"On Thursday afternoon, Yahoo put a link in the 'Featured' box at the top of their home page to [a] Home and Garden story.

In an instant, traffic to our site nearly tripled, breaking a couple of records: nearly 7,300 hits per second and 4.9 million page views for the hour in which the spike occurred, then 4.2 million in the following hour."

- Denise Warren, New York Times. June 2009

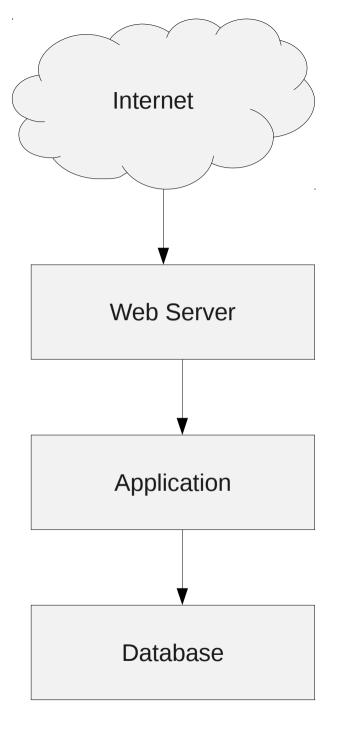
HTTP Acceleration with Varnish

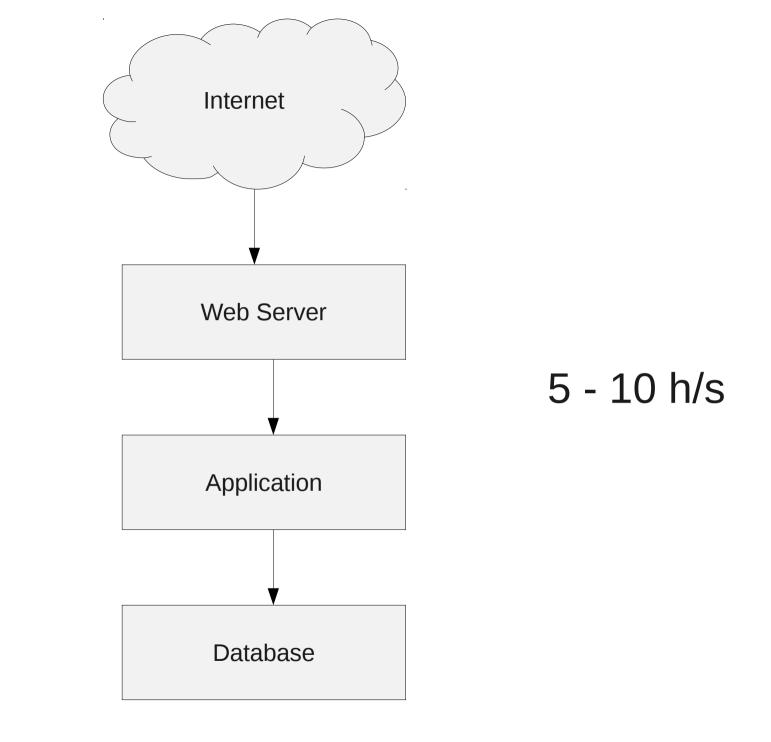
Simon Lyall

Sysadmin Miniconf linux.conf.au 2011

Slashdot / Reddit / Digg

10 – 30,000 visits over 48 hours





It gets worse.

