

Rewriting addons.mozilla.org with Django

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A man with red hair and a beard, wearing a black t-shirt and a backpack, stands next to a brown sign. He is pointing at the sign with his right hand and giving a thumbs up with his left hand. The sign is mounted on two wooden posts and has a white border. The background shows a clear blue sky, green pine trees, and a distant mountain range.

Summit
Elev. 3849 Ft.

Oh god how did I get here
I am not good with PHP

Add-ons *for* Firefox

2,101,032,748 add-ons downloaded
125,015,215 add-ons in use

Categories

- Alerts & Updates 937
- Appearance 1121
- Bookmarks 973
- Download Management 525
- Feeds, News & Blogging 1023
- Games & Entertainment 9
- Language Support 479
- Photos, Music & Videos 918
- Privacy & Security 721
- Shopping 15
- Social & Communication 1423
- Tabs 444
- Toolbars 1280
- Web Development 1172

within

Advanced ▾

Add on style. Add on function. Add features to Firefox.



Choose from 5000 free extras to make your browser look and function the way you want.



An add-on can be a new time-saving toolbar button, a shortcut to search, a themed look, and more. Add-ons make browsing easier.



Choose add-ons for the way you browse. Install in a few clicks and they stay up to date with easy reminders. Explore and add on

- Introduction
Shopping
Rock Your Firefox
Best of 2 Billion
Web Development
Travel

addons.mozilla.org

AMO

github.com/jbalogh/zamboni

addons.mozilla.org

- 165 million request per month

Hardware

- 3 Zeus load balancers
- 24 web servers
 - mod_wsgi: 16 procs, no threading
- 1 MySQL master, 4 slaves
- 3 memcached
- 3 sphinx
- 1 RabbitMQ, 2 celeryd
- 1 Redis master, 1 slave

How we're switching

- One url at a time
- PHP & Python run side by side


```
class Addon(models.Model):
    name = models.ForeignKey('Translation')
    description = models.ForeignKey('Translation')
    authors = models.ManyToManyField('User')
    # Denormalization
    current_version = models.ForeignKey('Version')
```

```
class Translation(models.Model):
    locale = models.CharField()
    localized_string = models.CharField()
```

```
class Version(models.Model):
    addon = models.ForeignKey(Addon)
    version = models.CharField()
```

```
class Addon(models.Model):
    name = models.ForeignKey('Translation')
    description = models.ForeignKey('Translation')
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```

multidb

- github.com/jbalogh/django-multidb-router
- Too easy now (thanks Alex & Russel)

Object caching

- github.com/jbalogh/django-cache-machine/
- automatically cache all queries

Invalidation



Your changes have been saved.

Please note that some changes may take several hours to appear in all areas of the website.

```
SELECT * from addons ORDER BY rating DESC LIMIT 10
```

```
[<Addon 1865: Adblock Plus>, ...]
```

md5(SELECT...rating...)	[<Addon 1865>, ...]
-------------------------	---------------------

```
SELECT * from addons ORDER BY rating DESC LIMIT 10
```

```
[<Addon 1865: Adblock Plus>, ...]
```

<code>md5(SELECT...rating...)</code>	<code>[<Addon 1865>, ...]</code>
<code>flush:md5(<Addon 1865>)</code>	<code>[md5(SELECT...rating...)]</code>

```
SELECT * from addons WHERE id = 1865
```

<Addon 1865: Adblock Plus>

md5(SELECT...rating...)	[<Addon 1865>, ...]
flush:md5(<Addon 1865>)	[md5(SELECT...rating...)]
md5(SELECT...id=1865)	<Addon 1865>


```
SELECT * from addons WHERE id = 1865
```

```
<Addon 1865: Adblock Plus>
```

<code>md5(SELECT...rating...)</code>	<code>[<Addon 1865>, ...]</code>
<code>flush:md5(<Addon 1865>)</code>	<code>[md5(SELECT...rating...), md5(SELECT...id=1865)]</code>
<code>md5(SELECT...id=1865)</code>	<code><Addon 1865></code>

