

Large Django sites at Mozilla

Andy McKay

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



ADD-ONS

EXTENSIONS | PERSONAS | THEMES | COLLECTIONS | MORE...

search for add-ons



EXPLORE

Featured >

Most Popular >

Top Rated >

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 >

Sit Back and Relax

Add-ons that help you on your travels!


Flagfox
 Displays a country flag depicting the location of the current website's server and more.


ScribeFire Classic
 ScribeFire Classic is a blog editor that integrates with Firefox and lets you easily post to your blog. ScribeFir...


FoxClocks
 FoxClocks let you keep an eye on the time around the world.

Featured Extensions

[See all »](#)
Pixlr Grabber
 Photos, Music & Videos
 (157)
 
Personas Rotator
 Photos, Music & Videos
 (75)
 
Text Link
 Appearance
 (223)
 
TinyURL Generator
 Social & Communication
 (46)
 
FabTabs
 Tabs
 (105)
 
Tab Mix Plus
 Tabs
 (1,779)

MOST POPULAR All »

 1. [Adblock Plus](#)
 14,121,565 users

 2. [Video DownloadHelper](#)
 7,086,546 users

 3. [Firebug](#)
 3,140,950 users

 4. [Greasemonkey](#)
 3,029,288 users

 5. [Download Statusbar](#)
 2,409,062 users

 6. [Personas Plus](#)
 2,196,604 users



mozilla

Marketplace

Search 

Opening soon.

We're inviting Mozillians to take the Marketplace for a test drive and discover the best the Web has to offer. Download apps, give them a try and let us know what you think. Thanks for your support!

[Test & give feedback →](#)

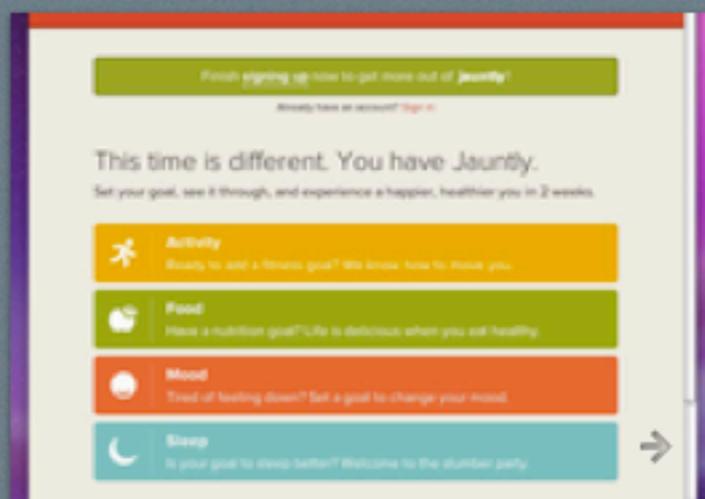


Featured



Beatlab

FREE



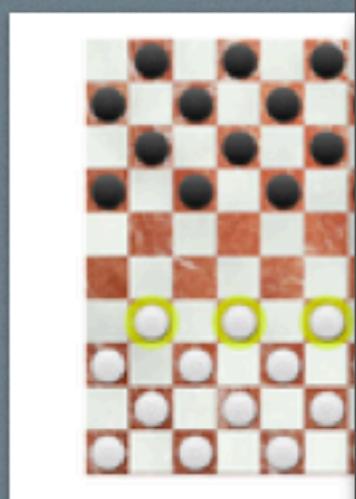
Jaunty

FREE



Evernote Web

FREE



Checkers

mozilla



Firefox OS App store

mozilla

All code open source

<https://github.com/mozilla/zamboni>



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

Security bounty

<http://bit.ly/security-bounty>

mozilla

How large?

How large?
300k+ add-ons

How large?

300k+ add-ons

150 mn views month

How large?

300k+ add-ons

150 mn views month

2+* bn API hits day

How large?

