

Large Django sites at Mozilla

Andy McKay Mozilla

<http://github.com/andymckay/presentations>

The background image shows a stunning sunset over a snow-covered mountain range. In the foreground, two silhouetted figures are snowboarding down a slope. A street lamp on the left side of the frame is illuminated, adding to the warm glow of the scene.

Vancouver

<http://github.com/andymckay/presentations>

mozilla







Game 3, tonight 2.00am

@andymckay



mozilla

- About

- About
- Performance

- About
- Performance
- Misc

- About
- Performance
- Misc
- Reuse

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- [Getting started with Firefox](#)
- [How to set the home page](#)
- [Customizing Firefox with add-ons](#)
- [Pop-up blocker](#)
- [Updating Firefox](#)

Common Questions

Explore Help Topics

Troubleshooting

- Firefox crashes
- The Adobe Flash plugin has crashed
- Troubleshooting extensions and themes
- Troubleshooting plugins
- Error loading web sites
- Basic Troubleshooting

Privacy & Security

- How do I stop websites from tracking me?
- Private Browsing
- Clear Recent History
- How to clear the cache
- Enabling and disabling cookies

Be AWESOME



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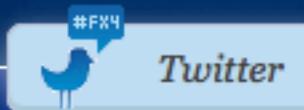
Check your PLUGINS

mozilla

FIREFOX 4 DOWNLOAD STATS[?]



197,165,401



Twitter

Android



Firefox 4 ↓



POWERED BY
 SQLstream

3:10

3:20



mozilla

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ADD-ONS

2,501,592,366 add-ons downloaded

Categories

[Alerts & Updates](#)[Appearance](#)[Bookmarks](#)[Download Management](#)[Feeds, News & Blogging](#)[Games & Entertainment](#)[Language Support](#)[Photos, Music & Videos](#)[Privacy & Security](#)[Shopping](#)[Social & Communication](#)[Tabs](#)[Web Development](#)[Other](#)

Collections

[Dictionaries & Language Packs](#)[Personas](#)[Plugins](#)[Search Tools](#)[Themes](#)

Browse under the radar with privacy-protecting add-ons



NoScript

The best security you can get in a web browser! Allow active content to run ...

[+ Add to Firefox](#)

Adblock Plus

Annoyed by adverts?
Troubled by tracking?
Bothered by banners?
Install Adblock ...

[+ Add to Firefox](#)

BetterPrivacy

Ever wondered why you are still tracked though you tried everything to prevent ...

[+ Add to Firefox](#)

Like these? Find more add-ons in the [The Paranoid Kit](#) collection.

[Introduction](#)[Rock Your Firefox](#)[Privacy](#)[Web Development](#)[Travel](#)

Browse Add-ons

Featured

Popular

Recently Added

Recently Updated



TinEye Reverse Image Search

by TinEye

[Continue to Download →](#)[Featured](#)

Not available for Firefox 6.0a2

TinEye is a reverse image search engine. The plugin adds a right-click menu item that allows you to search for an image to find where it has been published before.

Collections

Collections are groups of related add-ons that anyone can create and share.

[Popular Collections](#)

mozilla

All code is open:
<https://github.com/jbalogh/zamboni>

All* bugs are open:
<https://bugzilla.mozilla.org>

Convert from
CakePHP (remora)
to Django (zamboni)



Changing one URL at a time from CakePHP to Django

General trend to move
away from PHP and do
more Python and Django

How large?

250k+ add-ons

150 mn views month

500* mn API hits day

* more than that

Lines of code

PHP 40k

Python 18k

Lines of code

PHP 40k

Python 18k

Unit tests 15k

Zeus (3)

CDN

Django, PHP (24)

MySQL (1 +3)

Memcached (3)

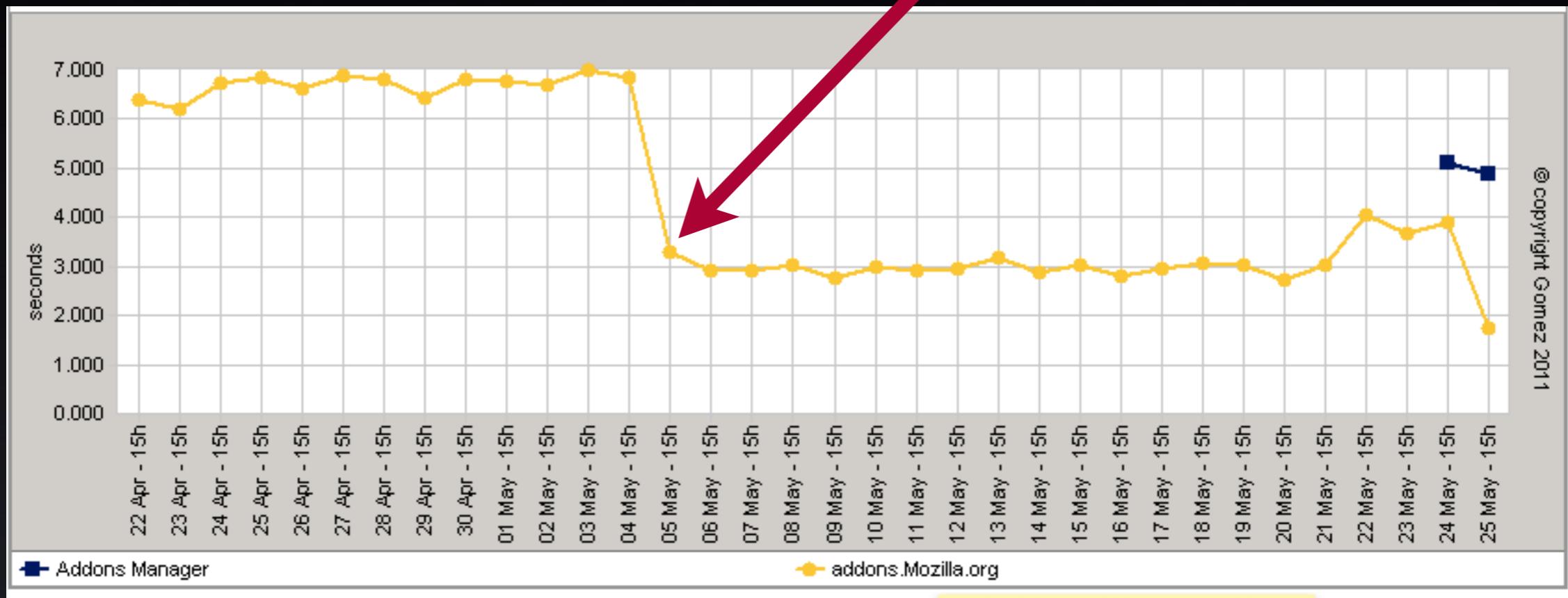
Rabbit MQ (1)

Celeryd (2+)

Redis (1 +1)

Sphinx (3+)

