

# High Performance for Small Sites

John Bickar, Stanford Web Services

# What is a “small site?”

Shared hosting

Limited/no access to Linux/Apache layer

Small VPS

Cannot install Varnish, memcache, etc.

# What is a “small site?”

If you run:

```
$ sudo apt-get install varnish
```

And it returns, “**user not sufficiently super,**” you might have a small site.

---

# **YOUR SLOW DRUPAL SITE**



**What you think you have.**

What you actually have.



What you don't have.





What you want.





**What you can have.**

What you can make your users think you have.





What you're still not going to get.

# The Creation of a Slow Drupal Site



---

A play in four acts

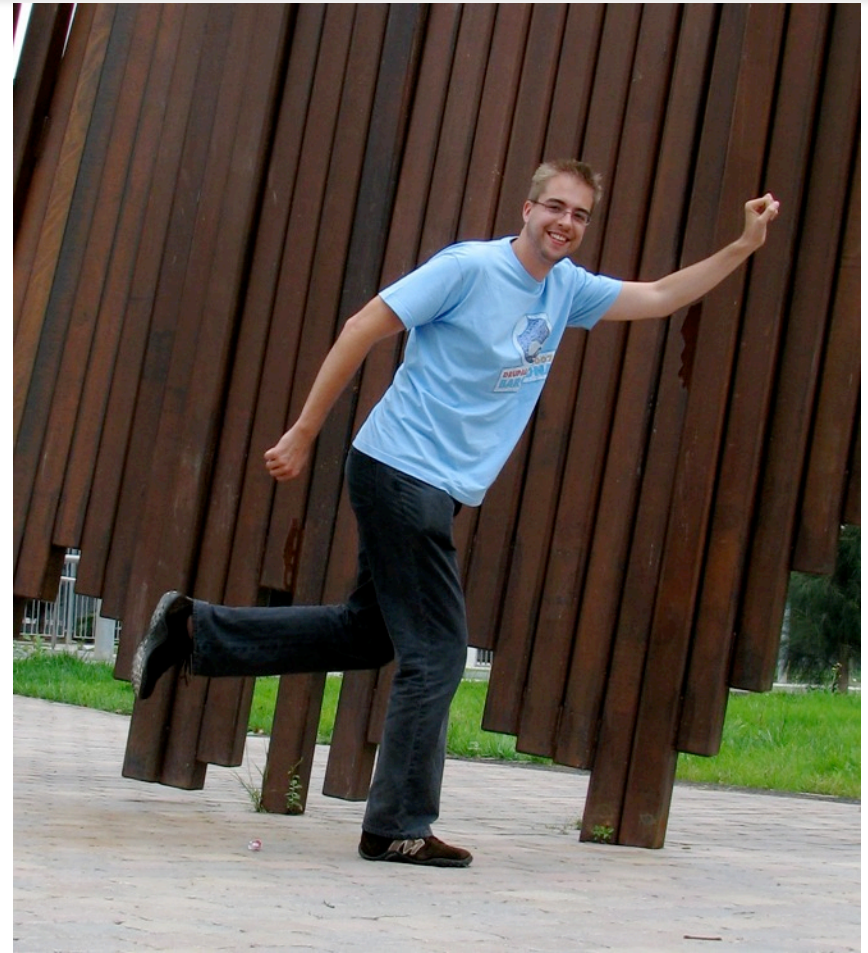
# ACT I: INCEPTION

“We need a Drupal!”



# ACT II: CREATION

Work, work, work





# **ACT III: EXPANSION**

“That’s great!”

George Foreman grill

“Can we add...”

Discussi

Custom

Events

Custom breadcrumb

Contact form

Mobil

Custom .tpl.php

Restricted content

Field level permissions

Slap Chop

GI Joe with the kung-fu grip

Room reservations

Seventeen more roles

Publishing workflow

Ten more content types



# ACT IV: DECELERATION



# Initial Assessment



Priorities

Resources

Traffic

Hosting Options

# Assessing Performance Bottlenecks



Who?

What?

Where?

When?

