



International PHP Conference - Mainz, Germany

Derick Rethans - dr@ez.no

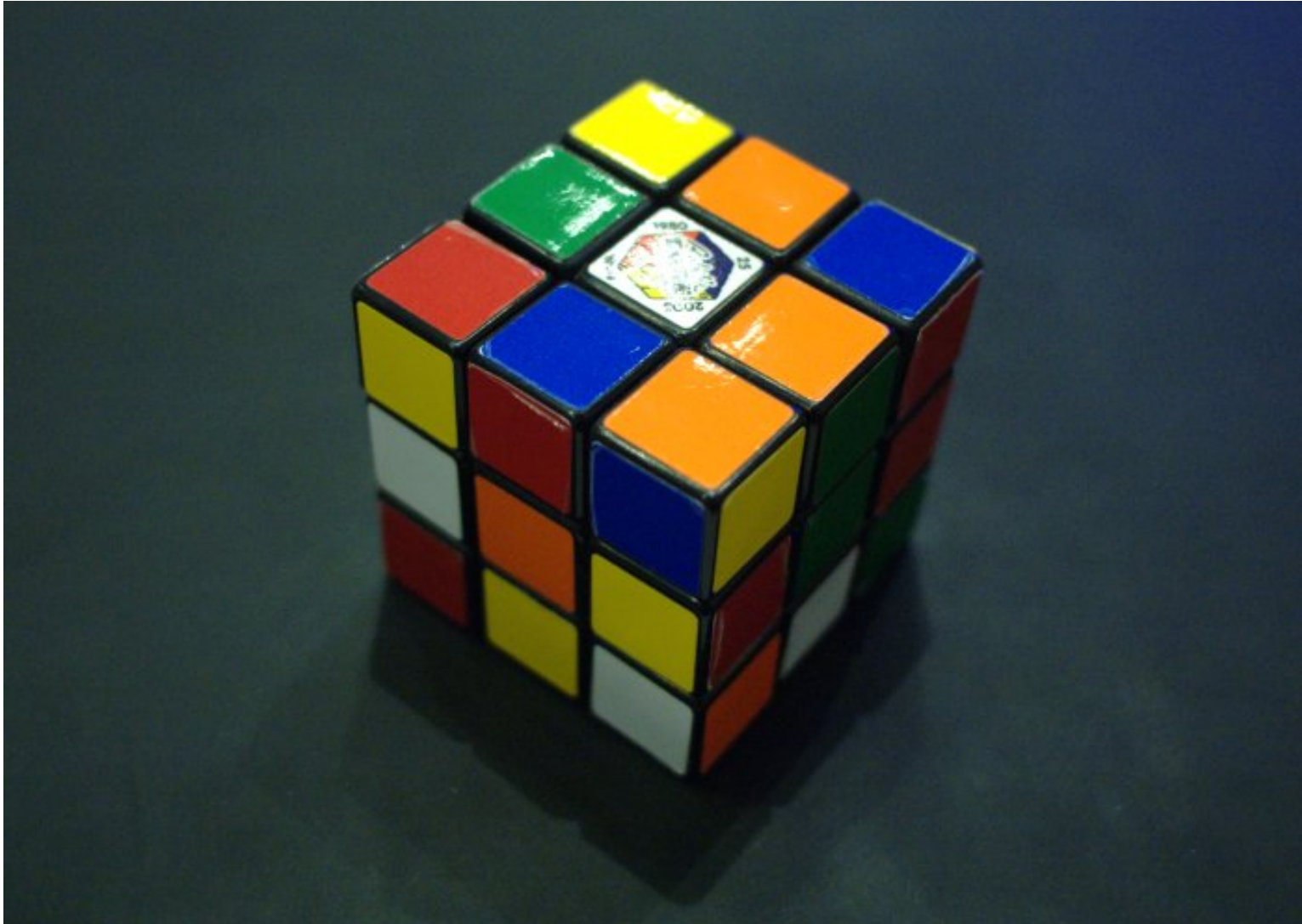
<http://derickrethans.nl/talks.php>

- Dutchman living in Norway
- eZ Systems A.S.
- eZ Components project lead
- PHP development
- mcrypt, input_filter, date/time support, unicode
- QA

