.__version__
'9.0.1'
>>> from pip import req
>>>
```

#### pip install --upgrade pip?

```
>>> pip.__version__
'9.0.1'
>>> from pip import req
>>>
>>>

'10.0.1'
>>> from pip import req
Traceback (most recent call last):
   File "<stdin>", line 1, in <module>
ImportError: cannot import name req
>>>
```



# NPM (part 2)

#### left-pad

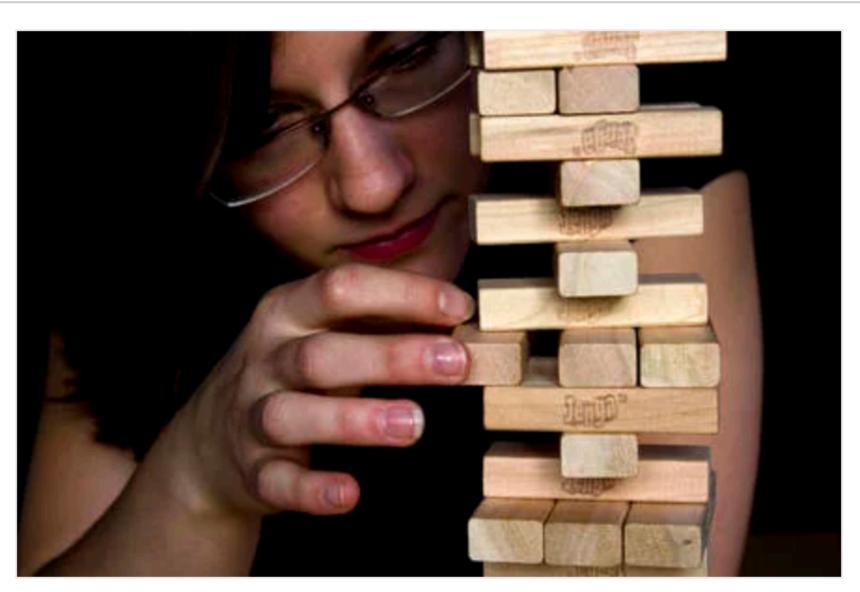
#### How one developer just broke Node, Babel and thousands of projects in 11 lines of JavaScript

Code pulled from NPM – which everyone was using

By Chris Williams, Editor in Chief 23 Mar 2016 at 01:24

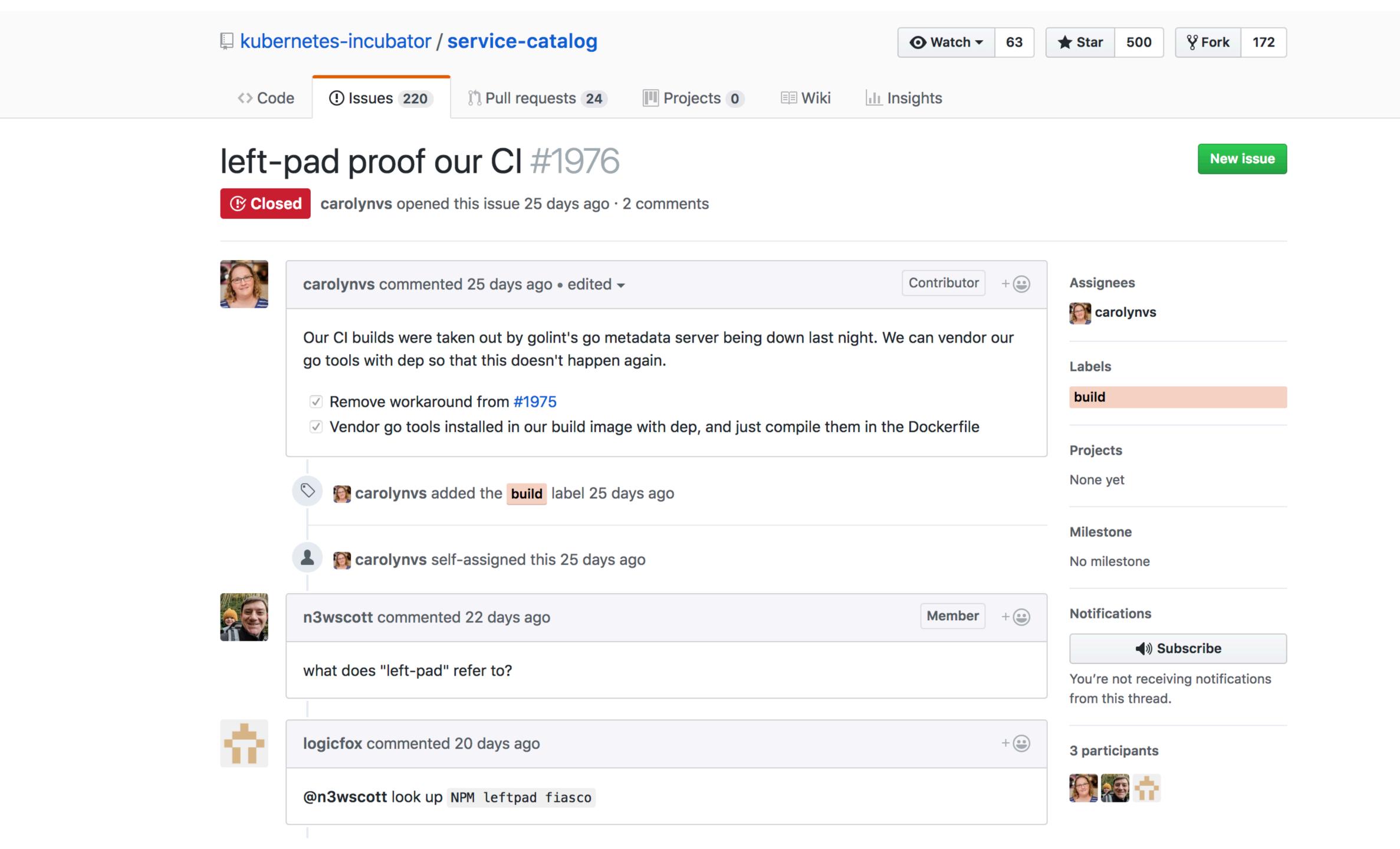


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Careful, careful ... Don't fumble this like the JS world (Credit: Claus Rebler)

**Updated** Programmers were left staring at broken builds and failed installations on Tuesday after someone toppled the Jenga tower of JavaScript.



On March 22nd 2016, a terrible tragedy befell the Node.JS community. A popular microframework for robust string expansion, `left-pad`, was removed from npmjs.com.

This resulted in broken deploys worldwide, a sudden and complete inability to appropriately zero-pad the fractional real cent value of many stock options, and untold billions of dollars in economic damage to the still nascent startup ecosystem of String Manipulation as a Service.

(From <a href="http://left-pad.io">http://left-pad.io</a>)

~ curl 'https://api.left-pad.io/?len=20&str=moar padding'

{"str":" moarpadding"}%

1. One less point of failure

2. It's (probably) faster

#### 3. Can host internal-only packages

#### requirements.txt