300k+ add-ons

150 mn views month

2+* bn API hits day

* more than that

mozilla

High Availability

High Availability
99.999 uptime*

High Availability
99.999 uptime*
5 data centres

High Availability
99.999 uptime*
5 data centres

* goals being defined

**Zeus Load
Balancer**

CDN

**Ngnix
Gunicorn
Django**

MySQL Master

Memcache

Elastic Search

Celery

MySQL Slaves

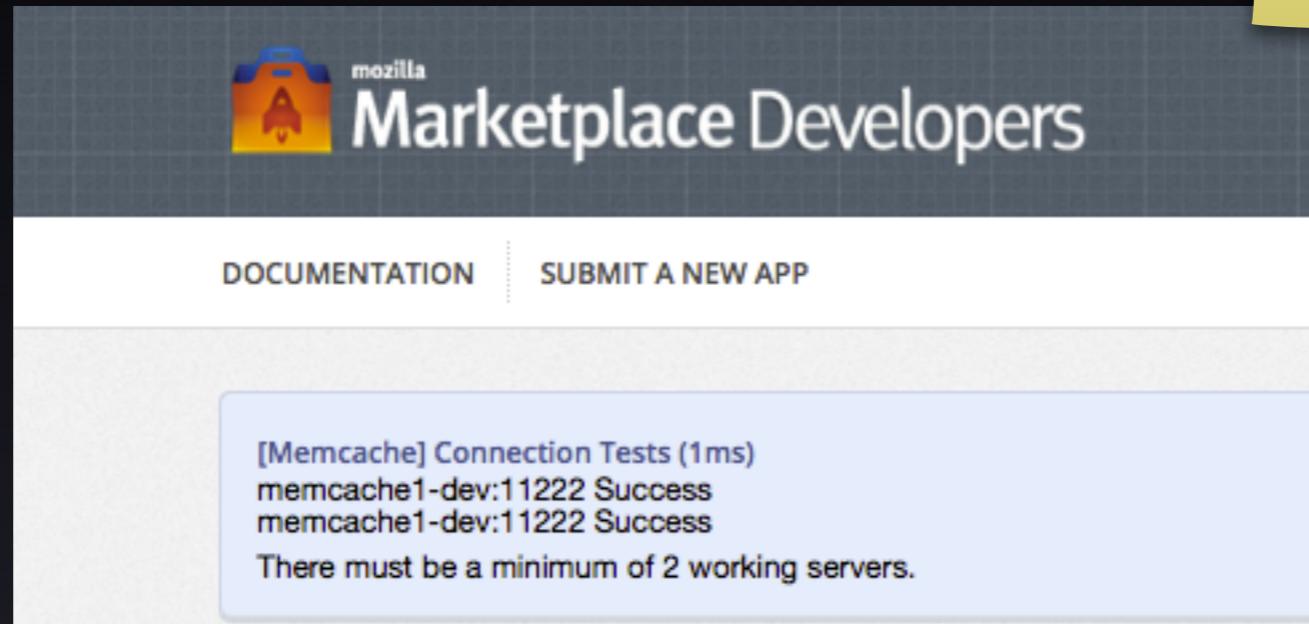
**Redis
(Deprecated)**

Rabbit MQ

1. Measuring

Nagios

<http://bit.ly/zamboni-monit>

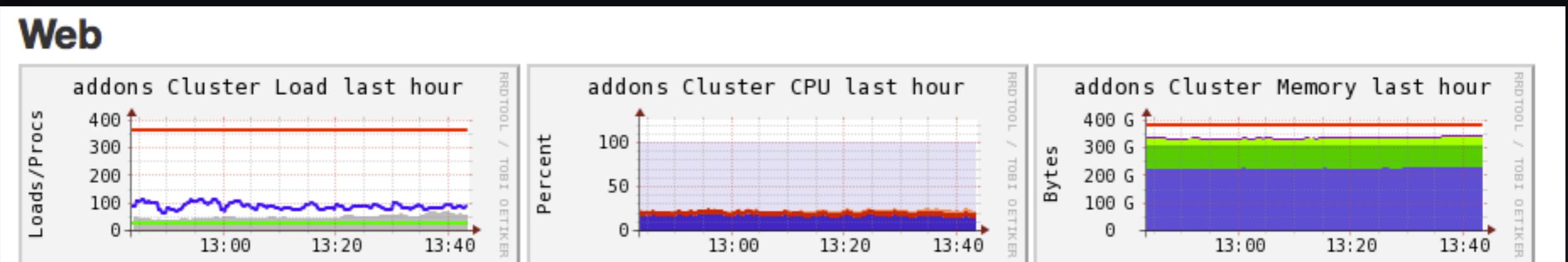


Simple page that returns
500 when something is
wrong

mozilla

Ganglia

Web



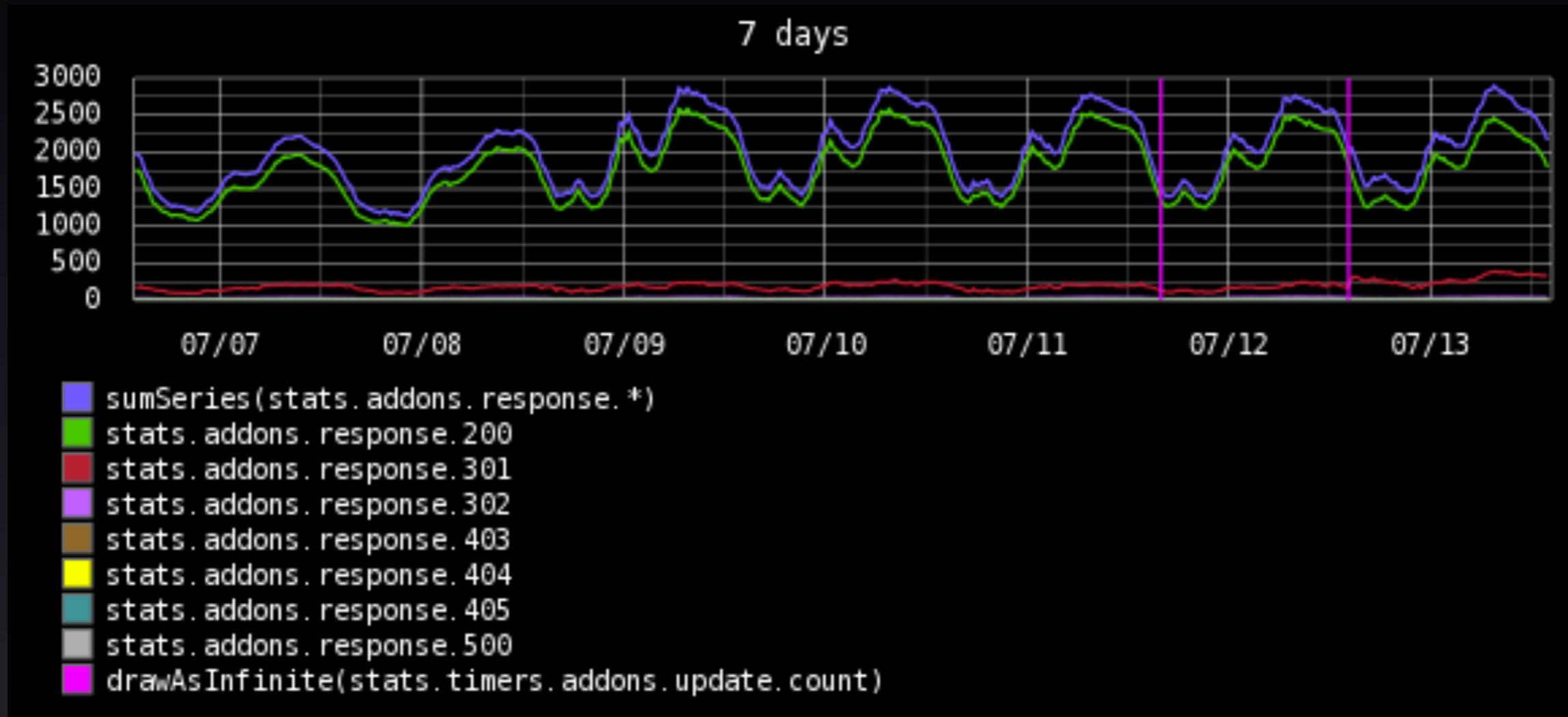
Graphite

<http://graphite.wikidot.com/>

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

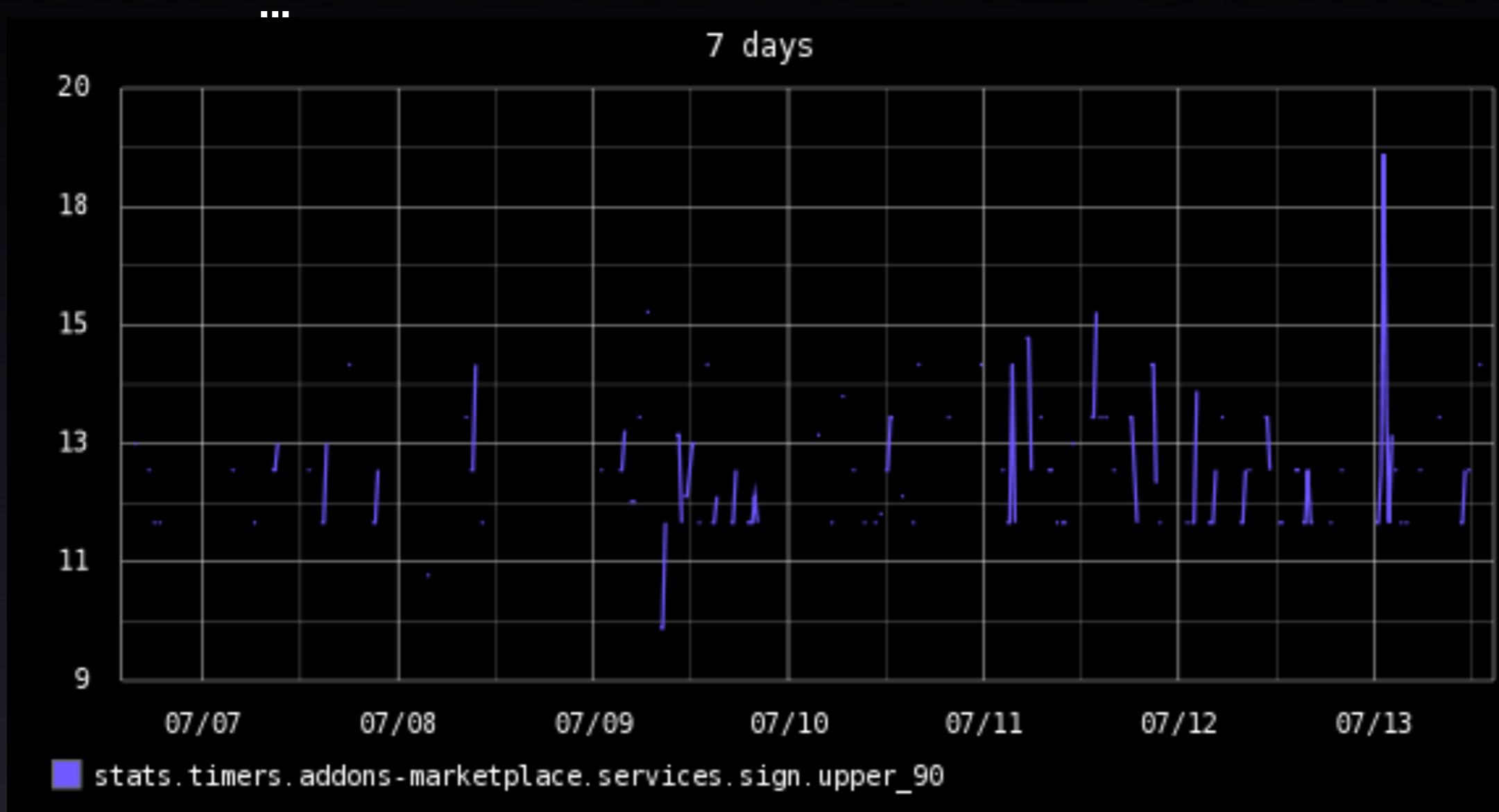
Middleware

```
MIDDLEWARE_CLASSES = (
    'django_statsd.middleware.GraphiteRequestTimingMiddleware',
    'django_statsd.middleware.GraphiteMiddleware',
) + MIDDLEWARE_CLASSES
```