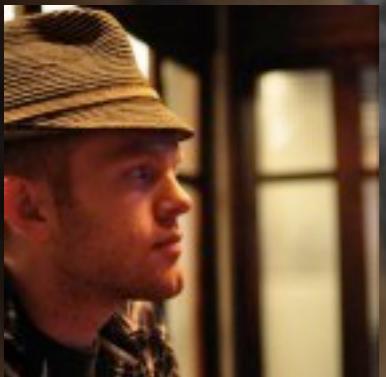
CDN goes live



Transition to:
site-performance

Cache machine

<http://bit.ly/cache-machine>



```
from django.db import models
import caching.base

class Addon(caching.base.CachingMixin,
            models.Model):
    ...
    status = models.IntegerField()
    objects = caching.base.CachingManager()
```



```
>>> Addon.objects.filter(status=public)
>>> len(connection.queries)
13
```

```
>>> Addon.objects.filter(status=public)
>>> len(connection.queries)
13
```

```
>>> Addon.objects.filter(status=public)
>>> len(connection.queries)
13
```

Invalidation

md5('select... a')

[obj 3615]

`md5('select... a')`

`[obj 3615]`

`obj 3615`

`md5('select... a')`

`md5('select... a')`

[obj 3615]

`md5('select... b')`

[obj 3615, obj 1685]

obj 3615

`md5('select... a')`
`md5('select... b')`

Memcached

```
rules = cache.get(3615)
rules.add('select... ')
cache.set(3615, rules)
```

Redis

redis.SADD(3615, ‘select...’)

Home page
20+ addons
400+ sql queries

Add-on

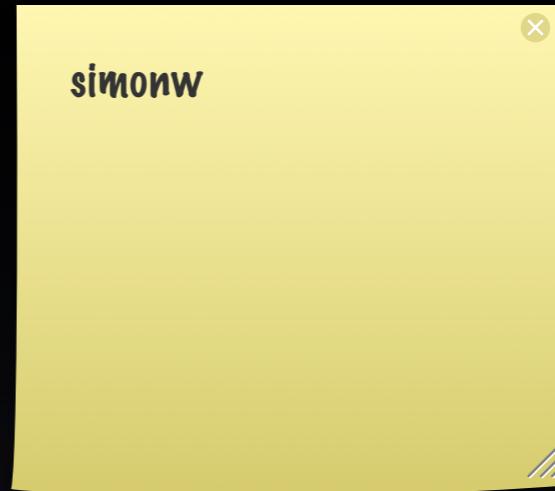
Version

standard answer in
django is select-related

File

django: select_related

<http://bit.ly/select-related>



Transformer

<http://bit.ly/queryset-transform>

```
@staticmethod  
def transformer(addons):  
    addon_dict = dict((a.id, a) for a in addons)  
    vs = filter(None, (a.current_version_id for a in addons))  
    versions = list(Version.objects.filter(id__in=vs))  
    for version in versions:  
        addon_dict[version.addon_id].current_version = version
```

slightly outdated
example

big SQL statements... :(

14313 character

Home page
20+ addons
~14 sql queries

Add-on Version Check

`about:config`  `extensions.update.url`

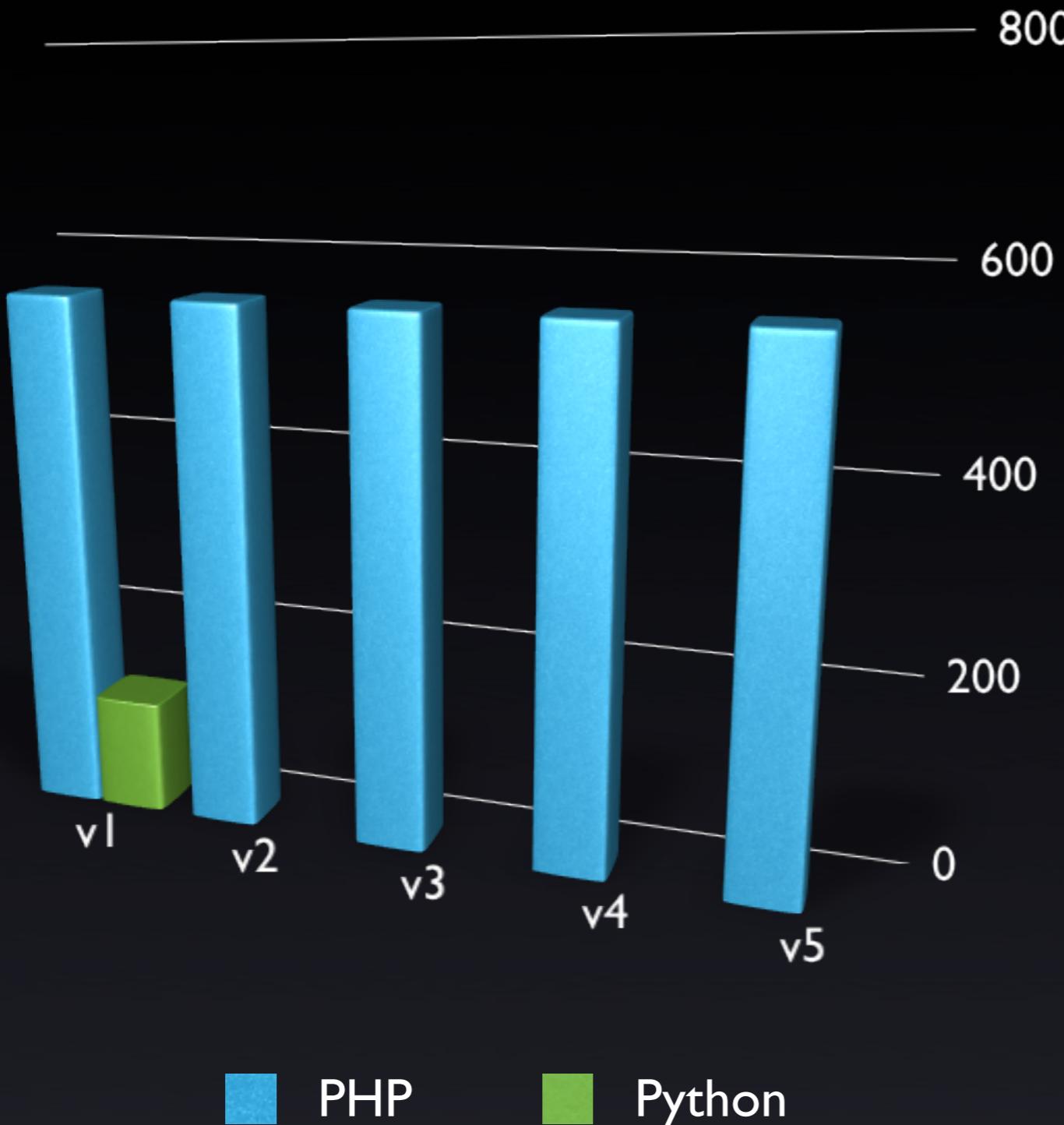
Incoming 8,000 req/sec
Uncached 1,600 req/sec