I Do Not Need a Debugger

- `printf()`, `var_dump()` and `echo` are good enough

I Do Not Need a Debugger



- Xdebug: An Open Source debugging tool
- About 5 years old
- Version 2 released a year ago
- Works (at least) on Linux and Mac and Windows

How did it start?

```
[derick@localhost derick]$ cat recursive.php
<?php
    function a() {
        a();
    }

    a();
?>
[derick@localhost derick]$ php recursive.php
Segmentation fault
```

With PEAR:

- `pecl install xdebug`

Without PEAR:

- `wget http://xdebug.org/files/xdebug-2.0.3.tgz`
- `tar -xvzf xdebug-2.0.3.tgz`
- `cd xdebug-2.0.3`
- `phpize`
- `./configure`
- `make`
- `make install`

Installing Xdebug

Enabling

- in php.ini add: `zend_extension=/full/path/to/xdebug.so`
- Use `zend_extension_debug` for debug builds of PHP

Installing Xdebug

On Windows

- Download the .dll for your PHP version from <http://xdebug.org/>
- in php.ini add: `zend_extension_ts=c:\php\xdebug.dll`

- `--enable-versioning` prevent Xdebug from loading
- Zend's extensions (optimizer, debugger, cache) prohibit Xdebug (and other non-Zend zend-extensions) from loading

- Stack overflow in PHP
- Infinite recursion

Xdebug protects with:

```
xdebug.max_nesting_level=4
```

(!) Fatal error: Maximum function nesting level of '4' reached, aborting!
in /home/httpd/html/test/xdebug/infinite.php on line 11

Call Stack

#	Time	Memory	Function	Location
1	0.0008	62864	{main}()	../infinite.php:0
2	0.0009	63528	a()	../infinite.php:14
3	0.0009	63604	b()	../infinite.php:6

Warning: fopen(ezcmaintest) [[function.fopen](#)]: failed to open stream: No such file or directory in /home/httpd/html/test/ezc/dr_mail_test.php on line 147

... is kinda useles.

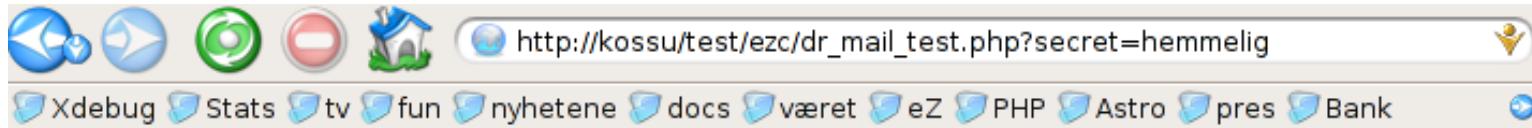
```
(!) ezcMailTransportException: An error occured while sending or receiving mail. Failed to connect to the server: dolly.ez.no:ezcomponents. in /dat/dev/ezcomponents/trunk/Mail/src/transports/transport_connection.php on line 57
```

Call Stack				
#	Time	Memory	Function	Location
1	0.0005	53512	{main}()	../dr_mail_test.php:0
2	0.0237	554800	ezcMailPop3Transport->__construct(string(11), string(12), string(12))	../dr_mail_test.php:8
3	0.0256	594140	ezcMailTransportConnection->__construct(string(11), string(12))	../pop3_transport.php:101

```
Variables in local scope (#3)
$server = 'dolly.ez.no' (length=11)
$errno = 111
$port = 'ezcomponents' (length=12)
$errorstr = 'Connection refused' (length=18)
$timeout = 5
```

xdebug.collect_params=1 and xdebug.show_local_vars=1

demo



(!) ezcMailTransportException: An error occurred while sending or receiving mail. Failed to connect to the server: dolly.ez.no:ezcomponents. in /dat/dev/ezcomponents/trunk/Mail/src/transport/transport_connection.php on line 57

Call Stack

#	Time	Memory	Function	Location
1	0.0008	54776	{main}()	../dr_mail_test.php:0
2	0.0206	556600	ezcMailPop3Transport->__construct(string(11), string(12), string(12), array(3))	../dr_mail_test.php:8
3	0.0223	595860	ezcMailTransportConnection->__construct(string(11), string(12))	../pop3_transport.php:101

