

Izzivi za razvojnika hitro rastoče strani

Optimizacija kode in strežnika za zagotavljanje
scalability-ja in hitrega delovanja

Pravila igre

brskalnik

strežnik spletnih vsebin

PHP

DB

Brskalnik

Čim manj http zahtevkov:

∞ Združevanje JS in CSS

∞ CSS Sprites

– spritegen.website-performance.org



Brskalnik

Čim manjša vsebina

∞ Minifikacija JS in CSS

– YUI compressor

– Jscompact

– Packer.js (jQuery)

∞ HTTP kompresija

– gzip

Brskalnik

CSS

Pozicioniranje elementov

JavaScript

Brskalnik

- ∞ Prednalaganje (preloading)
- ∞ Paralelni prenosi
 - Od dva do štiri različne domene
- ∞ JS in CSS v zunanje datoteke
 - Ne vedno!

Brskalnik

Pomoč in orodja:

∞ Firefox

– Firebug

– YSlow

– Tamper data

∞ developer.yahoo.com/performance

∞ www.sitepoint.com

Spletni strežnik (Apache)

- ∞ Nepotrebne/dinamične razširitve
- ∞ `mod_rewrite` -> `mod_alias`
- ∞ Kaj logiramo
- ∞ `HostnameLookups = off!`
- ∞ `Allow from ip`

Spletni strežnik

<Directory /> AllowOverride None

```
read(15, "GET /images/logo.png HTTP/1.1\r\nH"..., 8000) = 577
```

```
gettimeofday({1215057833, 846724}, NULL) = 0
```

```
stat64("/var/www/testing/public/images/logo.png", {st_mode=S_IFREG|0775, st_size=13229, ...}) = 0
```

```
open("./.htaccess", O_RDONLY|O_LARGEFILE) = -1 ENOENT (No such file or directory)
```

```
open("/var/.htaccess", O_RDONLY|O_LARGEFILE) = -1 ENOENT (No such file or directory)
```

```
open("/var/testing/.htaccess", O_RDONLY|O_LARGEFILE) = -1 ENOENT (No such file or directory)
```

```
open("/var/www/testing/.htaccess", O_RDONLY|O_LARGEFILE) = -1 ENOENT (No such file or directory)
```

```
open("/var/www/testing/public/.htaccess", O_RDONLY|O_LARGEFILE) = -1 ENOENT (No such file or directory)
```

```
lstat64("/var/www/testing/public/images", {st_mode=S_IFDIR|0775, st_size=4096, ...}) = 0
```

```
open("/var/www/testing/public/images/.htaccess", O_RDONLY|O_LARGEFILE) = -1 ENOENT (No such file or directory)
```

```
lstat64("/var/www/testing/public/images/logo.png", {st_mode=S_IFREG|0775, st_size=13229, ...}) = 0
```

Spletni strežnik

- ∞ Reverse proxy
- ∞ Selitev statičnih vsebin na „lažje“ strežnike
- ∞ Polna zamenjava za učinkovitejše strežnike