Incoming 8,000 req/sec
Uncached 1,600 req/sec
PHP 550 req/sec

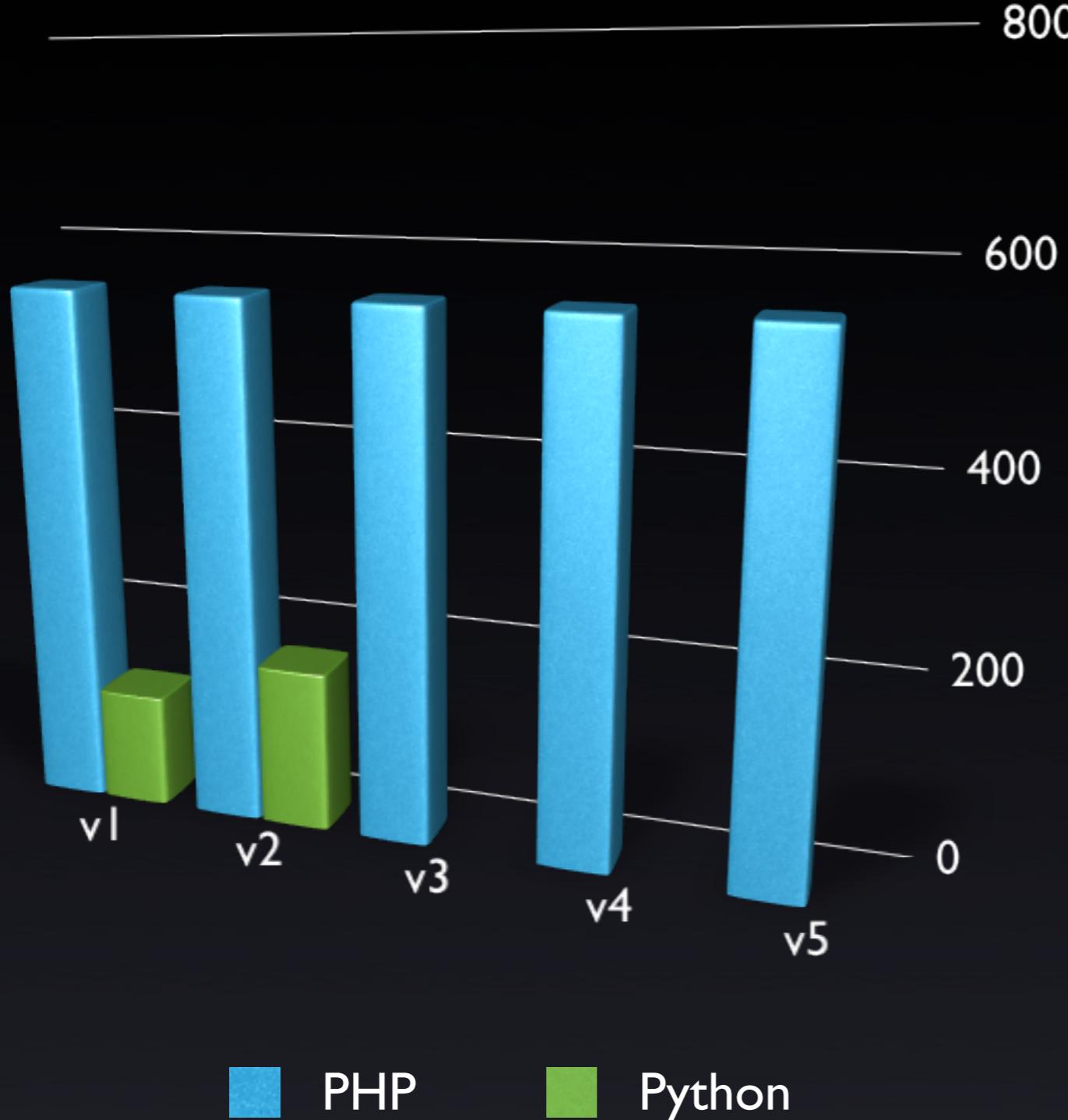


No pages go out until
they are faster

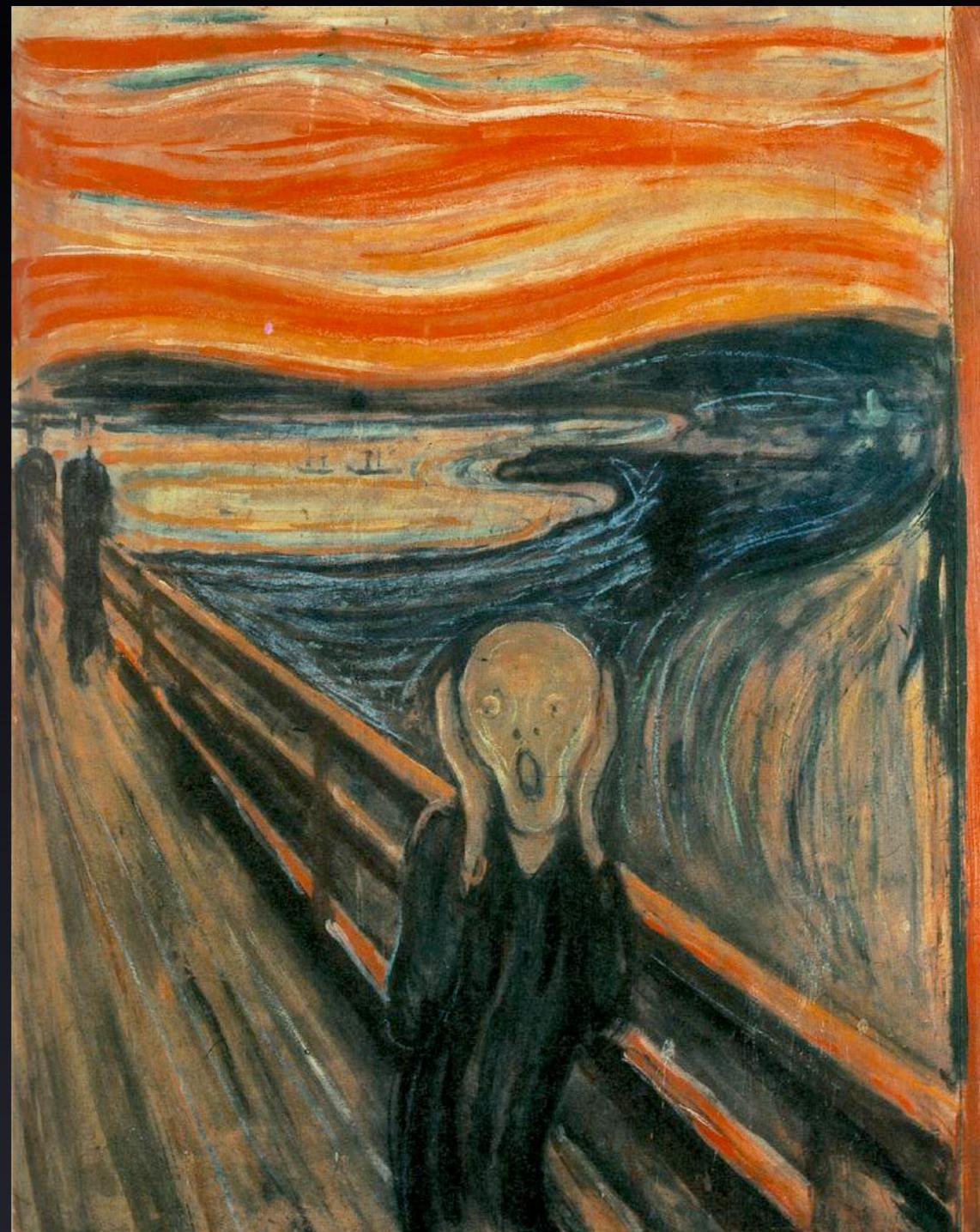


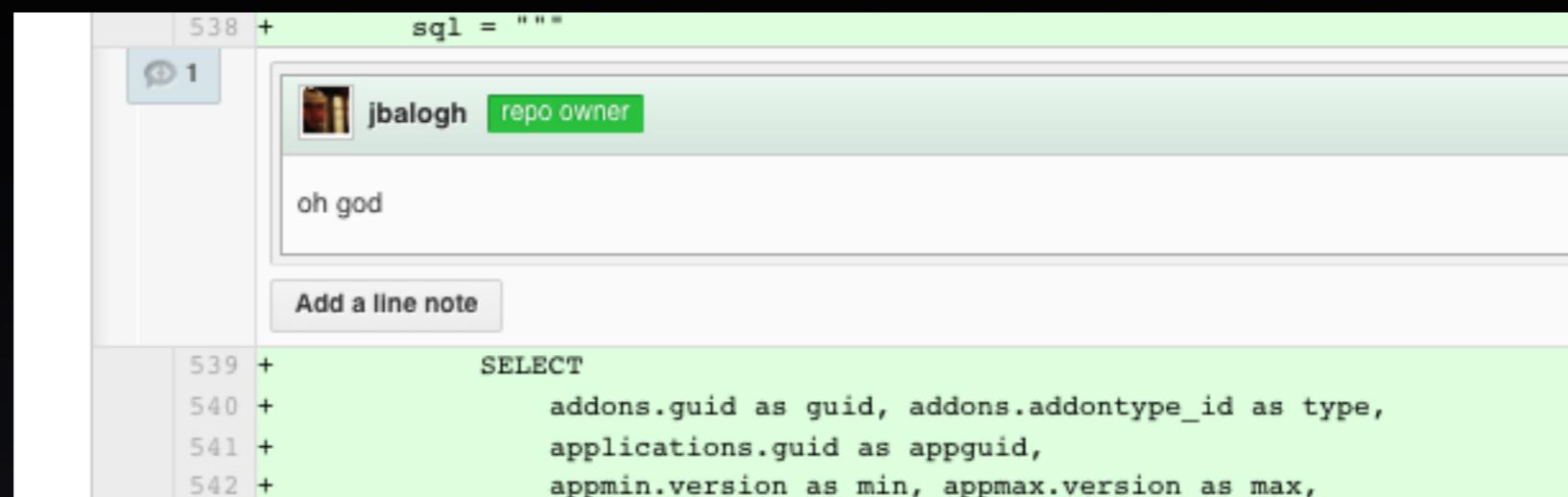
v1
Plain
Django

v2 Min. SQL queries



node.js crisis

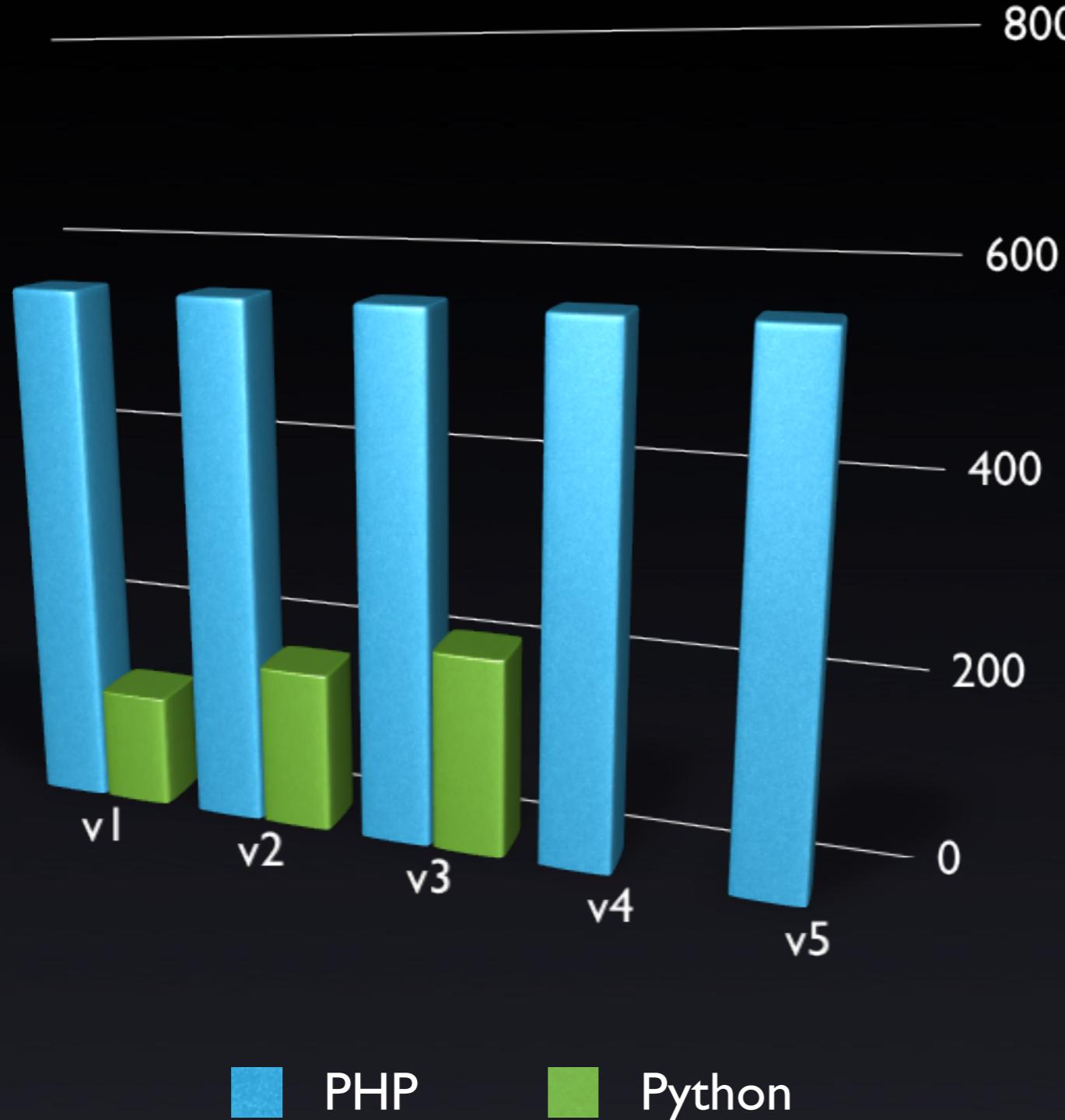




A screenshot of a GitHub pull request interface. At the top, line 538 shows the assignment of a variable `sql` to an empty string. Below this, a note from a user named `jbalogh` (repo owner) is displayed, containing the text "oh god". A button labeled "Add a line note" is visible. The bottom part of the screenshot shows code starting at line 539, which includes a `SELECT` statement with several columns from tables like `addons`, `applications`, and `appmin`.

```
538 +     sql = ""  
1  
jbalogh repo owner  
oh god  
Add a line note  
539 +     SELECT  
540 +         addons.guid as guid, addons.addontype_id as type,  
541 +         applications.guid as appguid,  
542 +         appmin.version as min, appmax.version as max,
```