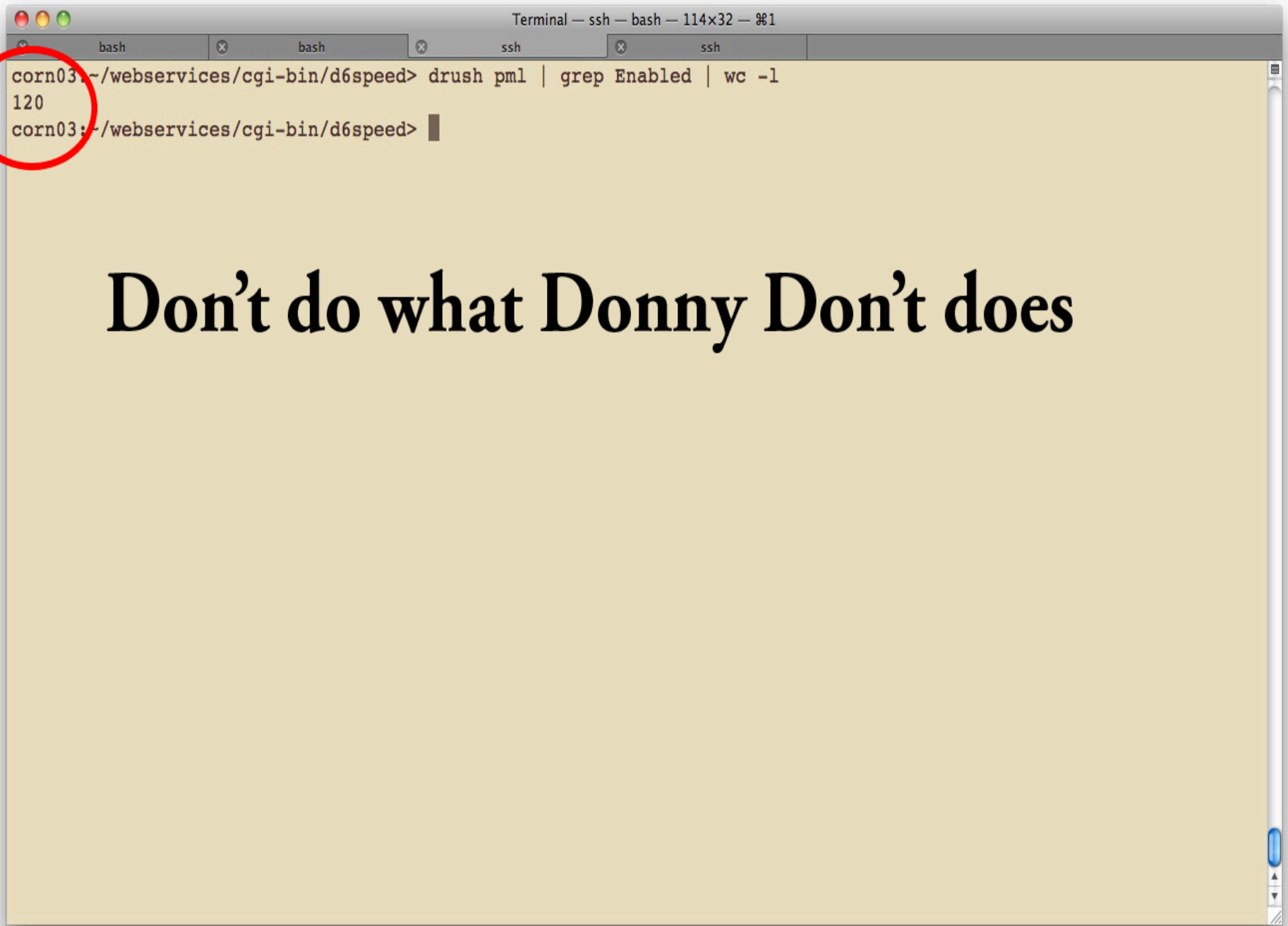
Why?

# General Tips



Disable unnecessary modules

Delete unnecessary modules



**Don't do what Donny Don't does**



# D6 Speed Test

Home

Modules **List** Uninstall

- The Date Popup module now requires the **jQuery UI module** as a source for the datepicker. Please install it immediately.
- The Date Popup module now requires the **jQuery UI module** as a source for the datepicker. Please install it immediately.
- The content access permissions need to be rebuilt. Please visit [this page](#).

- Organic groups module enabled. Please see the included **README file** for further installation instructions.
- The configuration options have been saved.