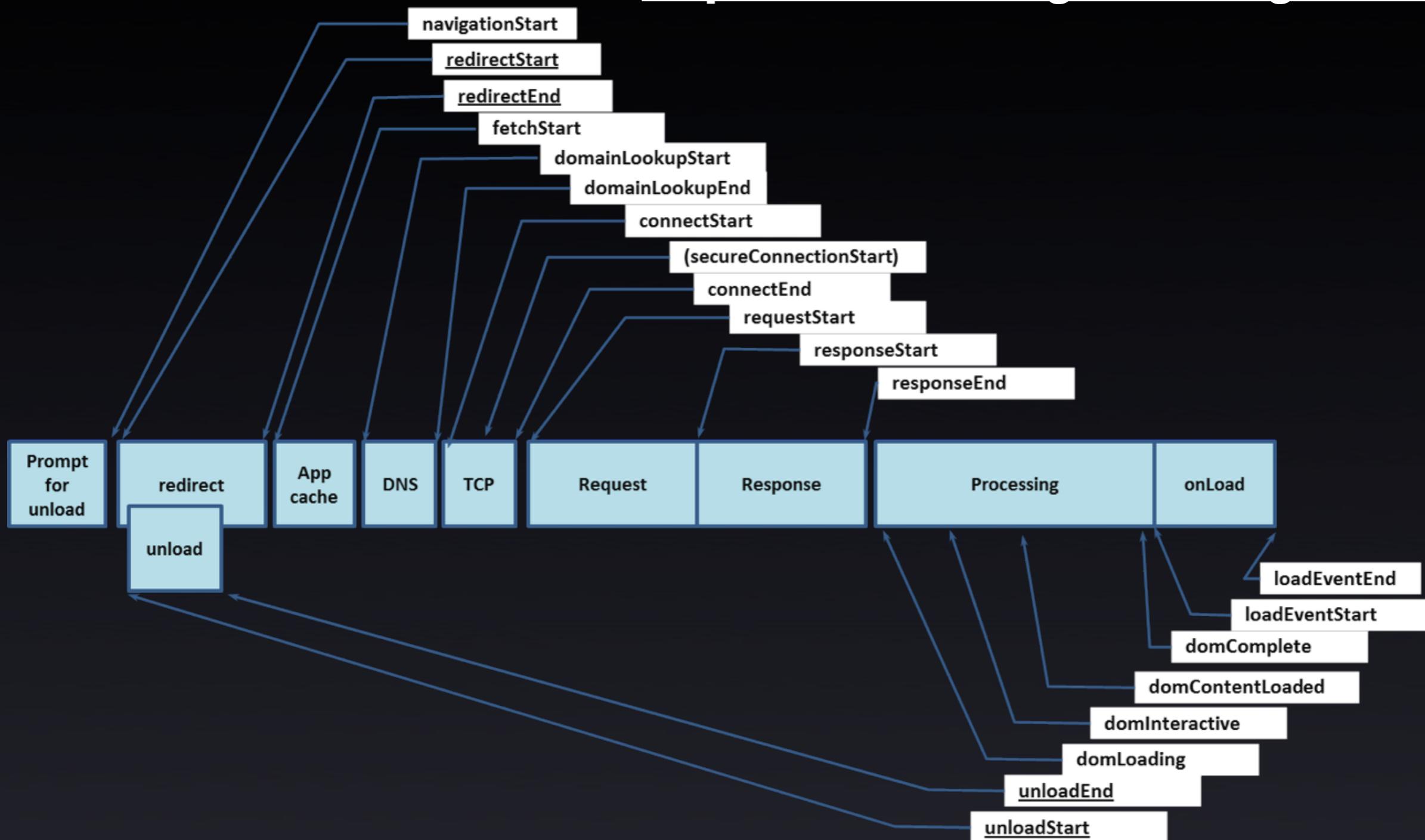
Anything

with `statsd.timer('services.sign'):`



Navigation Timing API

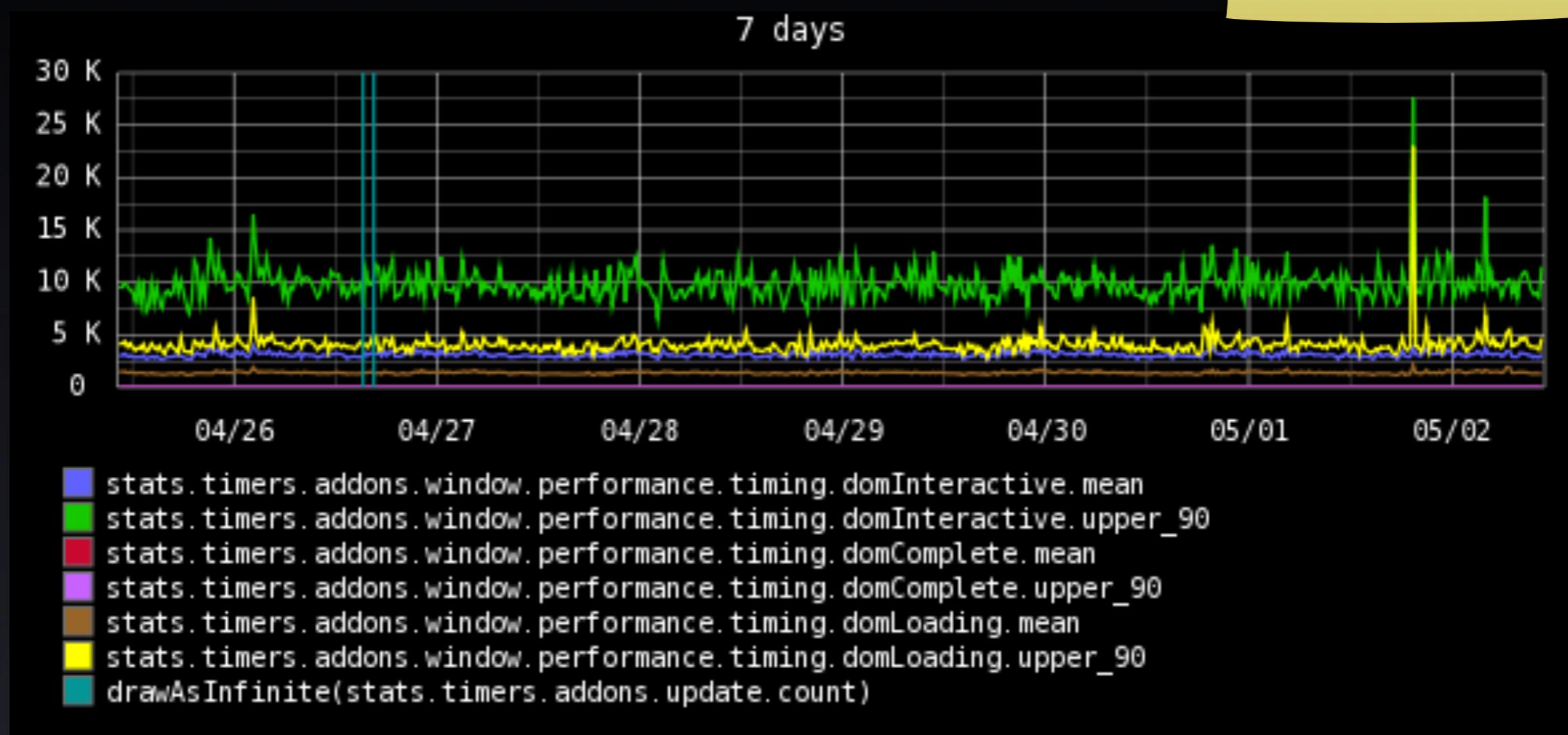
<http://www.w3.org/TR/navigation-timing/>