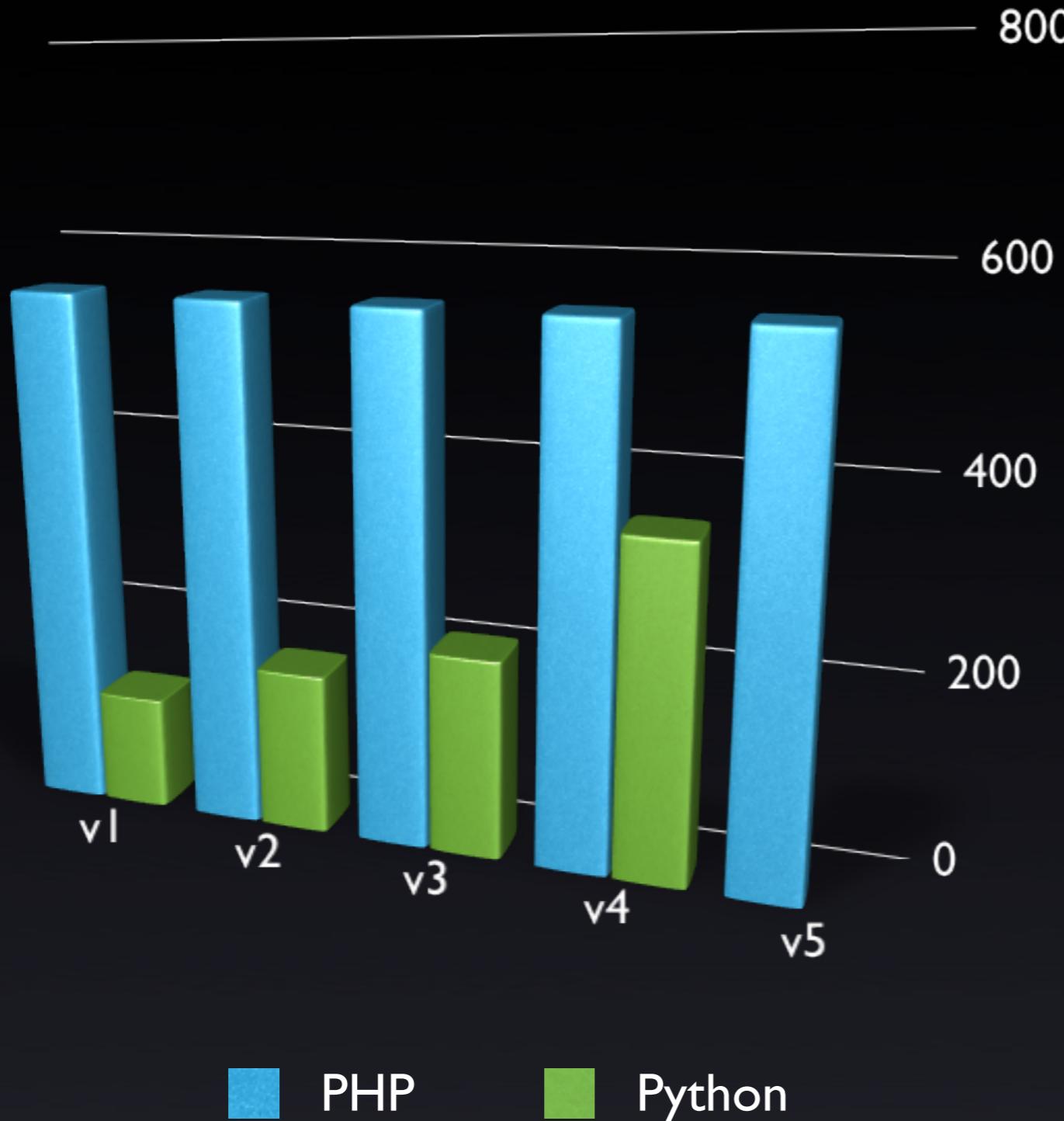
oh god



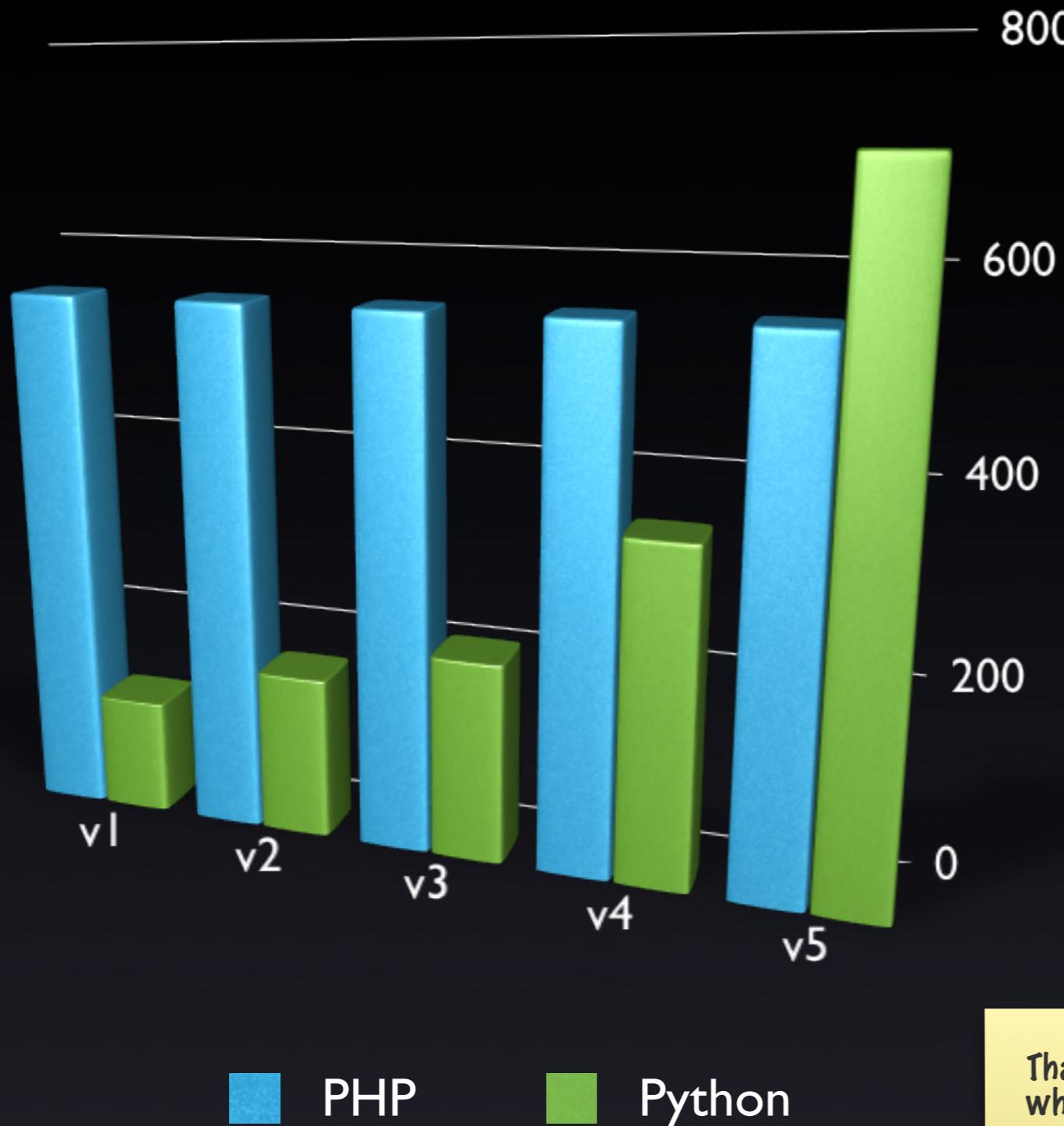
v3 Django and raw SQL

max-requests 200,
actually we hit 210

v4
WSGI
no Django



v5 Pooling, optimised queries



That's 700 req/sec
which translates into

A close-up photograph of fresh green celery stalks and leaves. The stalks are long, thin, and ribbed, with bright green leaves at the top featuring distinct serrated edges.

Celery

<http://celeryproject.org>