No information is available about potential new releases for currently installed modules and themes. To check for updates, you may need to **run cron** or you can **check manually**. Please note that checking for available updates can take a long time, so please be patient.

Modules are plugins that extend Drupal's core functionality. Enable modules by selecting the *Enabled* checkboxes below and clicking the *Save configuration* button. Once a module is enabled, new *permissions* may be available. To reduce server load, modules with their *Throttle* checkbox selected are temporarily disabled when your site becomes extremely busy. (Note that the *Throttle* checkbox is only available if the Throttle module is enabled.) The auto-throttle functionality must be enabled on the [throttle configuration page](#) after having enabled the throttle module.

It is important that [update.php](#) is run every time a module is updated to a newer version.

You can find all administration tasks belonging to a particular module on the [administration by module page](#).

To extend the functionality of your site, a number of [contributed modules](#) are available.

To clear all caches, click the button on the [Performance page](#).

See the [available updates](#) page for information on installed modules and themes with new versions released.

Access control

Enabled	Throttle	Name	Version	Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ACL	6.x-1.4	Access control list API. Has no features on its own. Required by: Forum Access ( <a href="#">enabled</a> )
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Content Access	6.x-1.2	Provides flexible content access control
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Forum Access	6.x-1.7	Allows forums to be set private and allows forums to be given moderators. Depends on: ACL ( <a href="#">enabled</a> ), Forum ( <a href="#">enabled</a> ), Taxonomy ( <a href="#">enabled</a> ), Comment ( <a href="#">enabled</a> )

# 48.04 seconds

Name	Path	Method	Status	Type	Initiator	Size	Time	Timeline	10.68s	16.01s	21.35s	26.69s	32.03s	37.36s	42.70s	48.04s
powered-blue-00x15.png	/group/webseervices/cgi-bin/d6speed/misc	GET	200 OK	image/png	modules:1128 Parser	(from cache)	0ms									
bkg.png	/group/webseervices/cgi-bin/d6speed/sites/all/r	GET	200 OK	image/png	modules:1168 Parser	(from cache)	Pending									
toolbar.png	/group/webseervices/cgi-bin/d6speed/sites/all/r	GET	200 OK	image/png	modules:1168 Parser	(from cache)	Pending									
favicon.ico	/group/webseervices/cgi-bin/d6speed/misc	GET	200 OK	image/x-icon	modules:1169 Parser	(from cache)	0ms									
bkg-red.png	/group/webseervices/cgi-bin/d6speed/sites/all/r	GET	200 OK	image/png	modules:1289 Parser	(from cache)	Pending									
icon_users.png	/group/webseervices/cgi-bin/d6speed/sites/all/r	GET	200 OK	image/png	modules:1290 Parser	(from cache)	Pending									
menu-expanded.gif	/group/webseervices/cgi-bin/d6speed/themes/g	GET	200 OK	image/gif	modules:1292 Parser	(from cache)	Pending									
print.css	/group/webseervices/cgi-bin/d6speed/themes/g	GET	200 OK	text/css	modules:33 Parser	1.57KB	11ms									

```
Terminal — ssh — bash — 114x32 — 1
bash bash ssh ssh
corn03:~/webservices/cgi-bin/d6speed> drush pml | grep access
Access control    Content Access (content_access)      Module Enabled 6.x-1.2
Access control    Forum Access (forum_access)          Module Enabled 6.x-1.7
Chaos tool suite  Custom rulesets (ctools_access_ruleset) Module Enabled 6.x-1.8
Development       Devel node access (devel_node_access) Module Enabled 6.x-1.26
Organic groups    OG Access Roles (og_access_roles)    Module Enabled 6.x-1.0
Organic groups    Organic groups access control (og_access) Module Enabled 6.x-2.3
Other             Taxonomy Access Control (taxonomy_access) Module Enabled 6.x-1.3
Workflow          Workflow access (workflow_access)     Module Enabled 6.x-1.5
corn03:~/webservices/cgi-bin/d6speed>
```