Dump \$_GET

```
$_GET['secret'] = 'hemmelig' (length=8)
```

xdebug.dump.GET=*

xdebug.dump.POST=username,password

Also for: COOKIE, ENV, FILES, REQUEST, SERVER and SESSION

```
array
  0 => null
  1 => 3.141592654
  2 =>
    array
      'dutch' =>
        object(locale)[1]
          public 'lang' => 'nl' (length=2)
          public 'variation' => 'NL' (length=2)
          public 'charsets' =>
            array
              0 => 'iso-88591' (length=9)
              1 => 'iso-8859-15' (length=11)
          private 'mb_supported' => false
          protected 'self' =>
            &object(locale)[1]
          protected 'id' => 1
```

```
<?php
ini_set( 'xdebug.var_display_max_data', 25 );
ini_set( 'xdebug.var_display_max_depth', 4 );

xdebug_var_dump(); // or just var_dump()
?>
```

```
<?php  
echo xdebug_get_function_count();  
?>
```

```
<?php  
echo xdebug_get_function_count();  
?>
```



```
<pre>
<?php
require_once 'ezc/Base/base.php';

function __autoload( $className )
{
    ezcBase::autoload( $className );
}

$config = ezcConfigurationManager::getInstance();
$config->init( 'ezcConfigurationIniReader', dirname( __FILE__ ) . '/examples' );

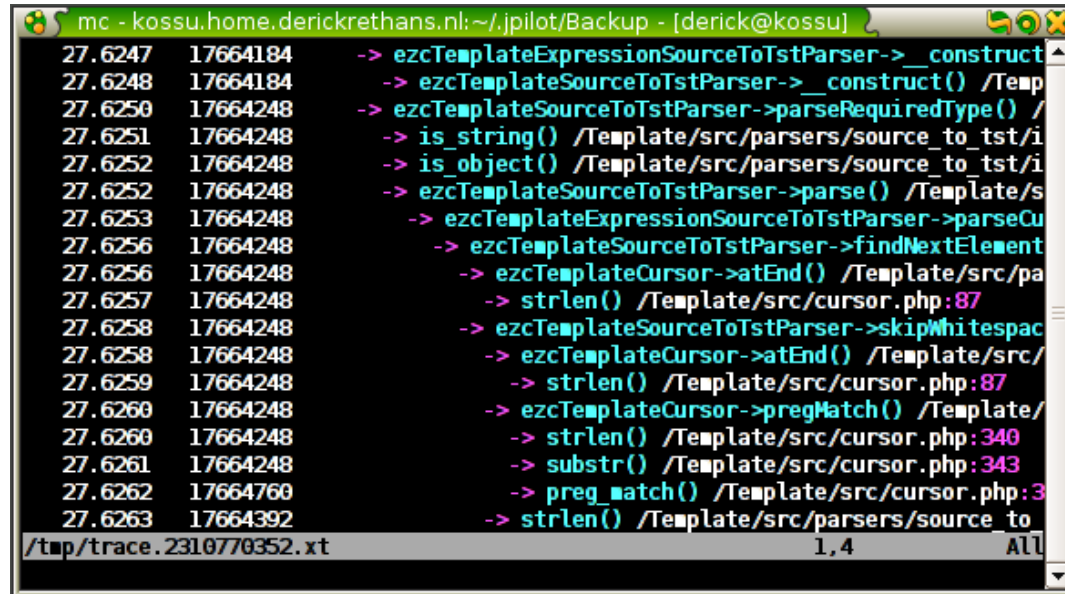
echo "Time Index: ", xdebug_time_index(), "\n";
$password = $config->getSetting( 'settings', 'db', 'password' );
echo "The password is <$password>.\n";
echo "Time Index: ", xdebug_time_index(), "\n";
?>
```

```
<pre>
<?php
require 'ezc_mail_setup.php';
error_reporting(E_ALL);

$parser = new ezcMailParser();
$set = new ezcMailFileSet( array( dirname(__FILE__).'/ezcmailtest.mail' ) );
echo "Memory: ", xdebug_memory_usage(), " bytes\n\n";

$mail = $parser->parseMail( $set );
foreach( $mail as $mailPart )
{
    echo "From: {$mailPart->from->email}\n";
    echo "Subject: {$mailPart->subject}\n";
}
unset( $mail );

echo "\nMaximum Memory: ", xdebug_peak_memory_usage(), " bytes\n";
?>
```



```
mc - kossu.home.derickrethans.nl:~/j/pilot/Backup - [derick@kossu]
27.6247 17664184 -> ezcTemplateExpressionSourceToTstParser->__construct
27.6248 17664184 -> ezcTemplateSourceToTstParser->__construct() /Temp
27.6250 17664248 -> ezcTemplateSourceToTstParser->parseRequiredType() /
27.6251 17664248 -> is_string() /Template/src/parsers/source_to_tst/i
27.6252 17664248 -> is_object() /Template/src/parsers/source_to_tst/i
27.6252 17664248 -> ezcTemplateSourceToTstParser->parse() /Template/s
27.6253 17664248 -> ezcTemplateExpressionSourceToTstParser->parseCu
27.6256 17664248 -> ezcTemplateSourceToTstParser->findNextElement
27.6256 17664248 -> ezcTemplateCursor->atEnd() /Template/src/pa
27.6257 17664248 -> strlen() /Template/src/cursor.php:87
27.6258 17664248 -> ezcTemplateSourceToTstParser->skipWhitespac
27.6258 17664248 -> ezcTemplateCursor->atEnd() /Template/src/
27.6259 17664248 -> strlen() /Template/src/cursor.php:87
27.6260 17664248 -> ezcTemplateCursor->pregMatch() /Template/
27.6260 17664248 -> strlen() /Template/src/cursor.php:340
27.6261 17664248 -> substr() /Template/src/cursor.php:343
27.6262 17664760 -> preg_match() /Template/src/cursor.php:3
27.6263 17664392 -> strlen() /Template/src/parsers/source to
/tmp/trace.2310770352.xt 1,4 ALL
```