Push things async
email
image processing
add-on validation

specifically fixing data
changes between php
and python

```
from celeryutils import task

@task
def update_tag(tag, **kw):
    tag.update_stat()
```

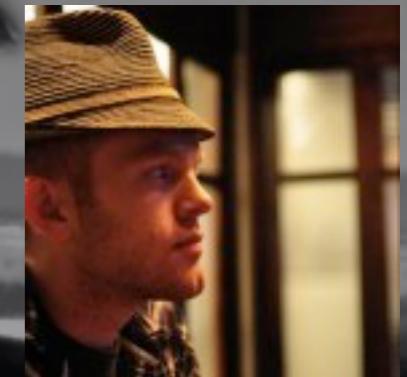
```
from celeryutils import task

@task(rate_limit='60/h')
def update_tag(tag, **kw):
    tag.update_stat()
```

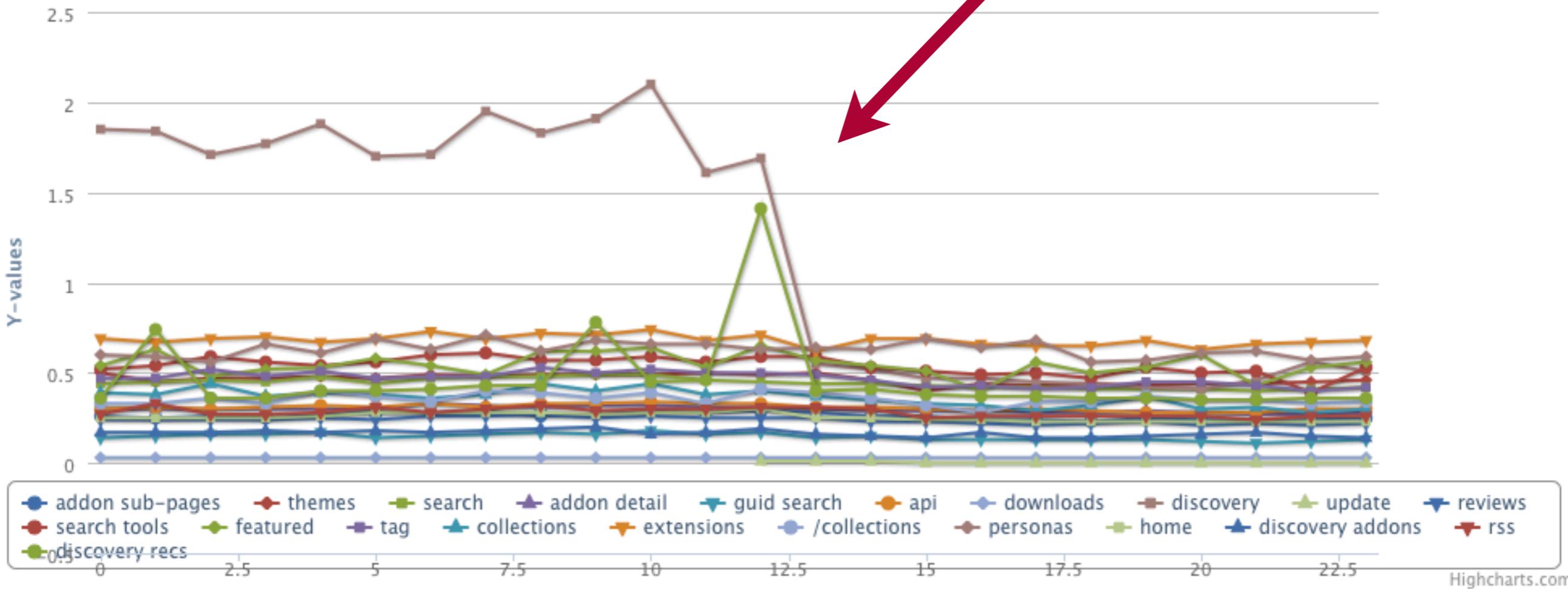
```
from tasks import update_tag  
update_tag.delay(tag)
```