Client timings

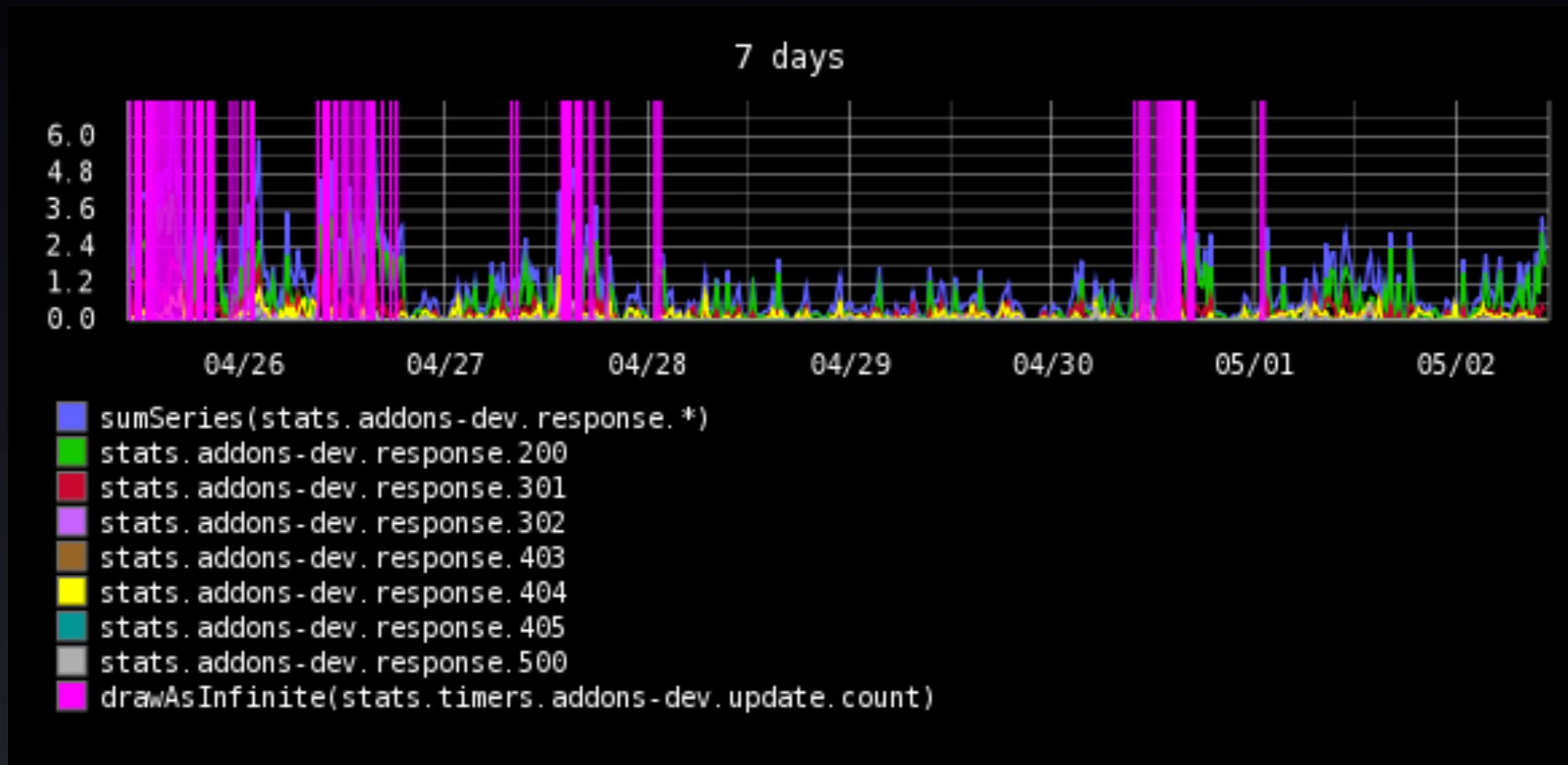
stick.send('/services/timing/re

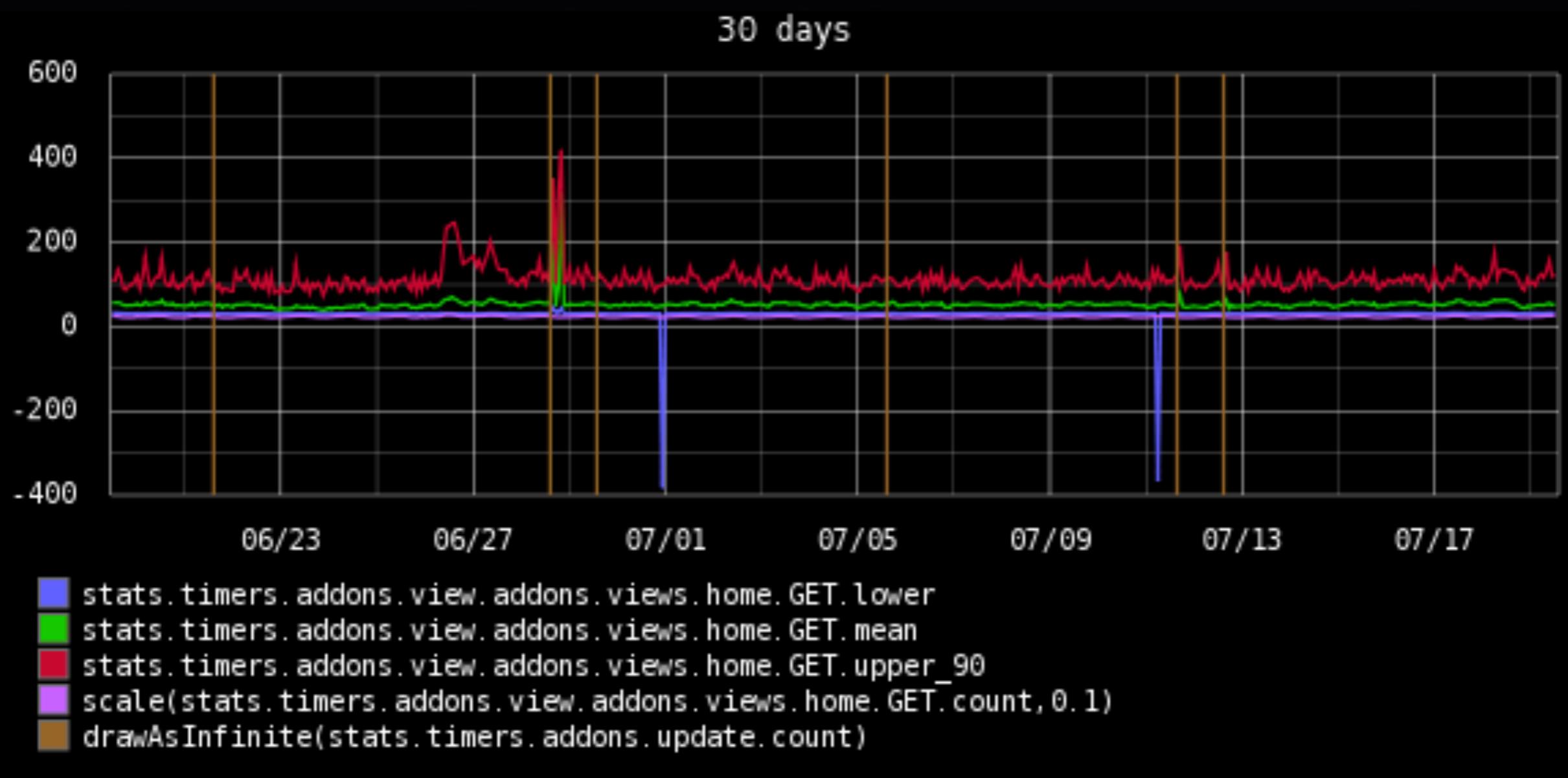
network
app
dom
rendering



Site update

manage.py statsd_ping --key=update





mozilla

2. Caching

Multiple levels caching



zeus
memcached
process level

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

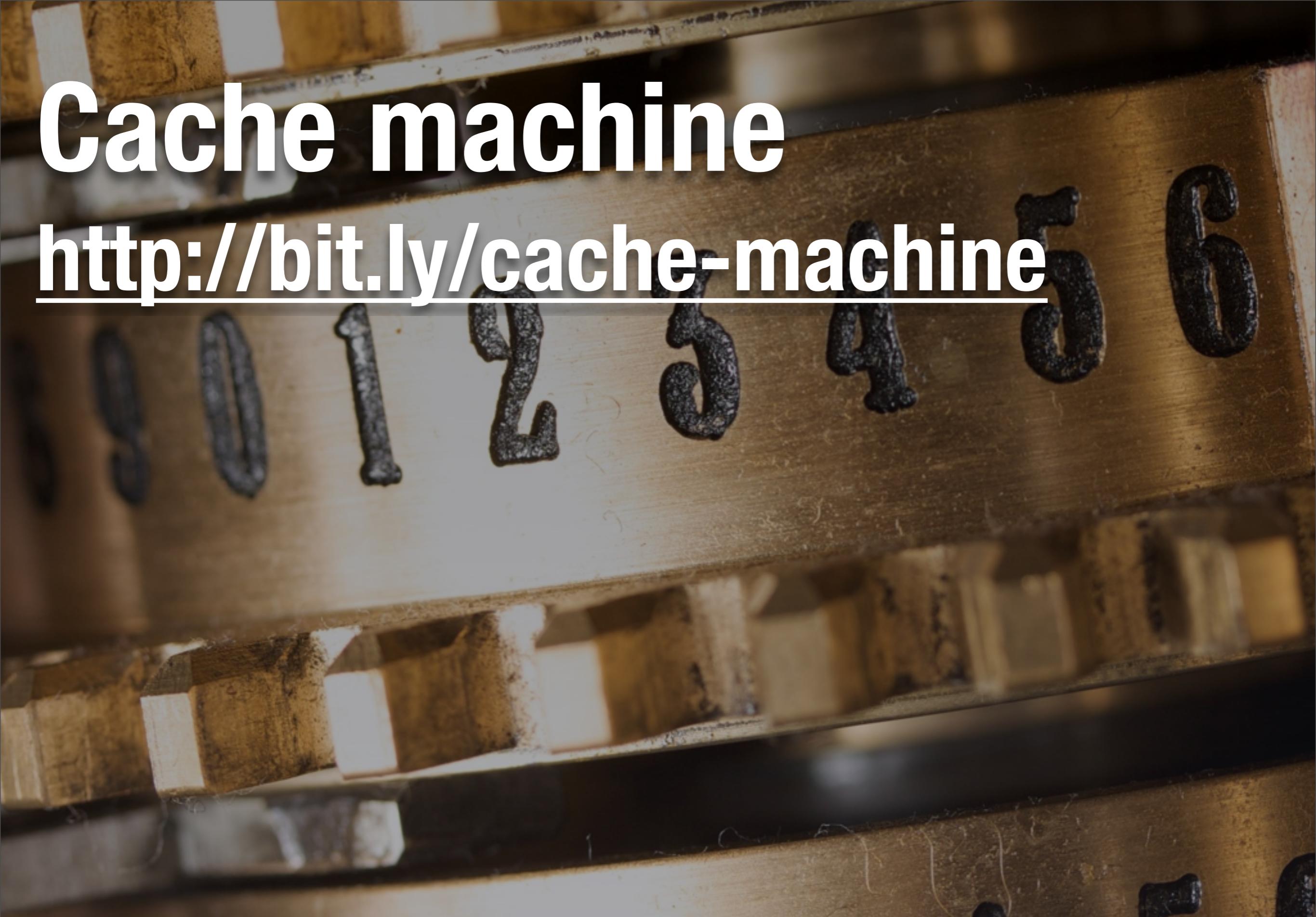
memcache prefix

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

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

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
```

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]

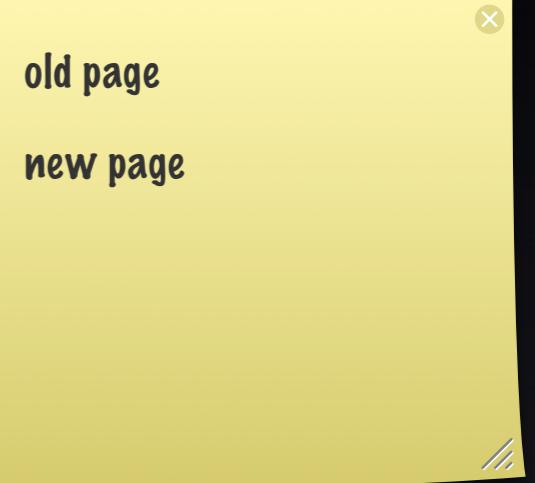
obj 3615

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

Elastic search

<https://github.com/mozilla/elasticsearch>

```
@classmethod
def popular(cls):
    """Elastically grab the most popular apps."""
    return cls.from_search().order_by('-weekly_downloads')
```



3. Async

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)
```

Process lots of objects

```
pks = Addon.objects.values_list('pk', flat=True)
for chunk in chunked(pks, 100):
    task.delay(chunk)
```

4. Query count

Django debug toolbar

<http://bit.ly/debug-toolbar>

Statsd

Stat	Timing	Time
cache.locmem.get		1ms
cache.locmem.get		0ms
db.mysql.default.execute		1ms
cache.locmem.get_many		0ms