Some settings:

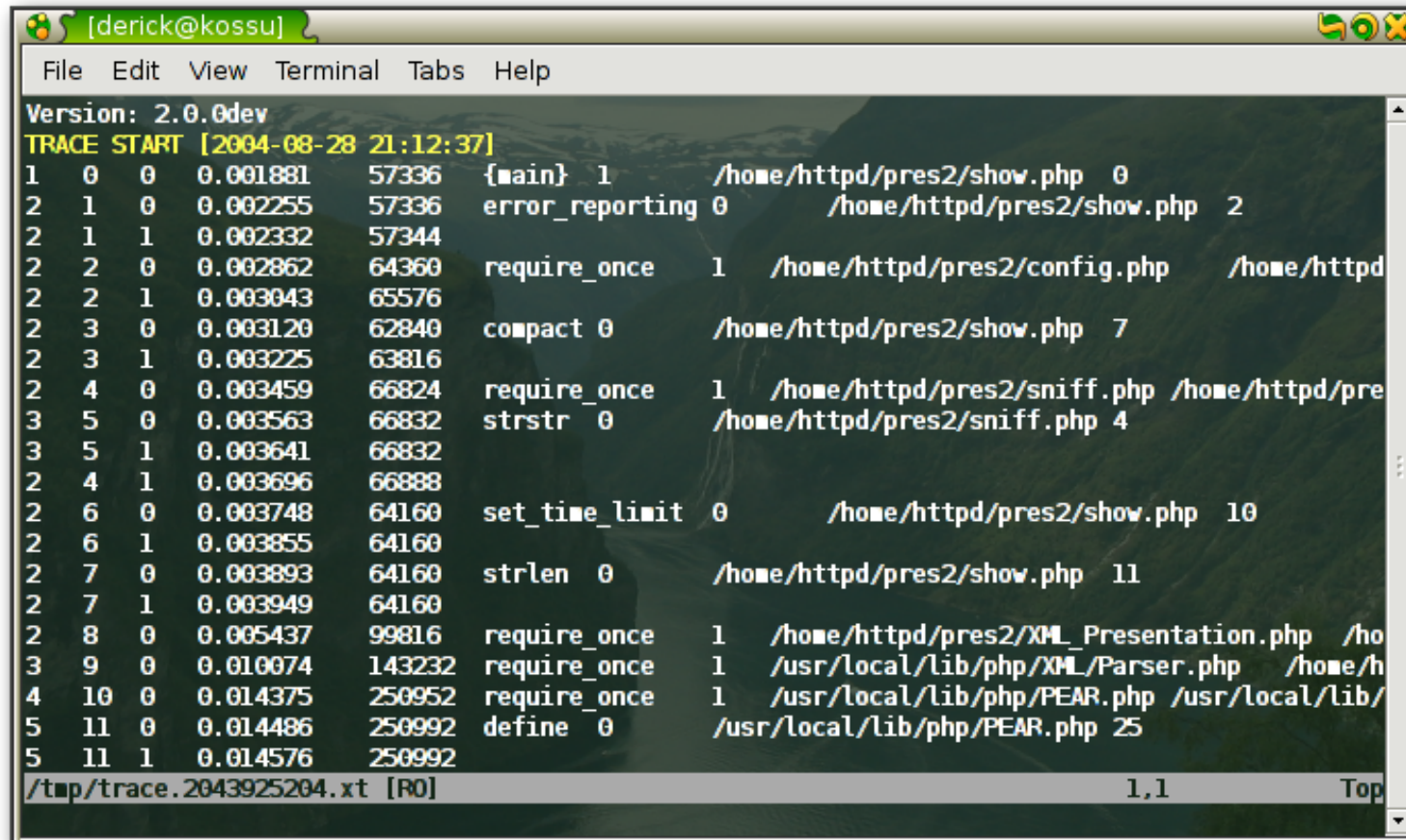
```
xdebug.auto_trace=1
xdebug.trace_output_dir=/tmp
xdebug.collect_params=1
xdebug.collect_return=1
xdebug.trace_output_name=trace.%c
```