Timing Middleware

<http://bit.ly/timing-ware>

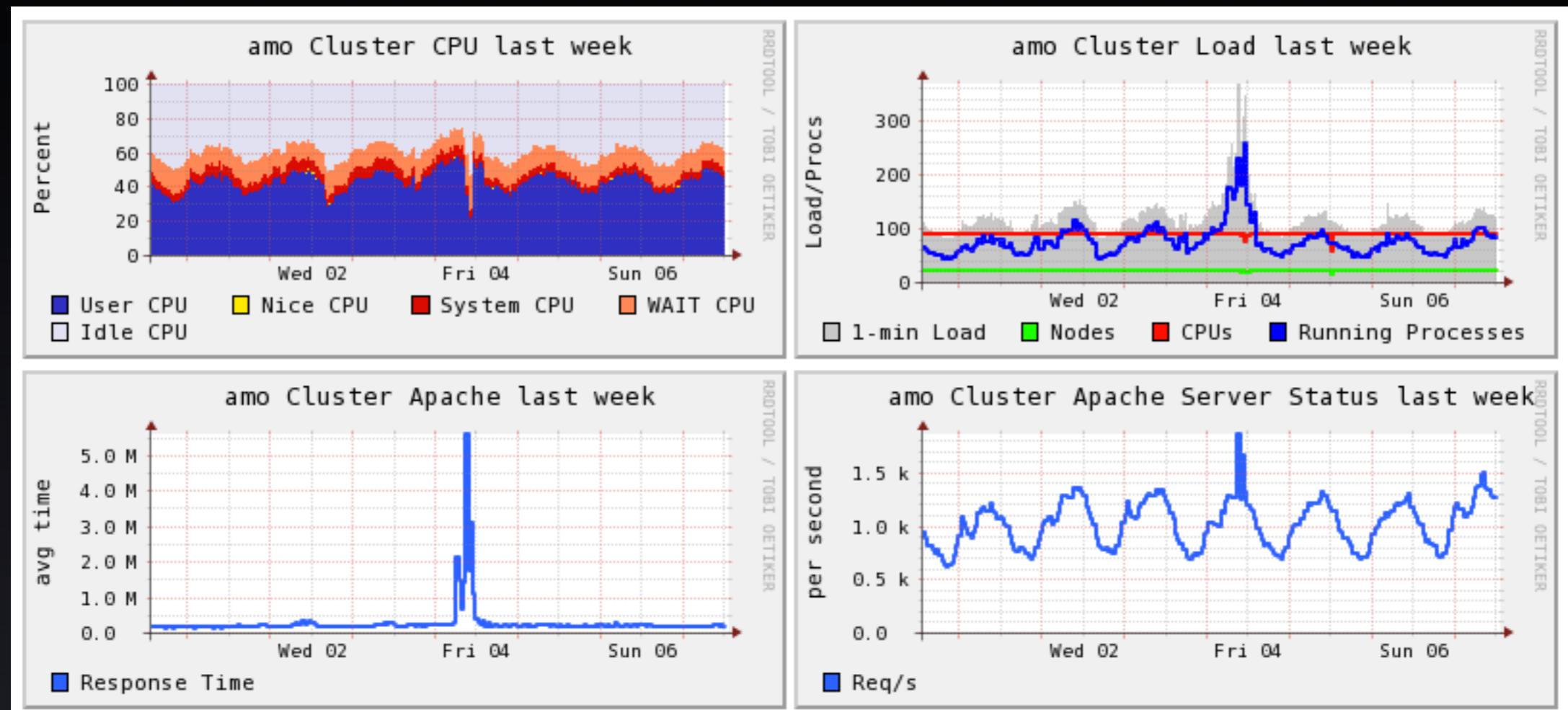


Page performance for 02-25



mozilla

Measurement



Graphite and statsd



40+ languages
including rtl





content translated
and
templates

Database strings

```
class Addon(caching.base.CachingMixin,  
models.Model):  
    ...  
    name = models.ForeignKey(Translation)
```

```
addon.name = 'name'  
addon.save()
```

```
addon.name = 'name'  
addon.save()
```

```
addon.name = {'fr': 'la nomme'}  
addon.save()
```



Django

```
{% blocktrans with app=request.APP %}  
    Add-ons for {{ app }}  
{% endblocktrans %}
```

Jinja2

<http://jinja.pocoo.org/>

```
{{ _('Add-ons for {0}') } | if(request.APP) }}
```

Jingo & Jingo minify

<http://bit.ly/jingo-mozilla>

<http://bit.ly/jingo-minify>

create a build id for each
build

sets a far future expires
django-compress also
does this

Far future expires

css-min.css?build=1c0f2d7-4de801b0

Deployment

Server 1
Build 2

Memcache

Server 24
Build 1

memcache prefix

```
CACHE_PREFIX = 'amo:%s:' % build_id
```

```
key = '%s:memoize:%s:%s' %  
(settings.CACHE_PREFIX, ..., ...)
```

Bleach

<http://bit.ly/django-bleach>



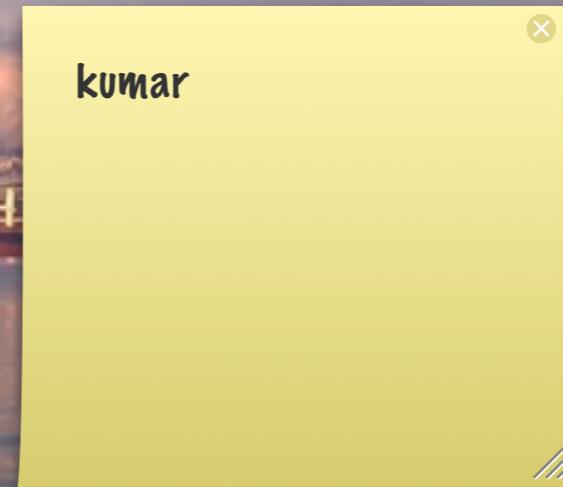
```
>>> bleach.clean('an <script>evil()</script> example')  
'an &lt;script&gt;evil()&lt;/script&gt; example'
```

```
>>> bleach.linkify('an http://ex.com url')  
'an <a href="http://ex.com"  
rel="nofollow">http://ex.com</a> url'
```