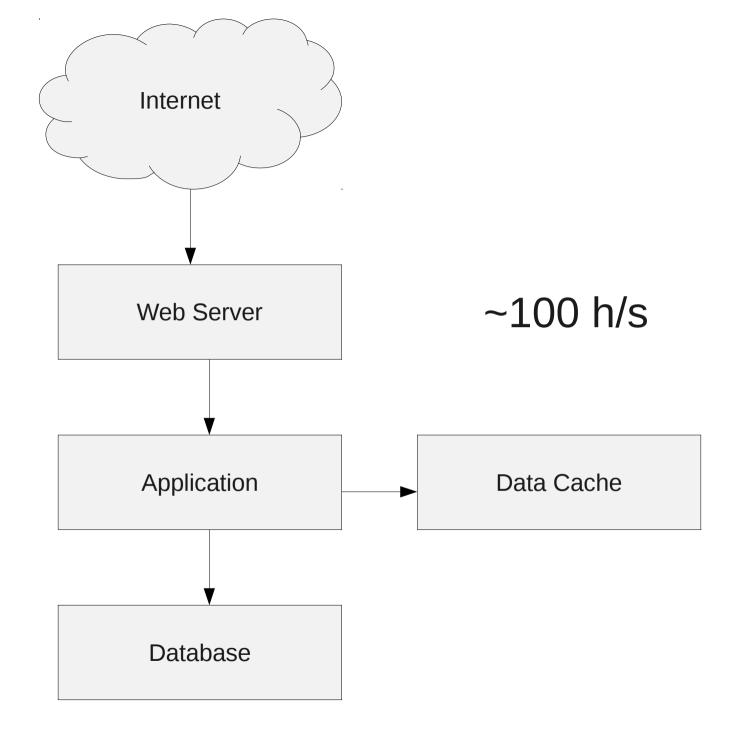
5 - 10 h/s is a good case

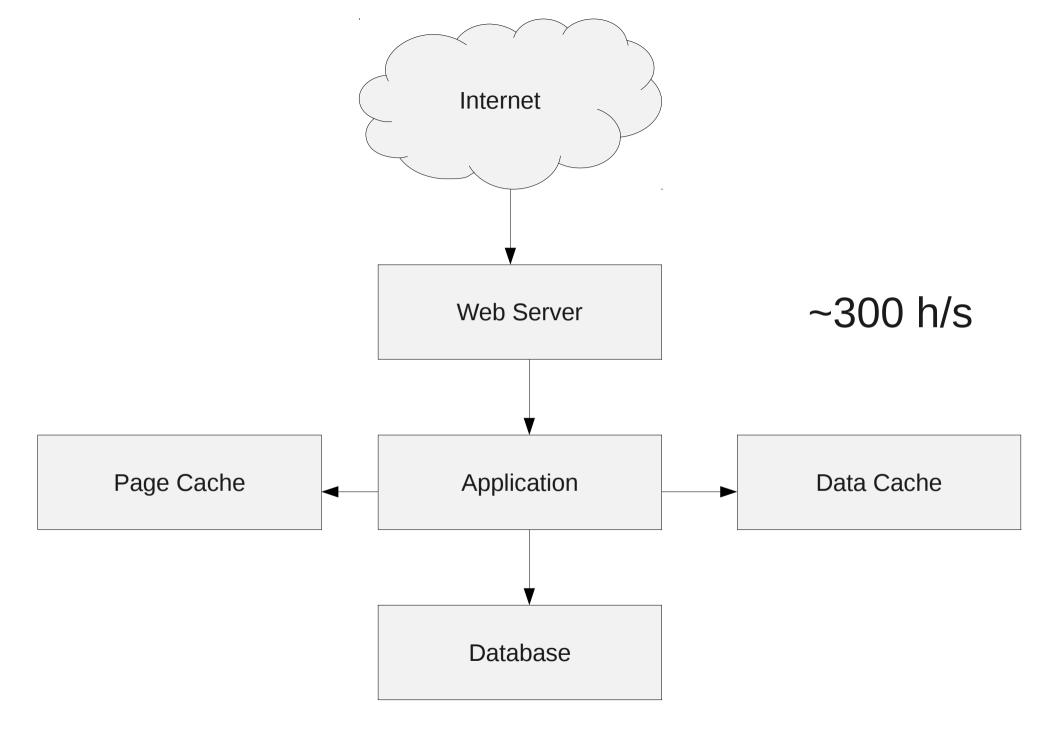
Some people have:

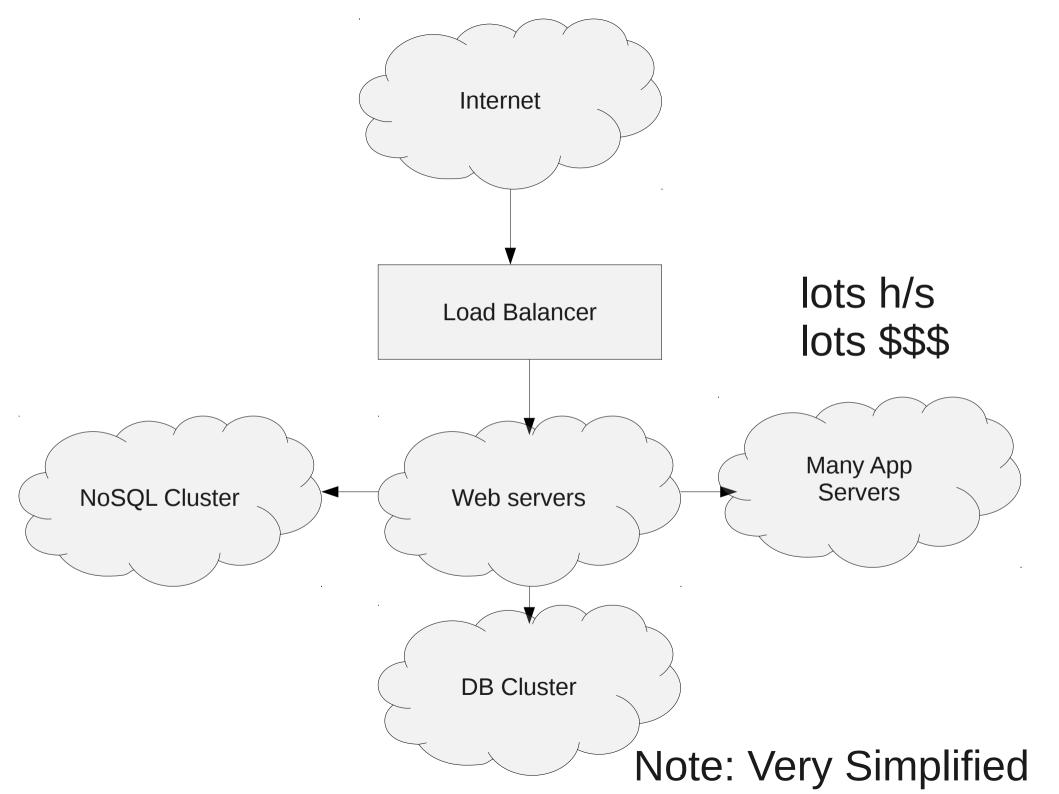
- Slow application servers
- Big datasets
- Complicated queries
- Multi-second page generation, (on a good day)





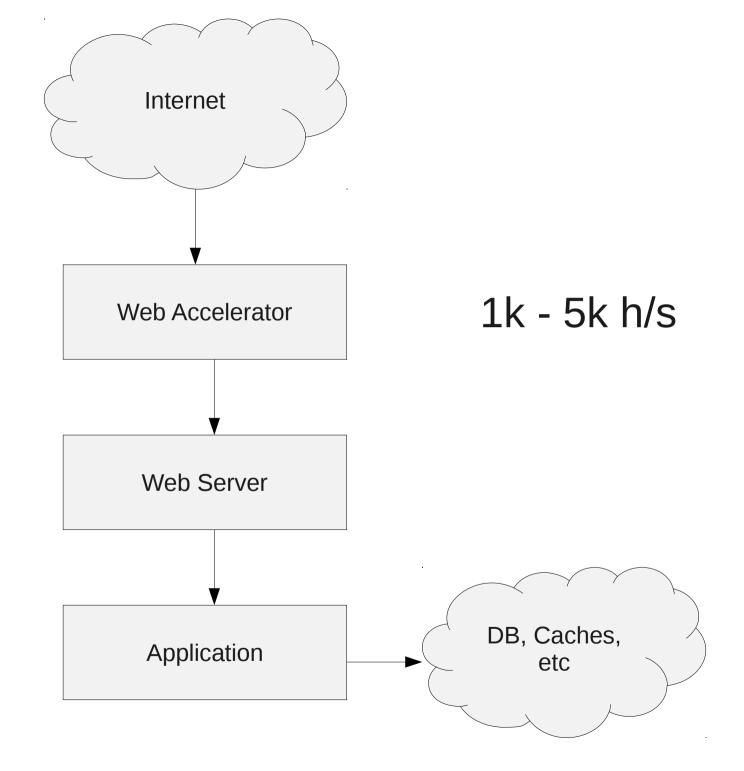






But if you are serving the same* page to everybody why send each hit to the app server?