cache.locmem.get		0ms
db.mysql.default.execute		1ms
cache.locmem.get_many		0ms
test		1001ms
test		1001ms
test		1001ms
test		1000ms
test		1001ms
cache.locmem.get		0ms
cache.locmem.get		0ms
db.mysql.default.execute		1ms
cache.locmem.get_many		0ms
cache.locmem.get		0ms
view.mkt.detail.views.detail.GET		5344ms
view.mkt.detail.views.GET		5344ms
view.GET		5344ms
cache.locmem.get		0ms

Stat	Total	Count	Values
response.200	1	1	

django-statsd
+ toolbar

Slow MySQL query log



ADD-ONS

[EXTENSIONS](#) | [PERSONAS](#) | [THEMES](#) | [COLLECTIONS](#) | [MORE...](#) search for add-ons

EXPLORE

[Featured](#) >[Most Popular](#) >[Top Rated](#) >

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](#) >

Sit Back and Relax

Add-ons that help you on your travels!

Flagfox
Displays a country flag depicting the location of the current website's server and more.

ScribeFire Classic
ScribeFire Classic is a blog editor that integrates with Firefox and lets you easily post to your blog. ScribeFir...

FoxClocks
FoxClocks let you keep an eye on the time around the world.

Featured Extensions

[See all »](#)

Pixlr Grabber
Photos, Music & Videos
 (157)



Text Link
Appearance
 (223)



FabTabs
Tabs
 (105)



Personas Rotator
Photos, Music & Videos
 (75)



TinyURL Generator
Social & Communication
 (46)



Tab Mix Plus
Tabs
 (1,779)

MOST POPULAR All »