```

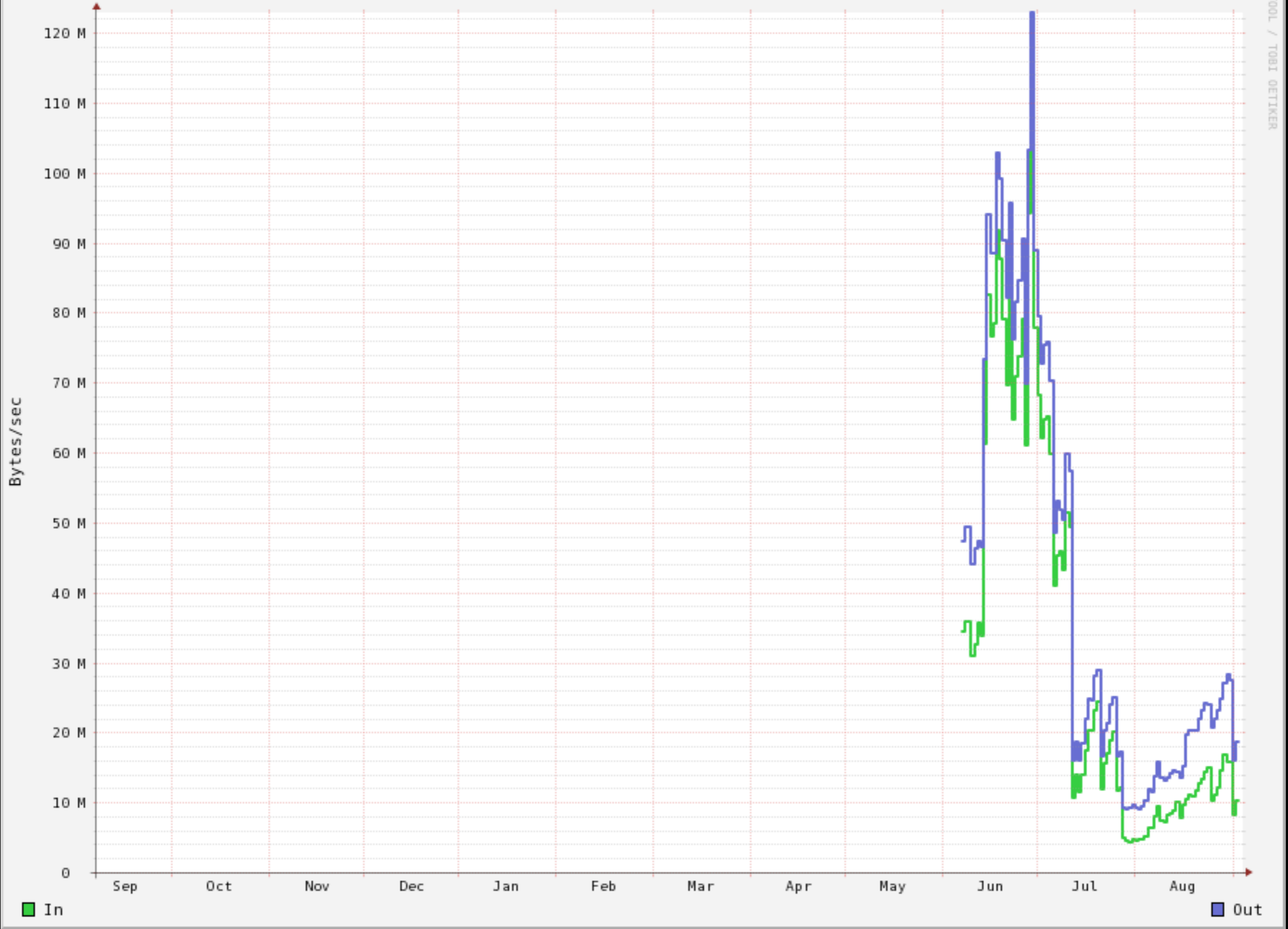
cache.set_many({
    md5(SELECT...id=1865): None,
    md5(SELECT...rating...): None
})

```

md5(SELECT...rating...)	[<Addon 1865>, ...]
flush:md5(<Addon 1865>)	[md5(SELECT...rating...), md5(SELECT...id=1865)]
md5(SELECT...id=1865)	<Addon 1865>

memcache-amo Cluster Network last year

ROADTOOL / TOBI OETIKER



Querysets are big

Querysets are big

- `cached_with(queryset, function)`
- `{% cache obj %}`
- From 29r/s to 186r/s

Related objects

- `addon.current_version`

Related objects

- github.com/simonw/django-queryset-transform/
- `select_related` on steroids

Transforms