* For various values of "the same"



Web Accelerator

Cache at the Per Page/URL level

Optimised server to grab/cache/serve full webpages

1000 – 5000 h/s out of the box on commodity hardware

20k+ h/s with tuning

Examples

- Squid
- Varnish
- Lighttpd
- Nginx
- Apache Traffic Server
- Perlbal
- Pound

- ...

- BlueCoat Appliance
- F5 appliance

I'll concentrate on Varnish

- http://www.varnish-cache.org
- FreeBSD license
- Active Development
- Used by Large sites (twitter, NYTimes, Photobucket, wikileaks, Wikia, perezhilton)
- Simple basic Config
- Very extensionable

\$ varnishd -f /etc/varnish.vcl -a 0.0.0.0:80 \$ cat /etc/varnish.vcl

```
backend default {
    .host = "10.0.0.1";
    .port = "80";
}
```

```
sub vcl_recv {
    unset req.http.cookie; }
```

```
sub vcl_fetch {
   set beresp.ttl = 60s; }
```

vcl_recv

Called at the beginning of a request,

vcl_pipe

Called upon entering pipe mode

vcl_hit

vcl_miss

vcl_fetch

Called after a successfull retrieve from backend vcl deliver

 \overline{C} alled before a cached object is sent to the client

vcl_error

Called when we hit an error

How cacheable is content?

ImagesextremelyJavascript LibrariesextremelyCSSveryjavascriptvery404 pagessomewhatHTMLit depends

How cacheable is content?

Images Javascript Libraries CSS javascript 404 pages HTML extremely extremely very very very somewhat it depends

Opposing Pressures

- 1. Keep the cache hit rate high and keep the load on the backend low
- 2. Make sure the content served is uptodate

Strategies

- Different expire times for different content.
- Explicitly flush content from cache when changed

- Use javascript to display less cacheable elements

What to push to the cache?

- anything that will spoil your hit rate
- url rewrites (ref=)
- mobile redirects
- different pages to logged in users
- serve pages when backend down
- alter expire times
- tidy up headers (user-agent, accept-encoding)

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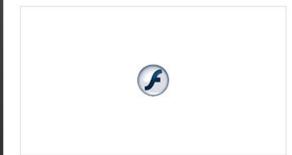
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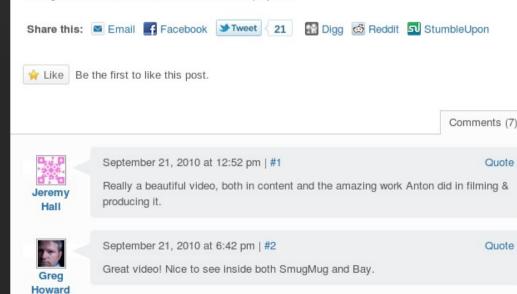
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Comments (7)

September 21, 2010 at 12:52 pm | #1

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Greg Howard Quote

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September 21, 2010 at 6:42 pm | #2