Javascript tests

django-qunit

<http://bit.ly/django-qunit>



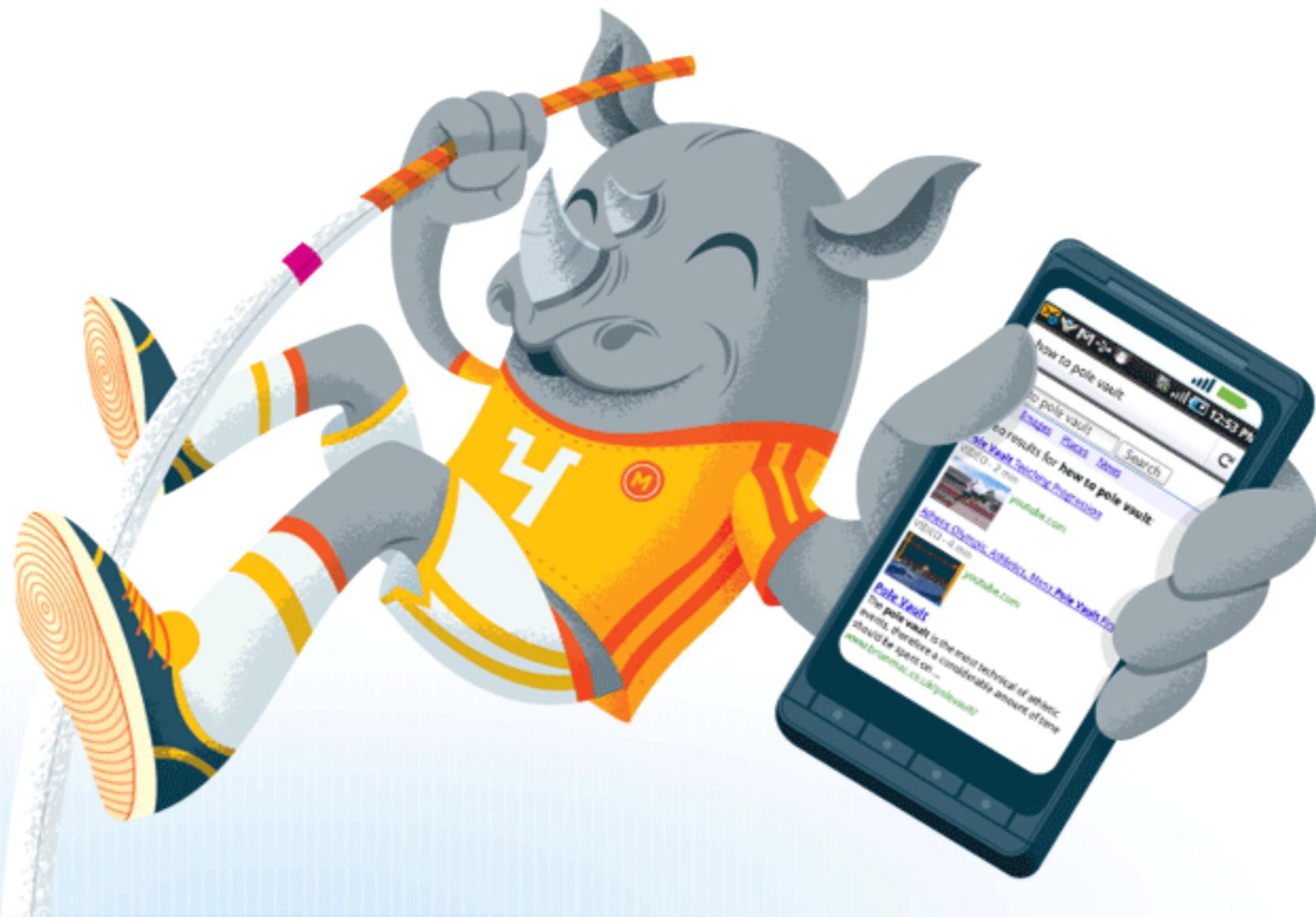
```
test('English', function() {
  z.refreshL10n('en-us');
  equals($('textarea:visible', this.sandbox).text().trim(),
    'Firebug integrates with Firefox to put ' +
    'a wealth of development tools...');
});
```

```
test('Japanese', function() {
  z.refreshL10n('ja');
  equals($('textarea:visible', this.sandbox).text().trim(),
    'Firebug は、Web ページを閲覧中にクリック一つ ' +
    ' で使える豊富な開発ツールを Firefox' +
    ' に統合します。あなたはあらゆる');
});
```



Use ~~Hudson~~Jenkins

<http://bit.ly/jstestnet>





Flake8

<http://bit.ly/flake8>

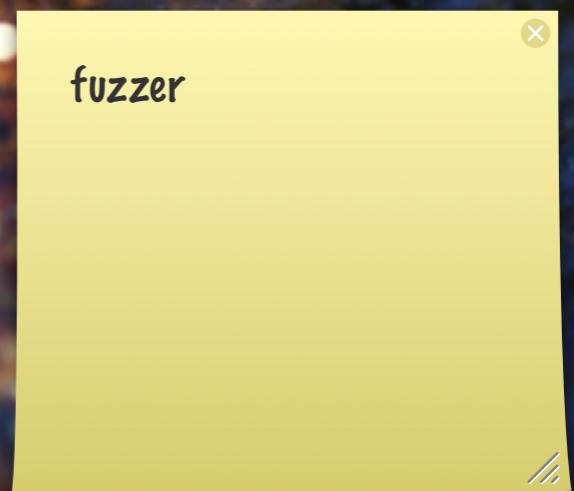
pep 8
py flakes
MacCabe

mozilla

```
~/sandboxes/zamboni(632719) $ flake8 apps/editors/tasks.py  
apps/editors/tasks.py:1: 'datetime' imported but unused  
apps/editors/tasks.py:3: 'stat' imported but unused
```

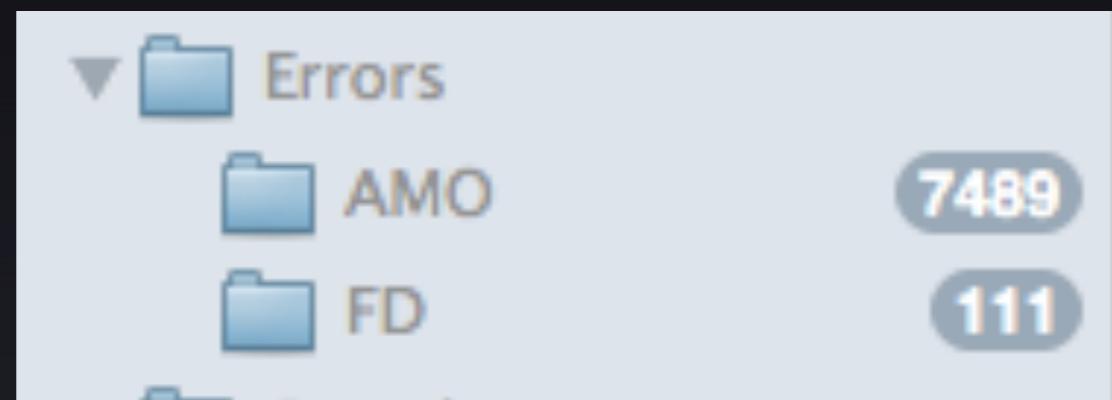


django-quieter-formset prevents 500 errors on forms





arecibo stop the emails!





django-waffle

<http://bit.ly/django-waffle>

easy feature flag and sample



fred wenzel



Playdoh

<http://bit.ly/mozilla-playdoh>

fred wenzel

Celery support
Jinja2 support
Simple migrations

By default:
SHA-512 or bcrypt and hmac
X-Frame-Options: DENY
secure and httponly flags on cookies

fred wenzel

zilla

**Take inspiration from...
but not the best for you**

for example jinja2 which
makes integration with
lots of django addons
possible, but a bit harder



django-secure

<http://bit.ly/django-secure>

<http://mzl.la/web-app-security>

Questions?

<http://github.com/andymckay/presentations>

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andym on irc.freenode.net, irc.mozilla.org