1. Adblock Plus
14,121,565 users

2. Video DownloadHelper
7,086,546 users

3. Firebug
3,140,950 users

4. Greasemonkey
3,029,288 users

5. Download Statusbar
2,409,062 users

6. Personas Plus
2,196,604 users

Home page
20+ addons
400+ sql queries

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

5. SQL

Add-on Version Check

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

Incoming 8,000 req/sec



Profile A

Profile B

Addon A

Addon B

Addon C

Addon B

Addon C

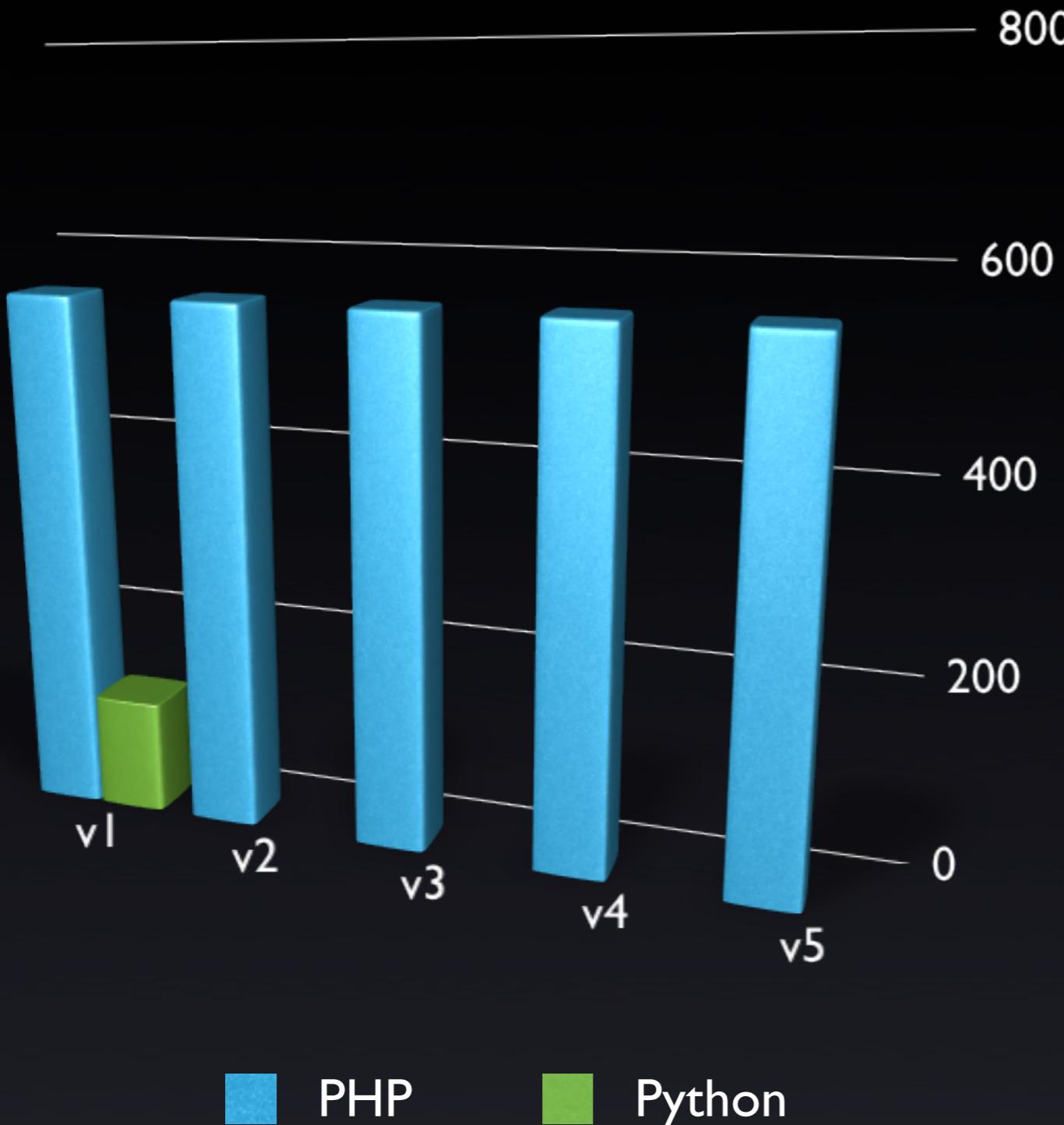
Addon D

Cached

Incoming 8,000 req/sec
Zeus Cache 6,400 req/sec
Uncached 1,600 req/sec

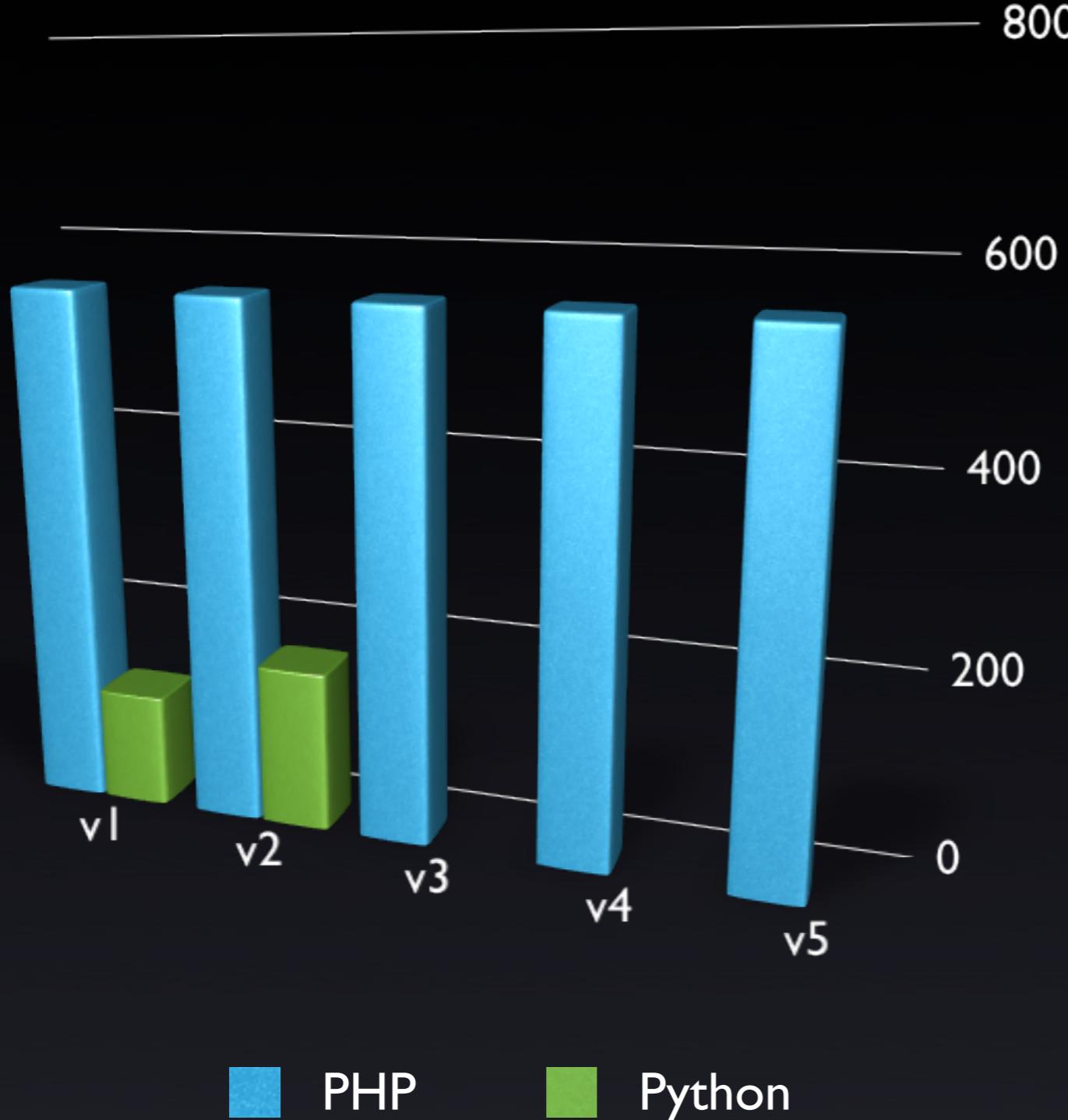


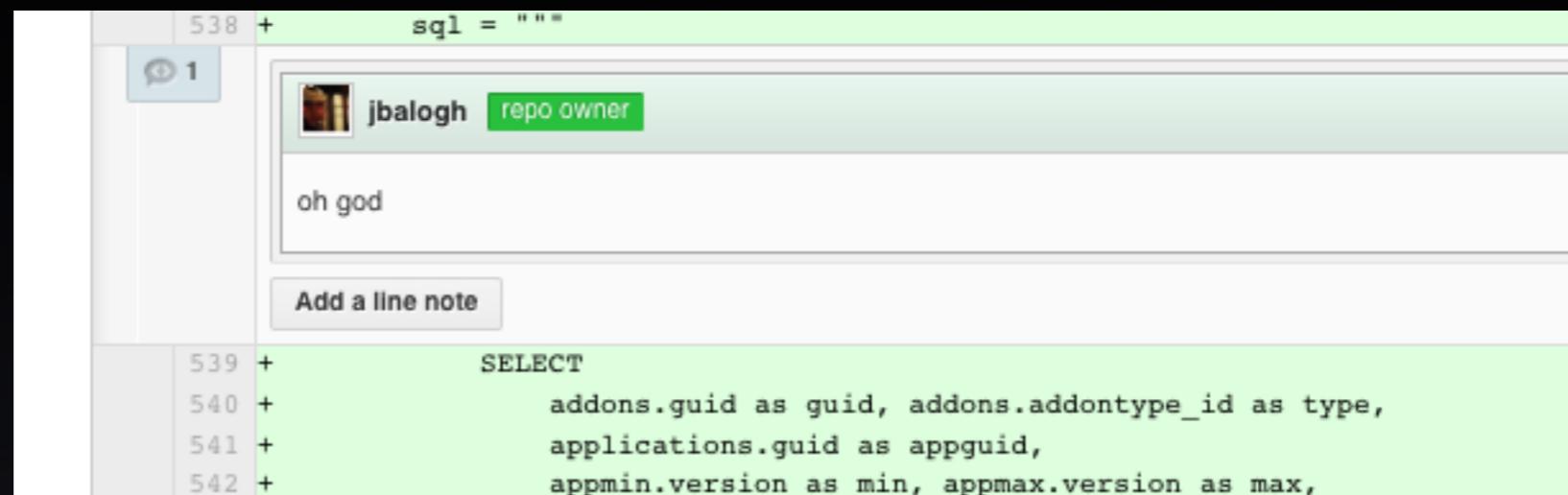
Incoming 8,000 req/sec
Zeus Cache 6,400 req/sec
Uncached 1,600 req/sec
Old PHP 550 req/sec
Python ?