**Don't do what Donny Don't does**

# General Tips

Drupal core performance settings

Use them

`admin/settings/performance (D6)`

`admin/config/development/performance (D7)`

# Testing Tools



YSlow

Inspector in Chrome, Safari

ApacheBench

# Advanced Performance - Caching



Cache Rules Everything Around Me

Cache gets stale

# Advanced Performance - Caching

cron

```
32 * * * * curl -sS http://www.example.com/foo > \  
/dev/null
```

# Advanced Performance - Caching

Views caching

Panels caching

Boost

AuthCache

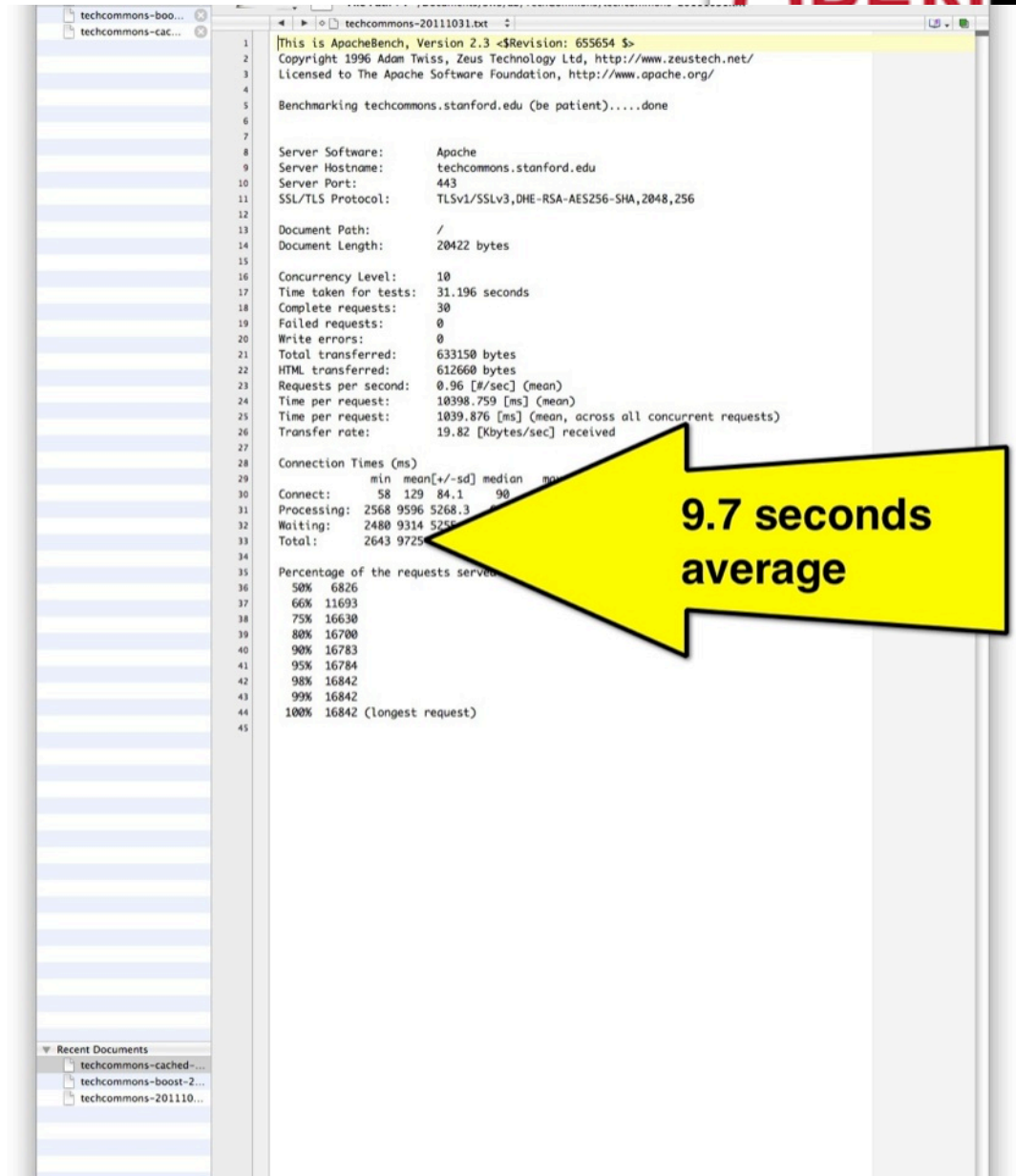
# Prove it

techcommons.stanford.edu

Homepage load time with uncached

View:

**9.7 seconds**



```
techcommons-20111031.txt
[This is ApacheBench, Version 2.3 <$Revision: 655654 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking techcommons.stanford.edu (be patient).....done

Server Software:      Apache
Server Hostname:     techcommons.stanford.edu
Server Port:         443
SSL/TLS Protocol:    TLSv1/SSLv3,DHE-RSA-AES256-SHA,2048,256

Document Path:       /
Document Length:     20422 bytes

Concurrency Level:   10
Time taken for tests: 31.196 seconds
Complete requests:   30
Failed requests:     0
Write errors:        0
Total transferred:   633150 bytes
HTML transferred:    612660 bytes
Requests per second: 0.96 [#/sec] (mean)
Time per request:    1039.876 [ms] (mean)
Time per request:    1039.876 [ms] (mean, across all concurrent requests)
Transfer rate:       19.82 [Kbytes/sec] received

Connection Times (ms)
   min  mean[+/-sd] median max
Connect:  58  129  84.1   90
Processing: 2568 9596 5268.3
Waiting:  2480 9314 5258
Total:    2643 9725

Percentage of the requests served within a certain time (ms)
 50%  6826
 66% 11693
 75% 16630
 80% 16700
 90% 16783
 95% 16784
 98% 16842
 99% 16842
100% 16842 (longest request)
```