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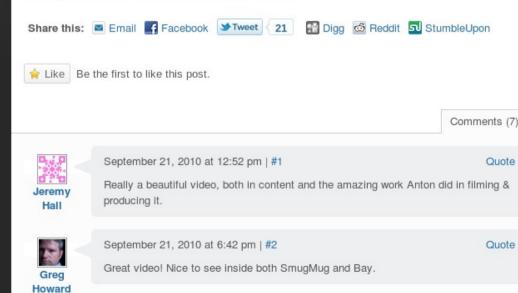
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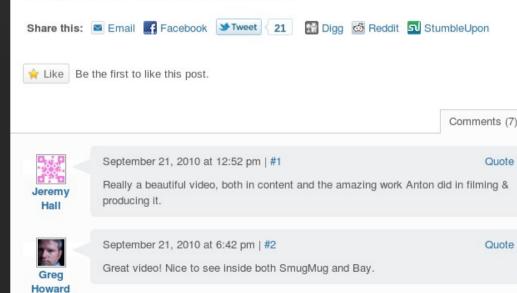
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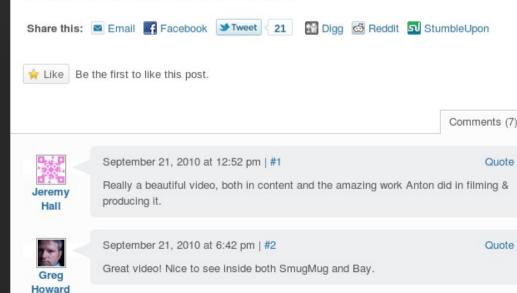
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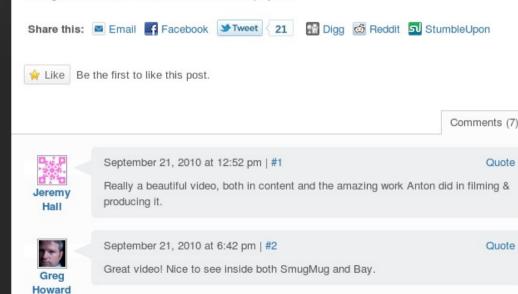
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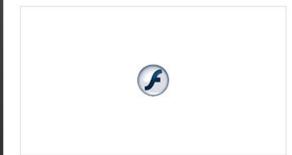
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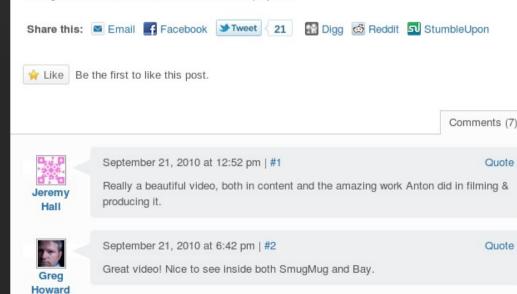
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URL tidy

htttp://www.example.com/ htttp://www.example.com/?ref=twitter htttp://www.example.com/?ref=rss

if (req.http.host == "www.example.com") {
 set req.url = regsub(req.url, ".*\?ref=.*", "");
}

Mobile redirect

```
sub vcl recv {
if (req.http.user-agent ~ ".*(iPhone|Android).*" {
    error 750 req.url;
sub vcl error {
if (obj.status == 750) {
  set obj.http.Location = "http://example.mobi" \
    obj.response;
  set obj.status = 302;
  return (deliver);
} }
```

Expired Cache Grace

Serve old page while new generating

```
sub vcl_recv {
    unset req.http.cookie;
    set req.grace = 15s;
}
```

```
sub vcl_fetch {
  set beresp.ttl = 60s;
  set beresp.grace = 15s;
}
```

Accept-Encoding Normalisation

if (req.http.Accept-Encoding) { if (req.url ~ "\.(jpg|png|gif|mp3|ogg|flv)\$") { # No point in compressing these remove reg.http.Accept-Encoding; } elsif (req.http.Accept-Encoding ~ "gzip") { set req.http.Accept-Encoding = "gzip"; } else { # unkown algorithm

remove req.http.Accept-Encoding;

.

Expire times

By default varnish will cache and object according to te normal expire headers

```
if (req.url ~ "(.js|.css)$") {
    set obj.ttl = 60m;
}
else {
    set obj.ttl = 45m; // default ttl 45 minutes
}
```

If backend down then just serve expired pages

If the backend is healthy then serve # expired copies of pages for up to

30s while waiting for new copy.

- # However if backend is unhealthy then serve # expired pages for up to an hour #
- if (req.backend.healthy) {
 set req.grace = 30s;

```
} else {
```

```
set req.grace = 1h;
```

Serve different content if users not logged in.

Change URL if logged in cookie missing
#

if (req.http.Cookie !~".*loggedin=yes.*") {

set req.url = regsub(req.url, "^", "unauthed/");

Edge Side Includes

```
#!/bin/sh
echo 'Content-type: text/html'
echo "
date "+%Y-%m-%d %H:%M"
```

```
<HTML>
<BODY>
The time is: <esi:include src="/cgi-
bin/date.cgi"/>
at this very moment.
</BODY>
</HTML>
```


Now they've changed their logo, the brand values make so much more sense to me.

What happens when your website changes it's logo? CSS? Motto?

Every single page has to be recreated

Don't be the person to tell the brand manager this will take a month to do.