Spletni strežnik

Apache Bench (ab), Siege, http_load

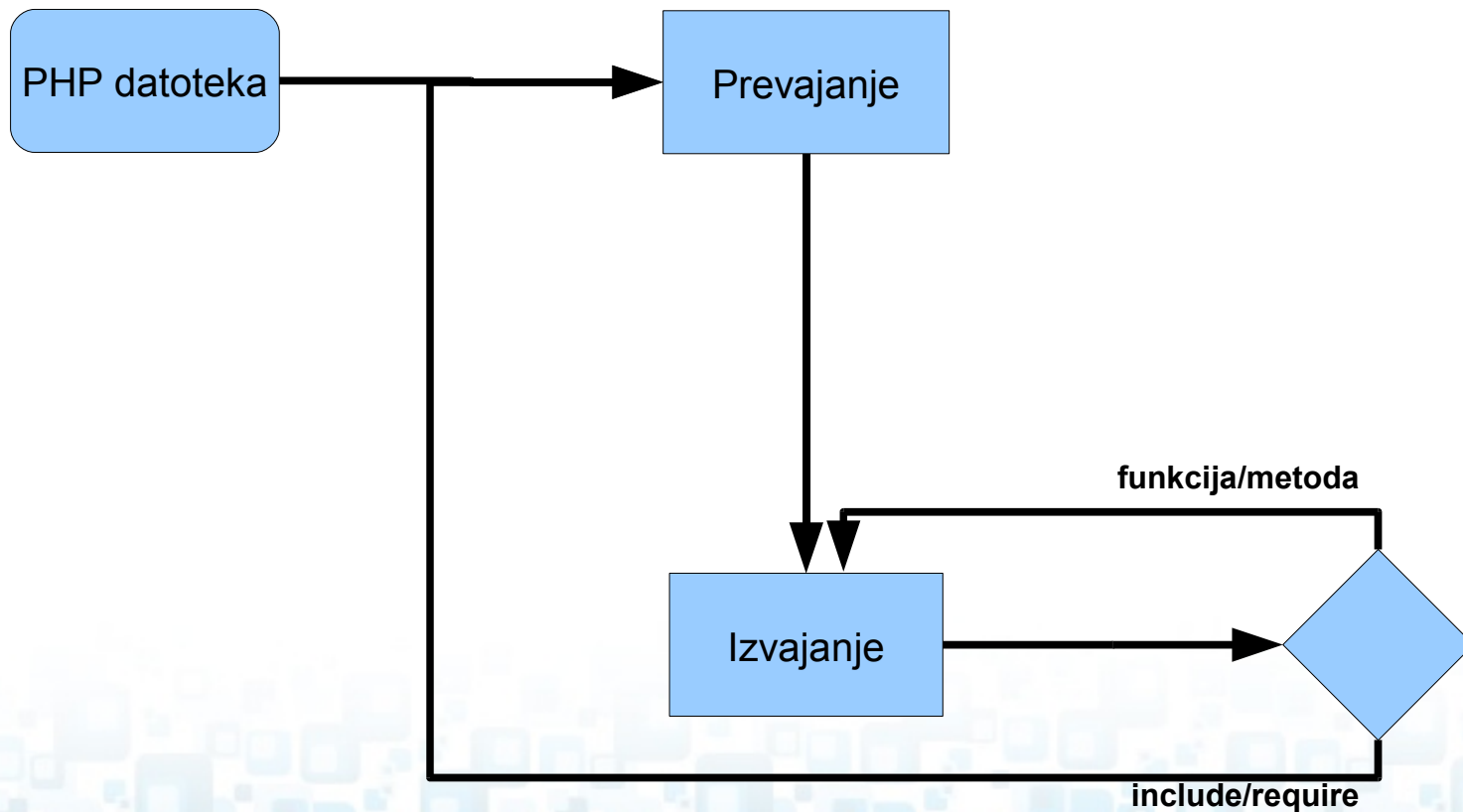
```
Concurrency Level:          20
Time taken for tests:      3.626006 seconds
Complete requests:      100
Failed requests:          0
Write errors:              0
Total transferred:        707600 bytes
HTML transferred:         671300 bytes
Requests per second:    27.58 [# /sec] (mean)
Time per request:         725.201 [ms] (mean)
Time per request:         36.260 [ms] (mean, across all concurrent requests)
Transfer rate:            190.57 [Kbytes/sec] received
```

PHP

- ∞ Optimizacija pri pripravi PHP (-O3, -march, -mcpu)
- ∞ Samo nujne in uporabljene razširitve
- ∞ Opcode cache (APC, Eaccelerator)