```
Addon.objects.transform(Addon.transformer)
```

```
@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
```


Templates

- `{% load %}`
- `{% blocktrans with article.price as amount %}`
- `{% ifnotequal %}`

Use Jinja2

- github.com/jbalogh/jingo
- Tags & filters are just functions
- `{{ _('Add-ons for {0}').format(app) }}`

Tests

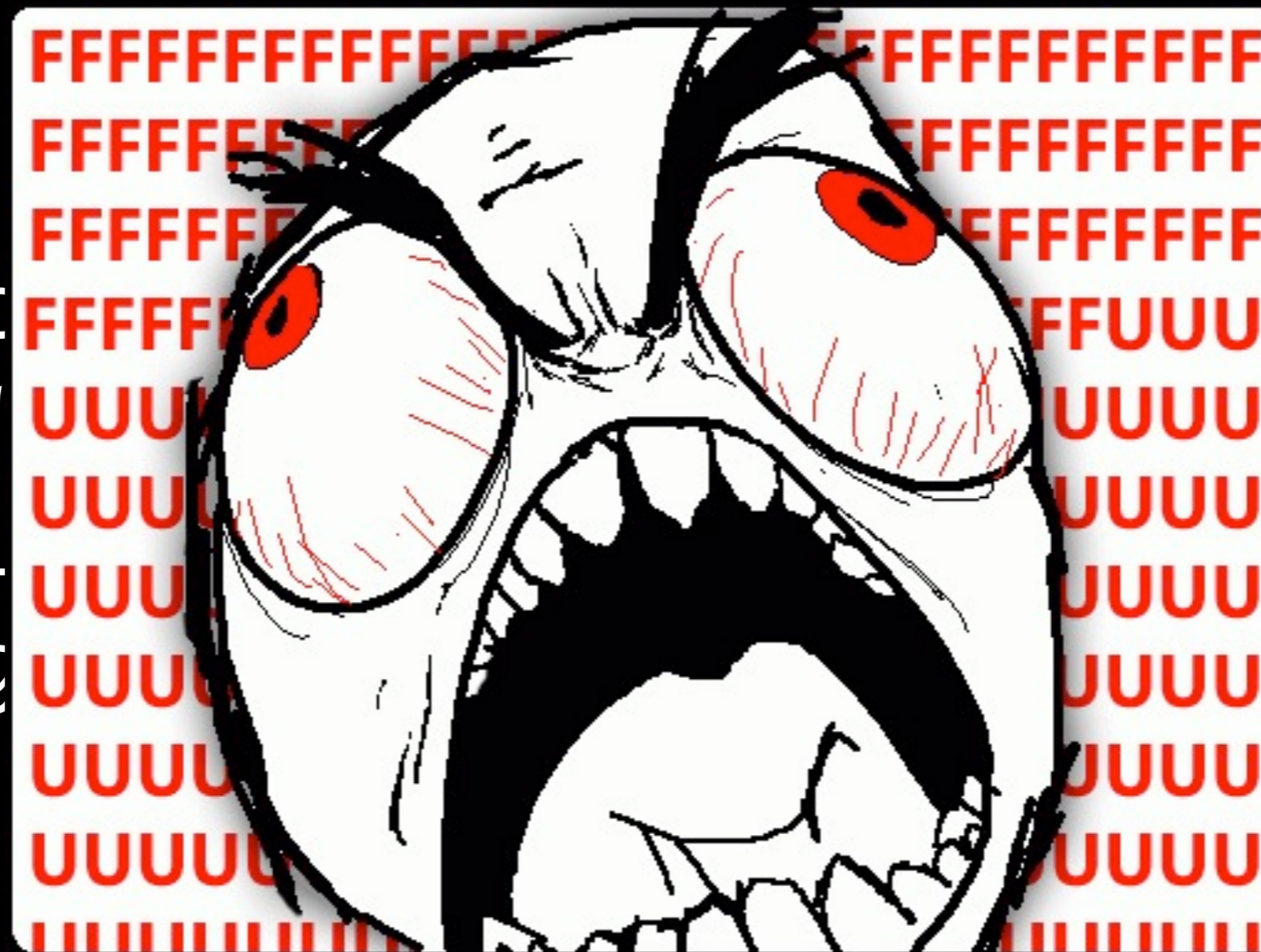
- github.com/jbalogh/django-nose
- nose makes testing easier

UnicodeDecodeError

- UnicodeEncodeError: 'ascii' codec can't encode characters in position 64-72: ordinal not in range(128)

UnicodeDecodeError

- UnicodeDecodeError: 'utf8' codec can't decode byte 0x... in position ...: range error



codec
in

Django issues

- `.filter()` is slow

Django issues

- `.filter()` is slow
- DELETE CASCADE

Django issues

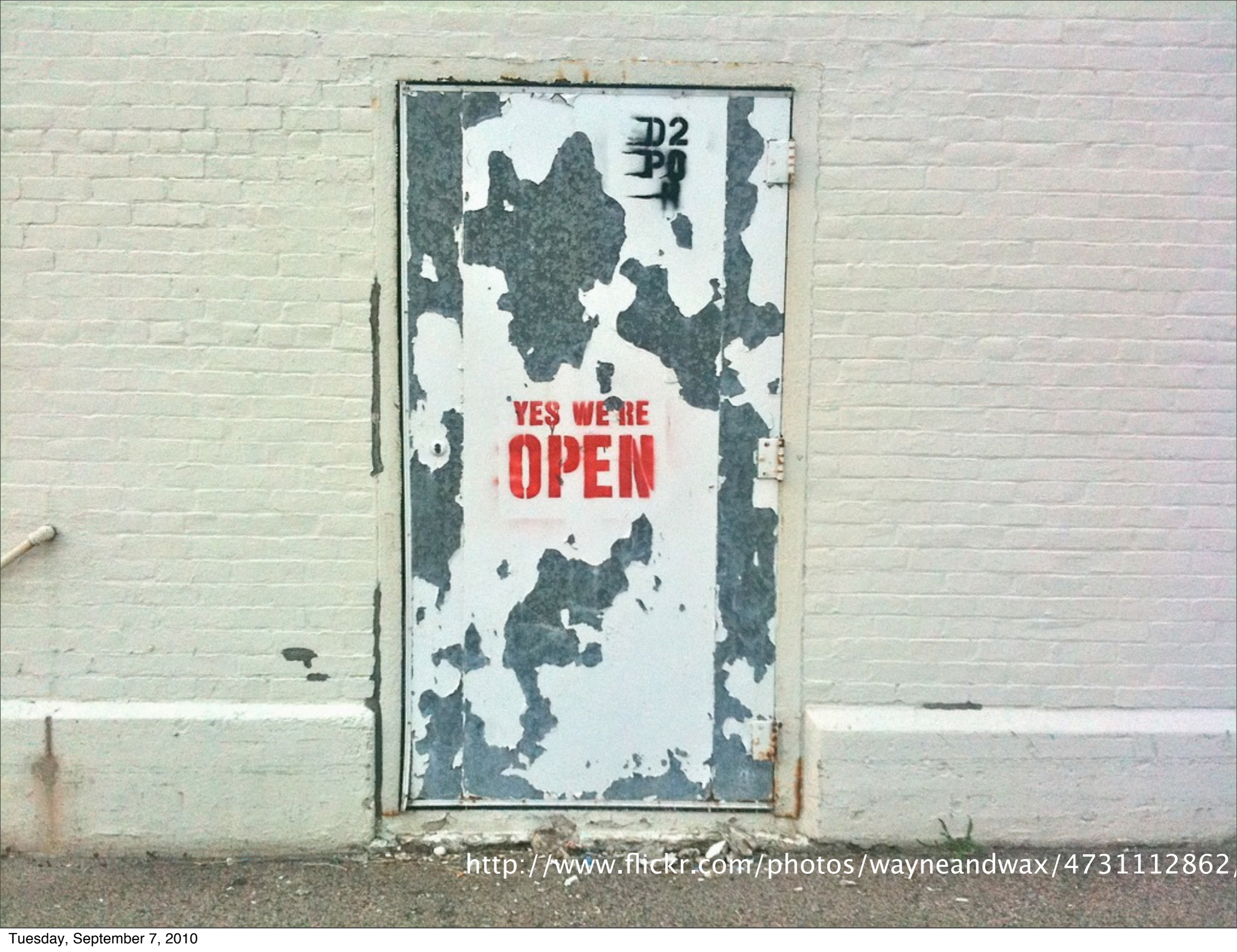
- `.filter()` is slow
- DELETE CASCADE
- SELECT before UPDATE

Does Django scale?

- Yes, with help
- We don't ship unless it's faster than PHP
- 44,000 lines of PHP vs. 12,500 lines of Python

Django @ Mozilla

- “I've been a PHP developer for 8 years and a Python developer for 6 months, and I don't want to go back.”



D2
P0

YES WE'RE
OPEN

<http://www.flickr.com/photos/wayneandwax/4731112862/>

Jobs Jobs Jobs

- mzl.la/djangocon
- bit.ly/djangocon
- bit.ly uses a single database for all their links!

Thank You

- github.com/jbalogh
- jbalogh.me/djangocon.pdf (slides)

References

github.com/jbalogh

github.com/jbalogh/zamboni

github.com/jbalogh/django-multidb-router

github.com/jbalogh/django-cache-machine/

github.com/jbalogh/jingo

github.com/jbalogh/django-nose

github.com/simonw/django-queryset-transform/

mzl.la/djangocon

github.com/mozilla

jbalogh.me/djangocon.pdf (slides)

jbalogh.me/djangocon.txt (this page)