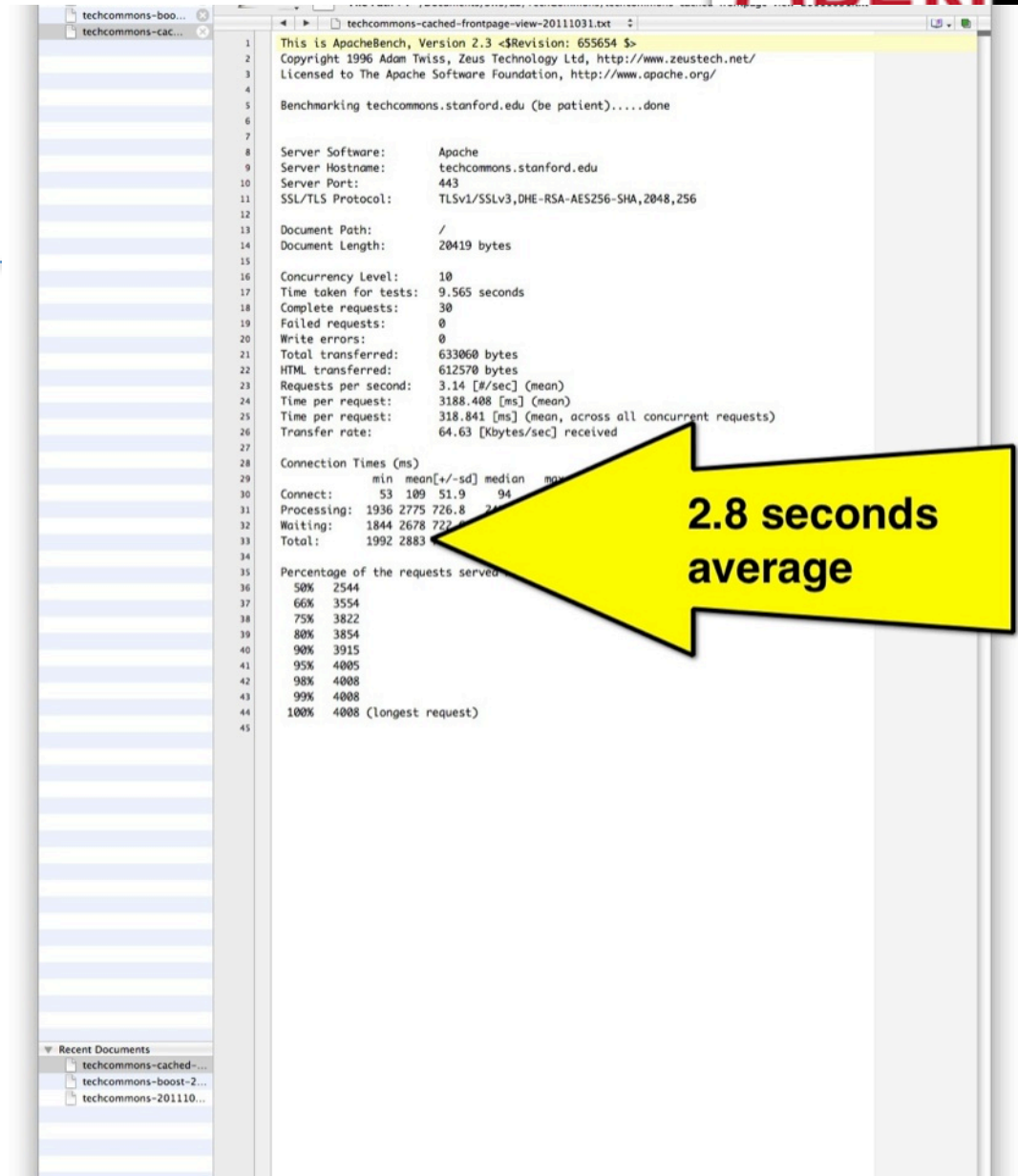


# Prove it

techcommons.stanford.edu

Homepage load time after enabling  
Views caching:

**2.8 seconds**



```
1 This is ApacheBench, Version 2.3 <$Revision: 655654 $>
2 Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
3 Licensed to The Apache Software Foundation, http://www.apache.org/
4
5 Benchmarking techcommons.stanford.edu (be patient).....done
6
7
8 Server Software: Apache
9 Server Hostname: techcommons.stanford.edu
10 Server Port: 443
11 SSL/TLS Protocol: TLSv1/SSLv3,DHE-RSA-AES256-SHA,2048,256
12
13 Document Path: /
14 Document Length: 20419 bytes
15
16 Concurrency Level: 10
17 Time taken for tests: 9.565 seconds
18 Complete requests: 30
19 Failed requests: 0
20 Write errors: 0
21 Total transferred: 633060 bytes
22 HTML transferred: 612570 bytes
23 Requests per second: 3.14 [#/sec] (mean)
24 Time per request: 318.841 [ms] (mean)
25 Time per request: 318.841 [ms] (mean, across all concurrent requests)
26 Transfer rate: 64.63 [Kbytes/sec] received
27
28 Connection Times (ms)
29 min mean[+/-sd] median max
30 Connect: 53 109 51.9 94
31 Processing: 1936 2775 726.8 21
32 Waiting: 1844 2678 722
33 Total: 1992 2883
34
35 Percentage of the requests served within a certain time (ms)
36 50% 2544
37 66% 3554
38 75% 3822
39 80% 3854
40 90% 3915
41 95% 4005
42 98% 4008
43 99% 4008
44 100% 4008 (longest request)
45
```

**2.8 seconds average**

# Prove it

techcommons.stanford.edu

Homepage load time after enabling  
Boost caching:

**117 milliseconds**

```
1 This is ApacheBench, Version 2.3 <$Revision: 655654 $>
2 Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
3 Licensed to The Apache Software Foundation, http://www.apache.org/
4
5 Benchmarking techcommons.stanford.edu (be patient).....done
6
7
8 Server Software:      Apache
9 Server Hostname:     techcommons.stanford.edu
10 Server Port:         80
11
12 Document Path:      /
13 Document Length:    19691 bytes
14
15 Concurrency Level:   2
16 Time taken for tests: 2.196 seconds
17 Complete requests:  30
18 Failed requests:    0
19 Write errors:       0
20 Total transferred:  600780 bytes
21 HTML transferred:   590730 bytes
22 Requests per second: 13.66 [#/sec] (mean)
23 Time per request:   146.389 [ms] (mean)
24 Time per request:   73.195 [ms] (mean, across all concurrent requests)
25 Transfer rate:      267.19 [Kbytes/sec] received
26
27 Connection Times (ms)
28   min  mean[+/-sd] median  max
29 Connect:    1    2  0.5    2
30 Processing:  9  115 232.0
31 Waiting:    6  112 232.0
32 Total:      10  117
33
34 Percentage of the requests served within a certain time (ms)
35 50%    17
36 66%    21
37 75%    39
38 80%    217
39 90%    532
40 95%    542
41 98%   1012
42 99%   1012
43 100%  1012 (longest request)
44
```

**0.11 seconds average**

Recent Documents

- techcommons-cached...
- techcommons-boost-2...
- techcommons-201110...

