

Caching Without Fear

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Phase2 Technology

phase2.github.com/presentation-caching-without-fear

Built with Hekyll

Why Cache

Performance, Performance, Performance

Caching Levels

Filesystem buffer cache

Accelerators

MySQL Cache

Boost

Bytecode Cache (APC)

Varnish/Nginx/etc

PHP Language Caches (static) Content Delivery Networks

Drupal Caches

CloudFront

drupal_static

Akamai

cache_set, cache_get

Caching Being Covered

Drupal Caches

Accelerators/CDNs

Why Caching Is Hard

“There are only two hard problems in Computer Science: cache invalidation, naming things and off-by-one errors.”

– Phil Karlton

Down with Invalidation

Mass invalidation

Time To Live

Basic Cache Controls

Cache pages for anonymous users

Minimum cache lifetime

Expiration of cached pages

CACHING

- Cache pages for anonymous users
- Cache blocks

Minimum cache lifetime

<none> ▼

Cached pages will not be re-created until at least this much time has elapsed.

Expiration of cached pages

<none> ▼

The maximum time an external cache can use an old version of a page.

Communicating with External Cache Systems

Cache-control

Expires

Vary

Age

X-Forwarded-For

Browser Flow Examples

GET /my-page
Accept-Encoding: gzip, deflate



200 OK
Last-Modified: Tue, 7 Feb 2012...
Cache-Control: public, max-age=900
Vary: Cookie,Accept-Encoding
Content-Encoding: gzip



Browser Flow Examples

GET /my-page
Accept-Encoding: gzip, deflate
If-Modified-Since: Tue, 7 Feb 2012...



304 Not Modified
Last-Modified: Tue, 7 Feb 2012...
Cache-Control: public, max-age=900
Vary: Cookie,Accept-Encoding
Content-Encoding: gzip



Browser Flow Examples

GET /admin/content/node
Accept-Encoding: gzip, deflate
Cookie: SESS1dab948587234=...



200 OK
Last-Modified: Wed, 8 Feb 2012...
Cache-Control: no-cache, no-store, ...
Vary: Cookie, Accept-Encoding
Content-Encoding: gzip

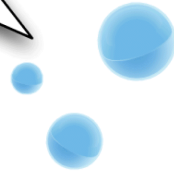


Browser Flow Examples

GET /my-page
Accept-Encoding: gzip, deflate

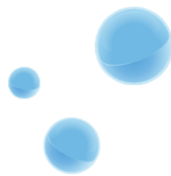


...



Browser Flow Examples

GET /my-page
Accept-Encoding: gzip, deflate



200 OK
Last-Modified: Tue, 7 Feb 2012...
Cache-Control: public, max-age=900
Vary: Cookie,Accept-Encoding
Content-Encoding: gzip

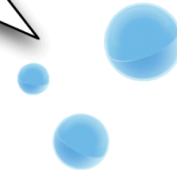


Browser Flow Examples

...



200 OK
Last-Modified: Tue, 7 Feb 2012...
Cache-Control: public, max-age=900
Vary: Cookie,Accept-Encoding
Content-Encoding: gzip
Age: 0

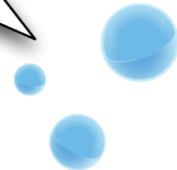


Browser Flow Examples

GET /my-page
Accept-Encoding: gzip, deflate



200 OK
Last-Modified: Tue, 7 Feb 2012...
Cache-Control: public, max-age=900
Vary: Cookie,Accept-Encoding
Content-Encoding: gzip
Age: 60

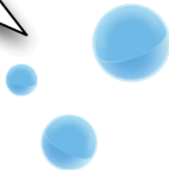


Browser Flow Examples

GET /my-page



...



Drupal Invalidation Behaviors

Page cache clearing events

Drupal cache modules handle them differently

Drupal cache versus external caches

Providers

- DrupalDatabaseCache - core

- MemCacheDrupal - memcache

- VarnishCache - varnish module

- DrupalFakeCache - core (install)

Cache Clearing Event: Cache Clear All

Cache Provider	Cache Clear All
DB	Y - immediate and again in min lifetime seconds
Memcache	Y - immediate by considering all previously cached items expired
Varnish	Defaults to Y - configurable with the 'varnish_cache_clear' variable
DrupalFakeCache	N

Cache Clearing Event: Content Edit

Cache Provider	Content Editing
DB	Y - will clear in min lifetime seconds
Memcache	Y - clears anything that was cached more than min lifetime seconds before edit
Varnish	Defaults to Y - configurable with the 'varnish_cache_clear' variable
DrupalFakeCache	N

Cache Clearing Event: Cron

Cache Provider **Cron**

DB	Y - will clear in min lifetime seconds
Memcache	N
Varnish	Defaults to N - configurable with the 'varnish_flush_cron' variable
DrupalFakeCache	N

Drupal Invalidation Behaviors: Menu Item Edit

Cache Provider	Menu Item Edit
DB	Y - will clear in min lifetime seconds
Memcache	Y - clears anything that was cached more than min lifetime seconds before edit1
Varnish	
DrupalFakeCache	

Drupal Invalidation Behaviors: Menu Ordering Change

Cache Provider **Menu Ordering Adjustment**

DB	Y - will clear in min lifetime seconds
Memcache	Y - clears anything that was cached more than min lifetime seconds before edit1
Varnish	
DrupalFakeCache	

Controlling Caching

drupal_page_is_cacheable

```
if (drupal_page_is_cacheable()) { do_something(); }  
drupal_page_is_cacheable(FALSE);
```

DrupalFakeCache

Expires Header

Cache Tags

```
cache_set('some_cid', $data, $bin, time() + $expire, array('node'  
=> array(2, 4)));  
cache_invalidate(array('node' => array(4)));
```

Accelerators

Time to live

PURGE

Expire

Purge

Varnish

Telnet

Ban

```
ban req.url == "/news"
```

```
ban obj.X-Url == "/news"
```

```
ban obj.Content-Type ~ "image"
```


More Caching

Site Construction

Capacity planning

Customer Expectations

- Static file lifetimes

Edge Side Includes

Other backends

- Membase

- Redis