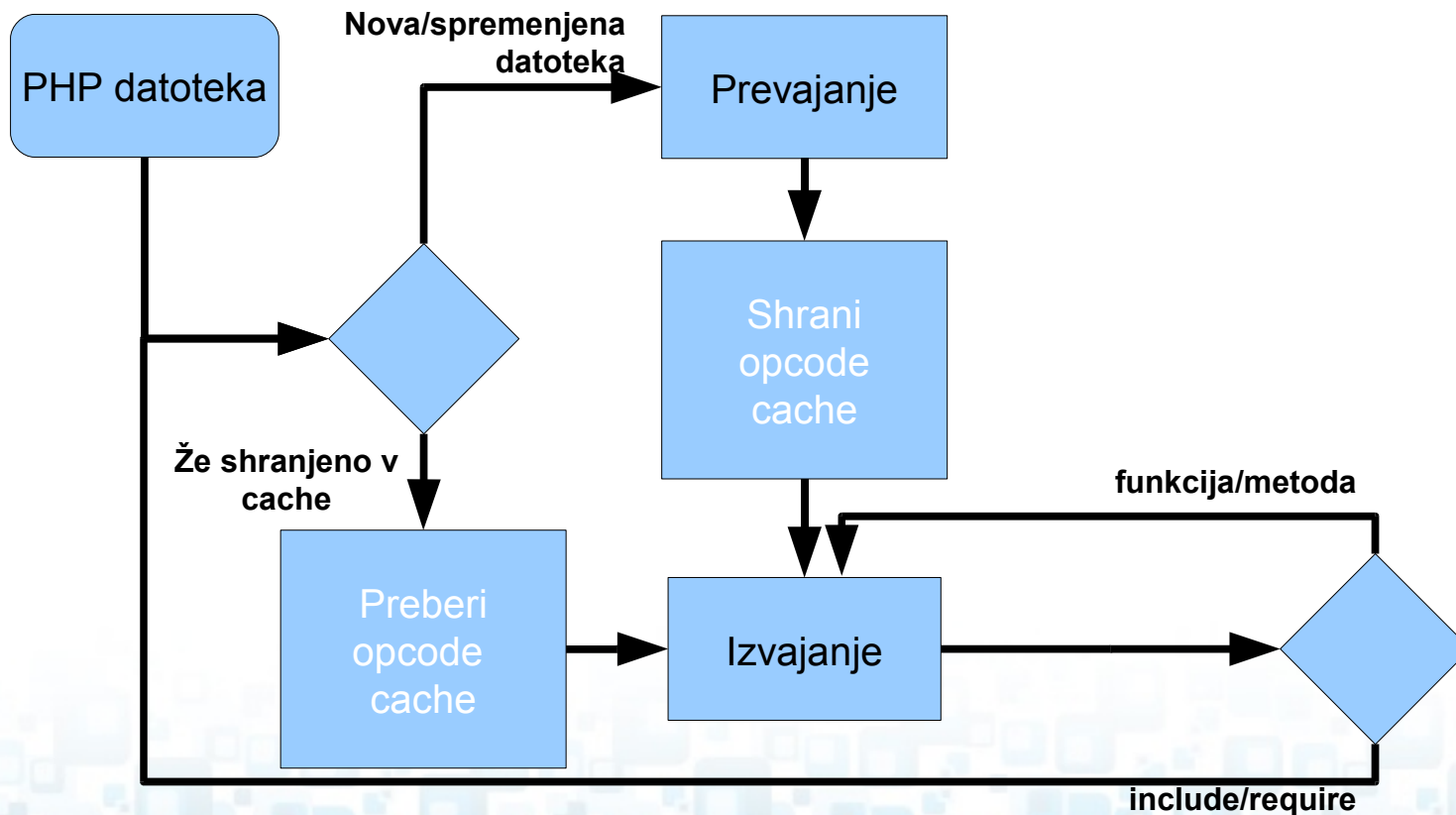
PHP

Diagram izvajanja PHP datoteke:



PHP

Diagram izvajanja z opcode cache:



PHP aplikacija

- ∞ Uporaba `array_*`()
- ∞ `file_*``_contents()` namesto `fopen()` ...
`fclose()`
- ∞ `str_*`() namesto `preg_*`() in `ereg_*`()
- ∞ `E_ALL|E_STRICT`
- ∞ `!@`

....

PHP aplikacija

- ∞ Profiliranje kode: Xdebug, APD, DBG
- ∞ Testiraj, izmeri, zapiši, optimiziraj
ponovi!

PHP aplikacija

/home/darh/RemoteFS/kruzer.projects/profile/cachegrind.out.2675 [/var/projects/dev.domenca.lan/trunk/boot/index.php] - KCachegrind

File View Go Settings Help

Time

Search: (No Grouping)

Incl.	Self	Called	Function	Location
25.86	12.06	18	<cycle 1>	(unknown)
25.58	11.78	19	Zend_Loader::loadClass <...	Loader.php
10.65	10.65	16	php::fggets	php:internal
61.36	5.20	6	<cycle 3>	(unknown)
4.18	4.01	1	include_once::/var/project...	Smarty.php
3.76	3.26	1	Domenca_Structure->pars...	Structure.php
3.41	3.09	50	Zend_Controller_Dispatch...	Abstract.php
65.49	2.58	1	Zend_Controller_Front->di...	Front.php
101.36	2.23	(0)	{main}	index.php
4.69	2.21	11	Zend_Filter_Inflector->filter	Inflector.php
6.62	2.09	1	include_once::/var/project...	Front.php
3.08	2.08	6	Zend_View_Abstract->lo...	Abstract.php
2.03	2.03	1	require_once::/var/project...	Action.php
1.92	1.86	1	require_once::/var/project...	View.php
2.28	1.45	1	require_once::/var/project...	Rewrite.php
5.48	1.35	16	Domenca_Structure->get...	Structure.php
1.33	1.30	1	require_once::/var/project...	Registry.php
2.79	1.28	6	Smarty->fetch <cycle 3>	Smarty.class.php
3.24	1.21	1	require_once::/var/project...	Abstract.php
2.51	1.16	5	Zend_Controller_Dispatch...	Standard.php
2.18	1.12	37	Zend_Controller_Front->g...	Front.php
5.23	1.10	15	Zend_Controller_Action_H...	ViewRenderer.php
1.01	0.97	1	require_once::/var/project...	Session.php
1.43	0.91	31	Zend_Filter_Word_CamelC...	CamelCaseToSeparator.ph
0.89	0.89	2	php::fwrite	php:internal
1.88	0.87	1	include_once::/var/project...	FlashMessenger.php
0.99	0.87	1	require_once::/var/project...	Standard.php
12.68	0.84	2	Domenca_CouchDB_Requ...	Request.php
0.74	0.72	2	Zend_Loader::loadFile	Loader.php
2.99	0.66	2	Zend_Controller_Front->g...	Front.php
0.86	0.64	1	require_once::/var/project...	Inflector.php
20.95	0.62	5	Zend_Controller_Dispatch...	Standard.php
0.59	0.58	1	require_once::/var/project...	Interface.php
8.32	0.55	5	Zend_Controller_Action_H...	ViewRenderer.php
4.81	0.52	5	Zend_Controller_Action_H...	ViewRenderer.php