# Advanced Performance - Debugging



Devel



# D6 Speed Test

Search this site:

## admin

- [Chaos Tools AJAX Demo](#)
- [Features](#)
- [Import](#)
- [My account](#)
- [Workflow summary](#)
- [Create content](#)
- [Recent posts](#)
- [Feed aggregator](#)
- [Log out](#)

[Home](#)

## Devel settings

- The Date Popup module now requires the **jQuery UI module** as a source for the datepicker. Please install it immediately.
- The Date Popup module now requires the **jQuery UI module** as a source for the datepicker. Please install it immediately.
- The content access permissions need to be rebuilt. Please visit [this page](#).

The configuration options have been saved.

### Query log

 **Collect query info**

Collect query info. If disabled, no query log functionality will work.

 **Display query log**

Display a log of the database queries needed to generate the current page, and the execution time for each. Also, queries which are repeated during a single page view are summed in the # column, and printed in red since they are candidates for caching.

**Sort query log:**

- by source
- by duration

The query table can be sorted in the order that the queries were executed or by descending duration.

**Slow query highlighting:**

Enter an integer in milliseconds. Any query which takes longer than this many milliseconds will be highlighted in the query log. This indicates a possibly inefficient query, or a candidate for caching.

 Store executed queries

Store statistics about executed queries. See the devel\_x tables.

**Sampling interval:**

If storing query statistics, only store every nth page view. 1 means every page view, 2 every second, and so on.

### XHProf

XHProf is a php extension which is essential for profiling your Drupal site. It pinpoints slow functions, and also memory hogging functions.

- 
- Enable profiling of all page views and drush requests.

You must enable the [xhprof php extension](#) to use this feature.

**xhprof directory:**

Location of the xhprof source code on your system, usually somewhere in /usr/local/share or /usr/share, include the leading forward slash.

**XHProf URL:**

Path to the publically accessible xhprof\_html - required to display profiler reports. You will need to set this up outside Drupal, for example at [http://xhprof.localhost/xhprof\\_html](http://xhprof.localhost/xhprof_html)

### API Site:

The base URL for your developer documentation links. You might change this if you run [api.module](#) locally.

 **Display page timer**

Display page execution time in the query log box.

 **Display memory usage**

Display how much memory is used to generate the current page. This will show memory usage when `devel_init()` is called and when `devel_exit()` is called. PHP must have been compiled with the `--enable-memory-limit` configuration option for this feature to work.

 Display redirection page

When a module executes `drupal_goto()`, the query log and other developer information is lost. Enabling this setting presents an intermediate page to developers so that the log can be examined before continuing to the destination page.

**Krumo display:**

- default
- blue
- green
- orange
- white
- disabled

Select a skin for your debug messages or select *disabled* to display object and array output in standard PHP format.

 Rebuild the theme registry on every page load

While creating new templates and `theme_*` overrides the theme registry needs to be rebuilt.

—▷ [Administration menu settings](#)

 Devel Node Access debug mode

Debug mode verifies the grant records in the `node_access` table against those that would be set by running [\[Rebuild permissions\]](#), and displays them all; this can cause considerable overhead.

For even more information enable the [Devel Node Access by User](#) block, too.

**SMTP library:**

- Default
- Log only

**Error handler:**

- None
- Standard drupal
- Backtrace

Choose an error handler for your site. *Backtrace* prints nice debug information when an error is noticed, and you choose to show errors on screen. **Backtrace requires the Krumo library.** *None* is a good option when stepping through the site in your debugger.

**Workflow** 6.x-1.5 Required by: Workflow access (enabled)

**Workflow access** 6.x-1.5 Content access control based on workflows and roles. Depends on: Workflow (enabled)

Save configuration



Executed 496 queries in 1948.67 milliseconds. Queries taking longer than 10 ms and queries executed more than once, are highlighted. Page execution time was 4059.54 ms.