```
--index-url https://org.my.pypi/simple/
my-internal-package==18.06.07
pathlib2==2.3.2
pexpect==4.5.0
selenium==3.12.0
```

#### Gemfile

```
BASE_URL = 'http://org.my.gems'
source BASE_URL
gem 'rails', '~>5'
gem 'xcode-install', '2.4.0'

source "#{BASE_URL}/private" do
   gem 'private-gem', '~> 1.1'
end
```

4. You have backups / archives to roll back to

- Python
  - devpi (caches on demand, private packages, mirrors packages from anywhere, not only pypi)
  - Bandersnatch (caches all of pypi up front ~500GB)

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  - Bandersnatch (caches all of pypi up front ~500GB)
- Ruby
  - gemstash (part of the Bundler org, caches on demand, private packages)
- Artifactory Pro does 20+ package manager mirrors/registry types, and is \$\$\$

• https://github.com/gaoyifan/homebrew-bottle-mirror (Yifan Gao)

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```
docker run -itd \
   --name=homebrew-bottles \
   -v /bottle-mirror/bottles:/srv/data \
   gaoyifan/homebrew-bottle-mirror
```

https://github.com/gaoyifan/homebrew-bottle-mirror (Yifan Gao)

```
docker run -itd \
  --name=homebrew-bottles \
  -v /bottle-mirror/bottles:/srv/data \
  gaoyifan/homebrew-bottle-mirror
> update package info...
From git://github.com/homebrew/homebrew-core
* branch
                    master -> FETCH_HEAD
* [new branch] master -> origin/master
HEAD is now at 60e56c1 prometheus: update 2.3.0 bottle.
> RUN brew bottle-mirror...
==> ascii-3.18.high_sierra.bottle.tar.gz downloaded
==> libdvdnav-6.0.0.high_sierra.bottle.tar.gz downloaded
==> ascii-3.18.sierra.bottle.tar.gz downloaded
==> libdvdnav-6.0.0.sierra.bottle.tar.gz downloaded
==> makepp-2.0.high_sierra.bottle.tar.gz downloaded
=> 1d64-97 17 snow leonard bottle tar or downloaded
```

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```
HOMEBREW_BOTTLE_DOMAIN=https://my.bottle.mirror \
brew install cocoapods jq libimobiledevice
```

## Thank you!





https://macops.ca/dependencies