v1
Plain
Django

v2 Min. SQL queries





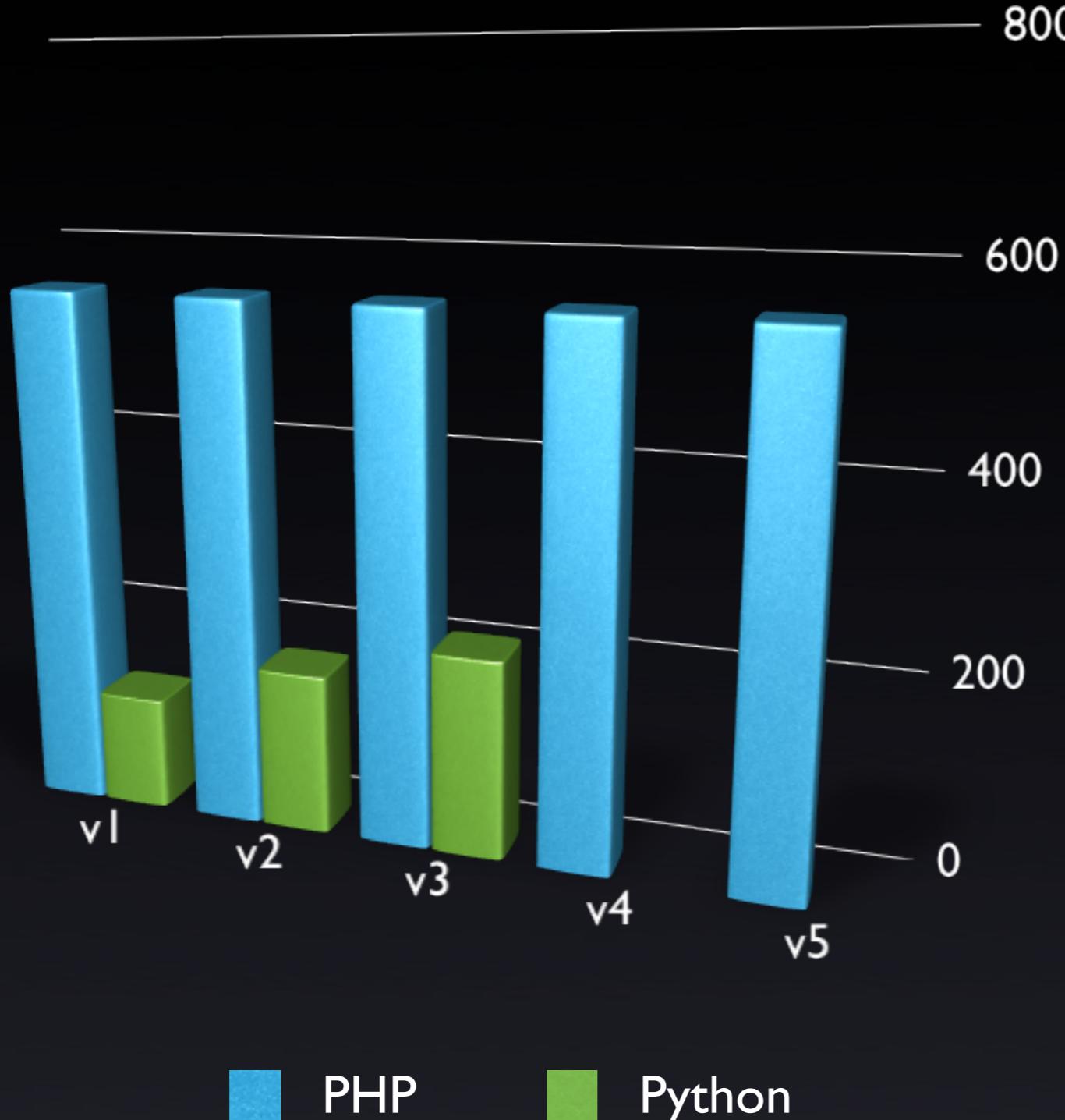
A screenshot of a GitHub pull request interface. At the top, a message box shows a profile picture of jbalogh, labeled "jbalogh repo owner", with the text "oh god". Below the message box is a button labeled "Add a line note". The code editor shows four lines of SQL code:

```
538 +     sql = ""  
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

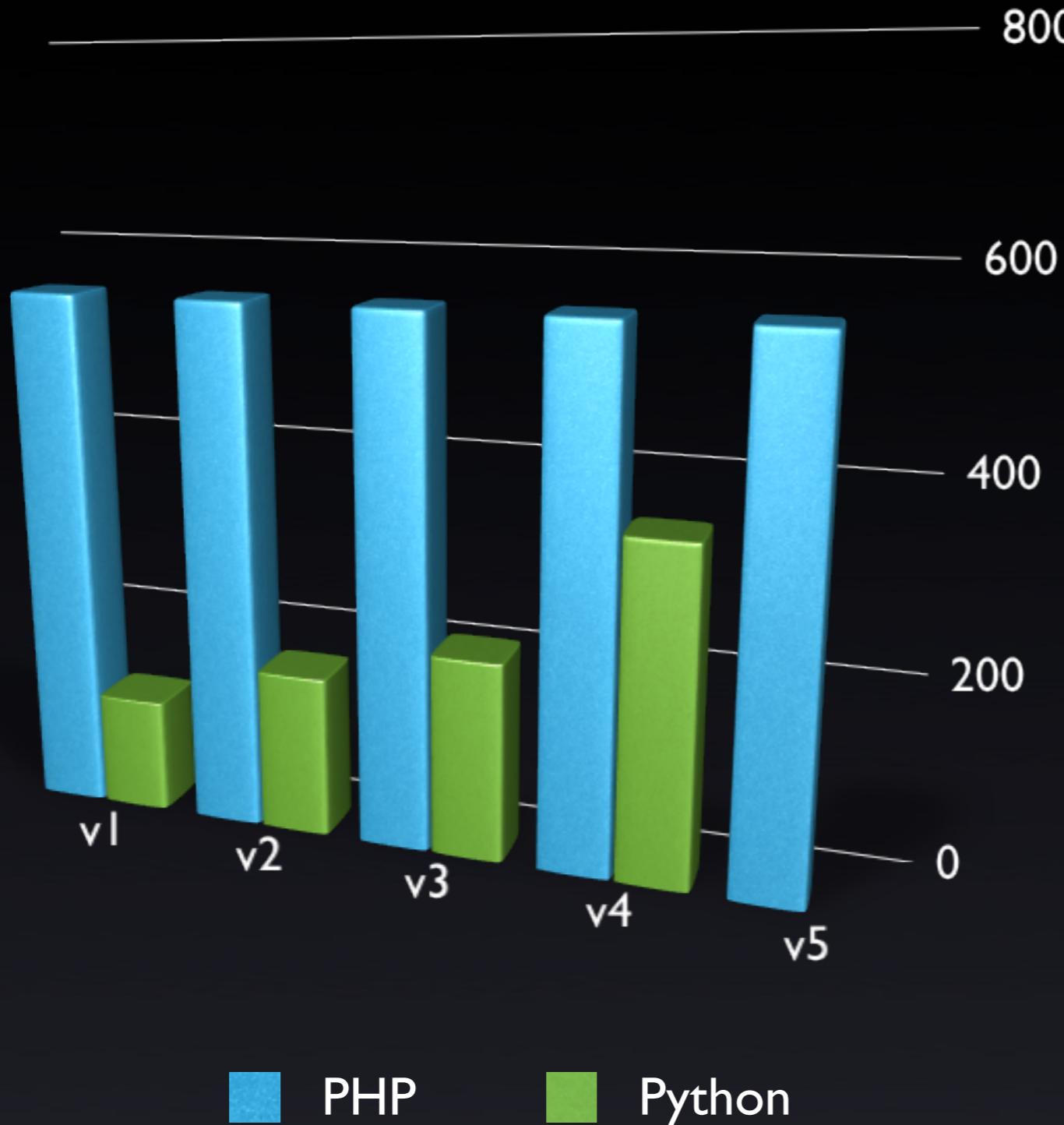
v3

Django and raw SQL

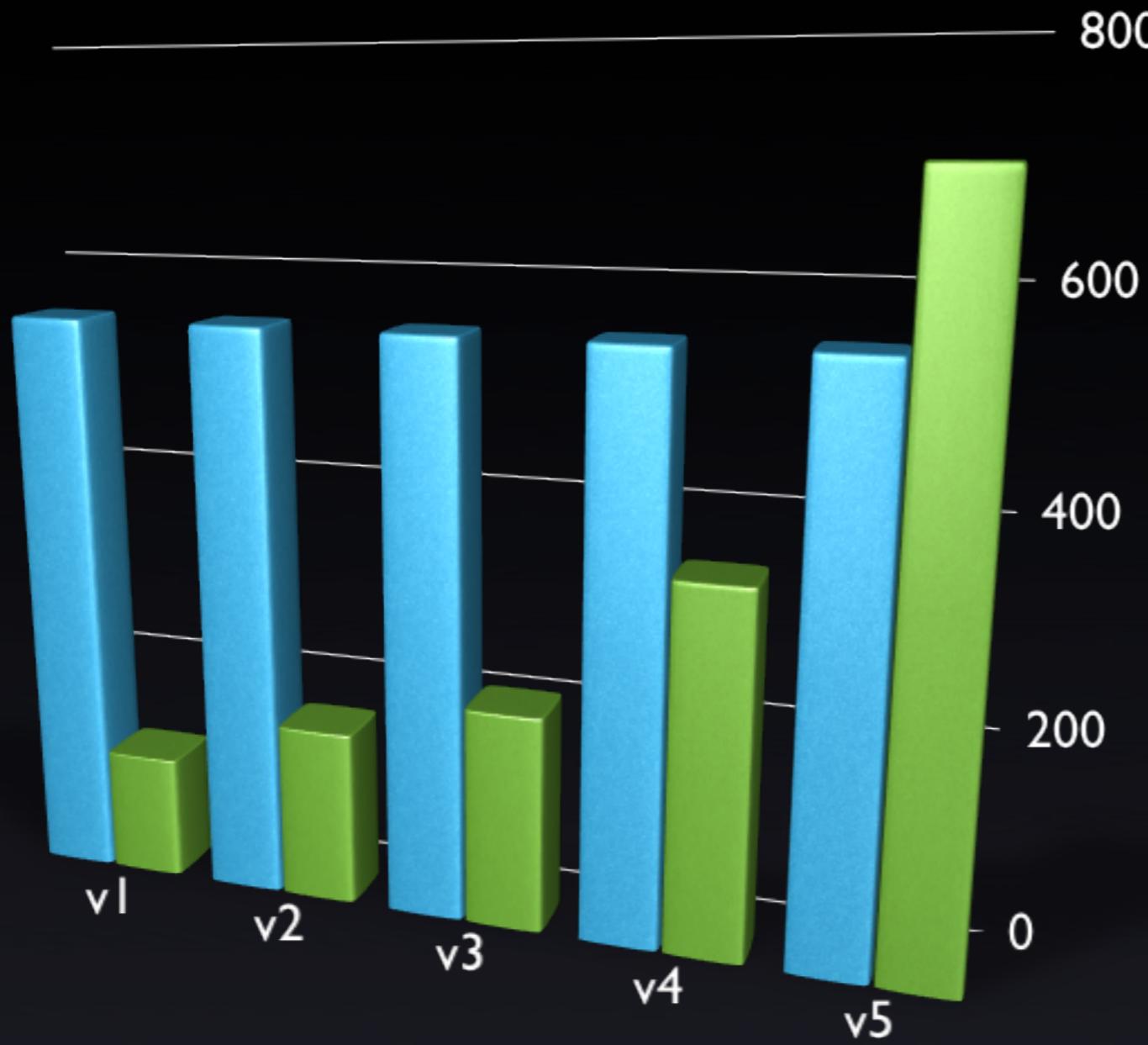


max-requests 200,
actually we hit 210

v4
WSGI
no Django



v5 Pooling, optimised queries



PHP

Python

That's 700 req/sec
which translates into
Upgraded hardware
1000 req/sec
Rob hudson 1200 req/sec

eh?



Deployments

Hi, I'm the chief of addons.stage.

who

password

ref



django-waffle

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