<cycle 1>

Types Callers All Callers Source Callee Map

Time	Count	Caller
15.57	5	{main} via Zend_Loader::autoload <cycle 1> (index.php)
4.63	1	Domenca_View_Smarty->__construct via Zend_Loader::autoload <cycle 1> ...
2.09	2	require_once::/var/projects/dev.domenca.lan/trunk/etc/routes.php via Zend_L...
0.70	1	Domenca_CouchDB->view via Zend_Loader::autoload <cycle 1> (CouchDB....
0.68	1	Content_NavigationController->init via Zend_Loader::autoload <cycle 1> (N...
0.48	1	Zend_Layout->_initHelper via Zend_Loader::loadClass <cycle 1> (Layout.php)
0.48	1	Zend_Layout->_initPlugin via Zend_Loader::loadClass <cycle 1> (Layout.php)
0.38	1	Domenca_CouchDB::decodejson via Zend_Loader::autoload <cycle 1> (Cou...
0.31	1	DocumentModel->db via Zend_Loader::autoload <cycle 1> (DocumentMode...
0.29	1	Domenca_CouchDB->send via Zend_Loader::autoload <cycle 1> (CouchDB....
0.25	1	Domenca_CouchDB_Request->execute via Zend_Loader::autoload <cycle 1> ...
0.02	1	Zend_Loader::registerAutoload via Zend_Loader::loadClass <cycle 1> (Load...
0.01	1	Zend_Registry::setClassName via Zend_Loader::loadClass <cycle 1> (Regis...

{main} via Zend_Loader::autoload <cycle 1> 15.57 %

{main} 4.63 %

{main} 2.09 %

Caller Map Parts Call Graph Callees All Callees Assembler

cachegrind.out.2675 [1] - Total Time Cost: 194 807

Izogibanje PHP

- ∞ Generiranje statične vsebine
- ∞ Odgovori čimprej (čim manj require/include, sql poizvedb)
- ∞ If-Not-Modified-Since, ETag, Expires
- ∞ Nginx + memcache = :)
- ∞ Nginx + depcache = :D

Podatkovne zbirke

- ∞ Pripravi ločene povezave (r/w)
- ∞ Pričakovane količine * 10
- ∞ Join, sub-query, indeksacija...
- ∞ Denormalizacija?
- ∞ Rekalkulacija ob spremembi
- ∞ Partitioniranje tabel/podatkov

Kje se zatika?

ab -n 1000 -c 10

16 r/s	15 SQL poizvedb.
31 r/s	103 x include_once/require_once
1234 r/s	Cache hit (php + depcache)
3000 r/s	Cache hit (nginx + depcache)
5000 r/s	Nginx servira statično datoteko

Cache

- ∞ Brskalnik (client caching)
- ∞ Reverse proxy
- ∞ Celotni izpis
- ∞ Po delih (fragmental caching)
- ∞ SQL, SOAP (data caching)

- ∞ Življenjska doba in spremembe

Optimizacija

- ∞ Statične datoteke.
- ∞ Prva stran
- ∞ Nepersonalizirane strani
- ∞ Pričakuj /., Digg...
- ∞ Analiza obiska - 80/20

Skalabilnost

- ∞ Vertikalna ali horizontalna?
- ∞ Metanje (preveč) denarja v problem

Hvala za pozornost.

Vprašanja?