ms	#	where	query
104.56	1	list_themes	SELECT * FROM system WHERE type = 'theme'
103.75	1	module_list	SELECT name, filename, throttle FROM system WHERE type = 'module' AND status = 1 ORDER BY weight ASC, filename ASC
46.99	4	cache_set	UPDATE cache SET data = 'a:4:{s:13:"condition_map";N;s:10:"block_info";a:34:{s:6:"blog-0";0:8:"stdClass";4:{s:4:"info";s:17:"Recent blog posts";s:6:"module";s:4:"blog";s:5:"delta";i:0;s:3:"bid";s:6:"blog-0";s:6:"book-0";0:8:"stdClass";5:{s:4:"info";s:15:"Book navigation";s:5:"cache";i:5;s:6:"module";s:4:"book";s:5:"delta";i:0;s:3:"bid";s:6:"book-0";s:9:"comment-0";0:8:"stdClass";4:{s:4:"info";s:15:"Recent comments";s:6:"module";s:7:"comment";s:5:"delta";i:0;s:3:"bid";s:9:"comment-0";s:8:"locale-0";0:8:"stdClass";5:{s:4:"info";s:17:"Language switcher";s:5:"cache";i:-1;s:6:"module";s:6:"locale";s:5:"delta";i:0;s:3:"bid";s:8:"locale-0";s:15:"menu-admin_menu";0:8:"stdClass";5:{s:4:"info";s:19:"Administration menu";s:5:"cache";i:-1;s:6:"module";s:4:"menu";s:5:"delta";s:10:"admin_menu";s:3:"bid";s:15:"menu-admin_menu";s:10:"menu-devel";0:8:"stdClass";5:{s:4:"info";s:11:"Development";s:5:"cache";i:-1;s:6:"module";s:4:"menu";s:5:"delta";s:5:"devel";s:3:"bid";s:10:"menu-devel";s:13:"menu-features";0:8:"stdClass";5:{s:4:"info";s:8:"Features";s:5:"cache";i:-1;s:6:"module";s:4:"menu";s:5:"delta";s:8:"features";s:3:"bid";s:13:"menu-links";s:3:"bid";s:18:"menu-primary-links";s:20:"menu-secondary-links";0:8:"stdClass";5:{s:4:"info";s:15:"Secondary links";s:5:"cache";i:-1;s:6:"module";s:4:"menu";s:5:"delta";s:15:"secondary-links";s:3:"bid";s:20:"menu-secondary-links";s:6:"node-0";0:8:"stdClass";5:{s:4:"info";s:9:"Syndicate";s:5:"cache";i:-1;s:6:"module";s:4:"node";s:5:"delta";i:0;s:3:"bid";s:6:"node-0";s:6:"poll-0";0:8:"stdClass";4:{s:4:"info";s:16:"Most recent poll";s:6:"module";s:4:"poll";s:5:"delta";i:0;s:3:"bid";s:6:"poll-0";s:9:"profile-0";0:8:"stdClass";5:{s:4:"info";s:18:"Author
46.84	1	_update_cache_set	INSERT INTO cache_update (cid, data, created, expire, serialized) VALUES ('update_project_projects', 'a:35:{s:3:"acl";a:7:{s:4:"name";s:3:"acl";s:4:"info";a:6:{s:4:"name";s:3:"ACL";s:7:"package";s:14:"Access control";s:7:"version";s:7:"6.x-1.4";s:7:"project";s:3:"acl";s:9:"datestamp";s:10:"1311687714";s:16:"_info_file_ctime";i:1335996335;s:9:"datestamp";s:10:"1311687714";s:8:"includes";a:1:{s:3:"acl";s:3:"ACL";s:12:"project_type";s:6:"module";s:10:"sub_themes";a:0:{s:11:"base_themes";a:0:{}}s:10:"admin_menu";a:7:{s:4:"name";s:10:"admin_menu";s:4:"info";a:6:{s:4:"name";s:19:"Administration menu";s:7:"package";s:14:"Administration";s:7:"version";s:14:"6.x-3.0-alpha4";s:7:"project";s:10:"admin_menu";s:9:"datestamp";s:10:"1268274903";s:16:"_info_file_ctime";i:1320101918;s:9:"datestamp";s:10:"1268274903";s:8:"includes";a:2:



INTERMISSION

Know thy users

Know thy content

Know thy traffic

**Keep Calm**  
**And**  
**DRUPAL ON**

# Appendix



## Linkies:

- <http://techcommons.stanford.edu/topics/web-development/benchmarking-site-performance-apachebench>
- <http://techcommons.stanford.edu/topics/drupal/boost>
- <http://techcommons.stanford.edu/topics/drupal/improving-drupal-performance-and-speed-leland-servers>