```
if waffle.flag_is_active(request, 'pay'):
```

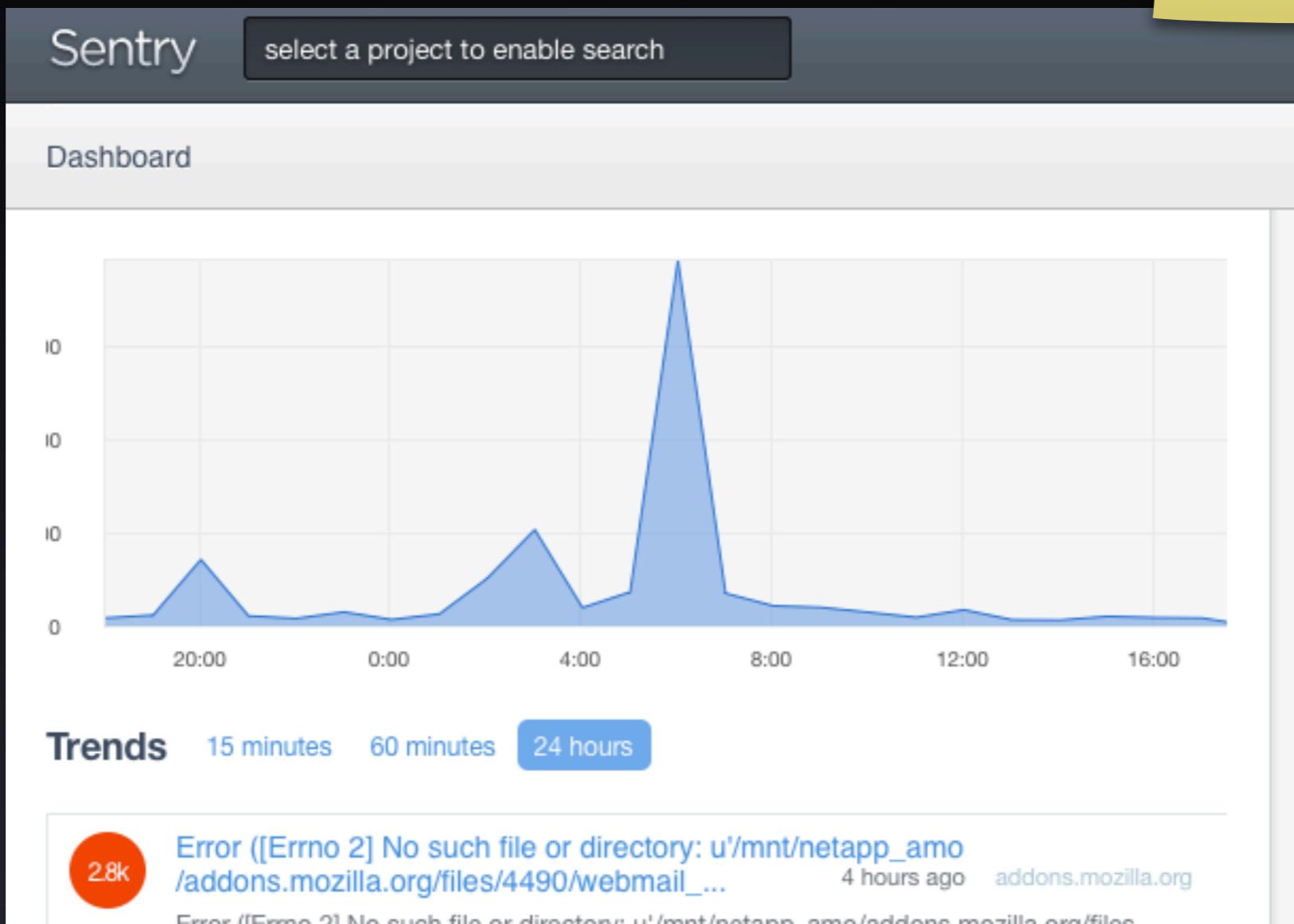
```
    ...
```

errors by email
does **not** scale

Sentry

<http://bit.ly/sentry-docs>

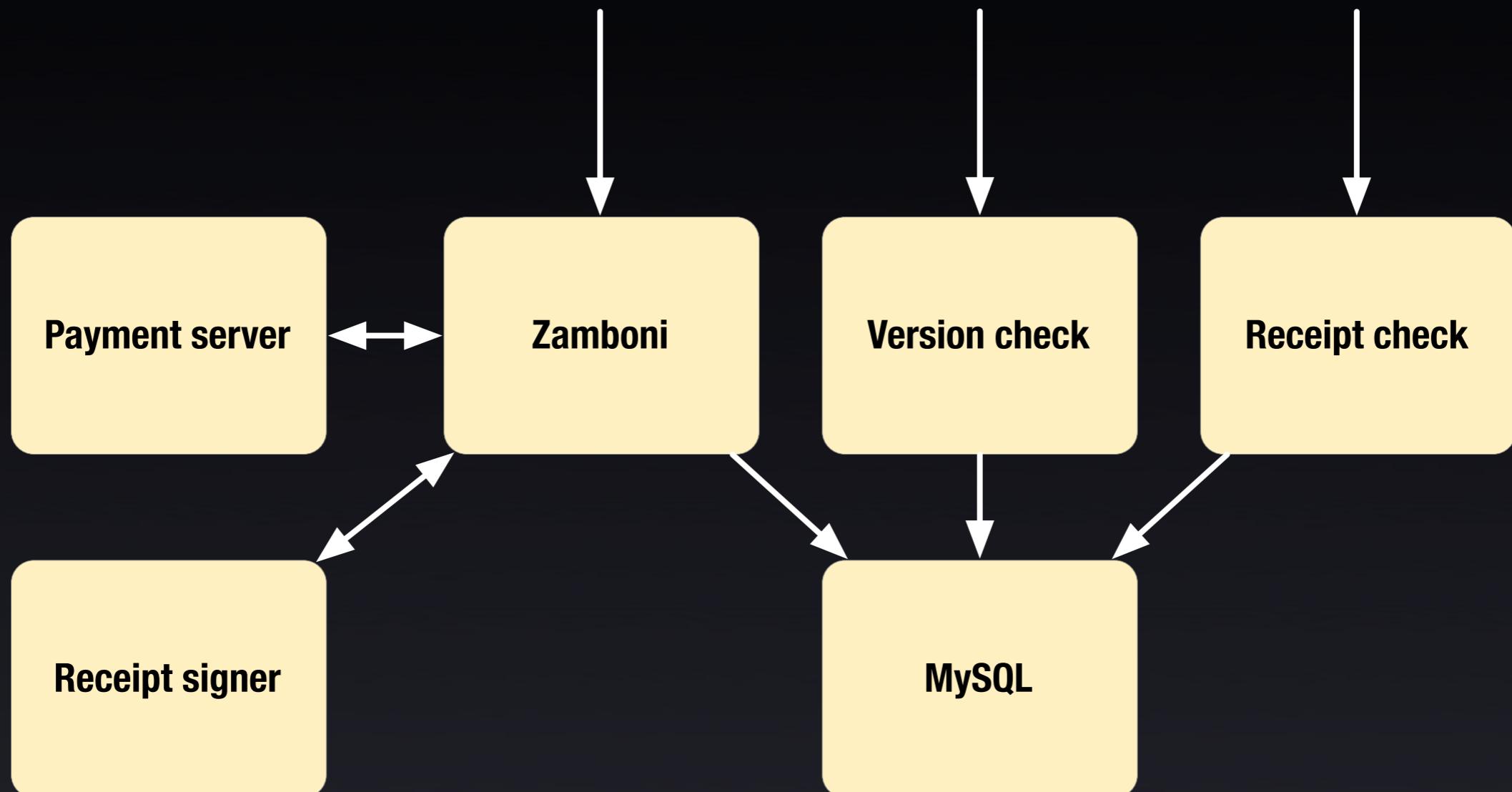
Or arecibo



mozilla

Future

More REST services



Questions?

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

@andymckay

andym@mozilla.com

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