Specifiers:

http://xdebug.org/docs/execution_trace#trace_output_name

Execution trace to file

Automatic readable format



```
[derick@kossu]
File Edit View Terminal Tabs Help
Version: 2.0.0dev
TRACE START [2004-08-28 21:12:37]
1 0 0 0.001881 57336 {main} 1 /home/httpd/pres2/show.php 0
2 1 0 0.002255 57336 error_reporting 0 /home/httpd/pres2/show.php 2
2 1 1 0.002332 57344
2 2 0 0.002862 64360 require_once 1 /home/httpd/pres2/config.php /home/httpd
2 2 1 0.003043 65576
2 3 0 0.003120 62840 compact 0 /home/httpd/pres2/show.php 7
2 3 1 0.003225 63816
2 4 0 0.003459 66824 require_once 1 /home/httpd/pres2/sniff.php /home/httpd/pre
3 5 0 0.003563 66832 strstr 0 /home/httpd/pres2/sniff.php 4
3 5 1 0.003641 66832
2 4 1 0.003696 66888
2 6 0 0.003748 64160 set_time_limit 0 /home/httpd/pres2/show.php 10
2 6 1 0.003855 64160
2 7 0 0.003893 64160 strlen 0 /home/httpd/pres2/show.php 11
2 7 1 0.003949 64160
2 8 0 0.005437 99816 require_once 1 /home/httpd/pres2/XML_Presentation.php /ho
3 9 0 0.010074 143232 require_once 1 /usr/local/lib/php/XML/Parser.php /home/h
4 10 0 0.014375 250952 require_once 1 /usr/local/lib/php/PEAR.php /usr/local/lib/
5 11 0 0.014486 250992 define 0 /usr/local/lib/php/PEAR.php 25
5 11 1 0.014576 250992
/tmp/trace.2043925204.xt [R0] 1,1 Top
```

```
xdebug.auto_trace=1 ; enable tracing
xdebug.trace_format=1 ; selects computerized format
xdebug.trace_options=0 ; sets extra option (1 = append)
```

- HTML traces
- Tracing only parts of an application with `xdebug_start_trace()` and `xdebug_stop_trace()`.
- Fetching the trace file name that is being used with `xdebug_get_tracefile_name()`.
- Changing how much data is shown with `xdebug.var_display_max_children`, `xdebug.var_display_max_data` and `xdebug.var_display_max_depth`.

demo

```
34     public function __construct()
35     {
36         $args = func_get_args();
37         parent::__construct( array() );
38         foreach ( $args as $part )
39         {
40             if ( $part instanceof ezcMailPart )
41             {
42                 $this->parts[] = $part;
43             }
44             elseif( is_array( $part ) ) // add each
45             {
46                 foreach ( $part as $array_part )
47                 {
```

Available functions:

```
xdebug_start_code_coverage();
xdebug_get_code_coverage();
xdebug_stop_code_coverage();
```

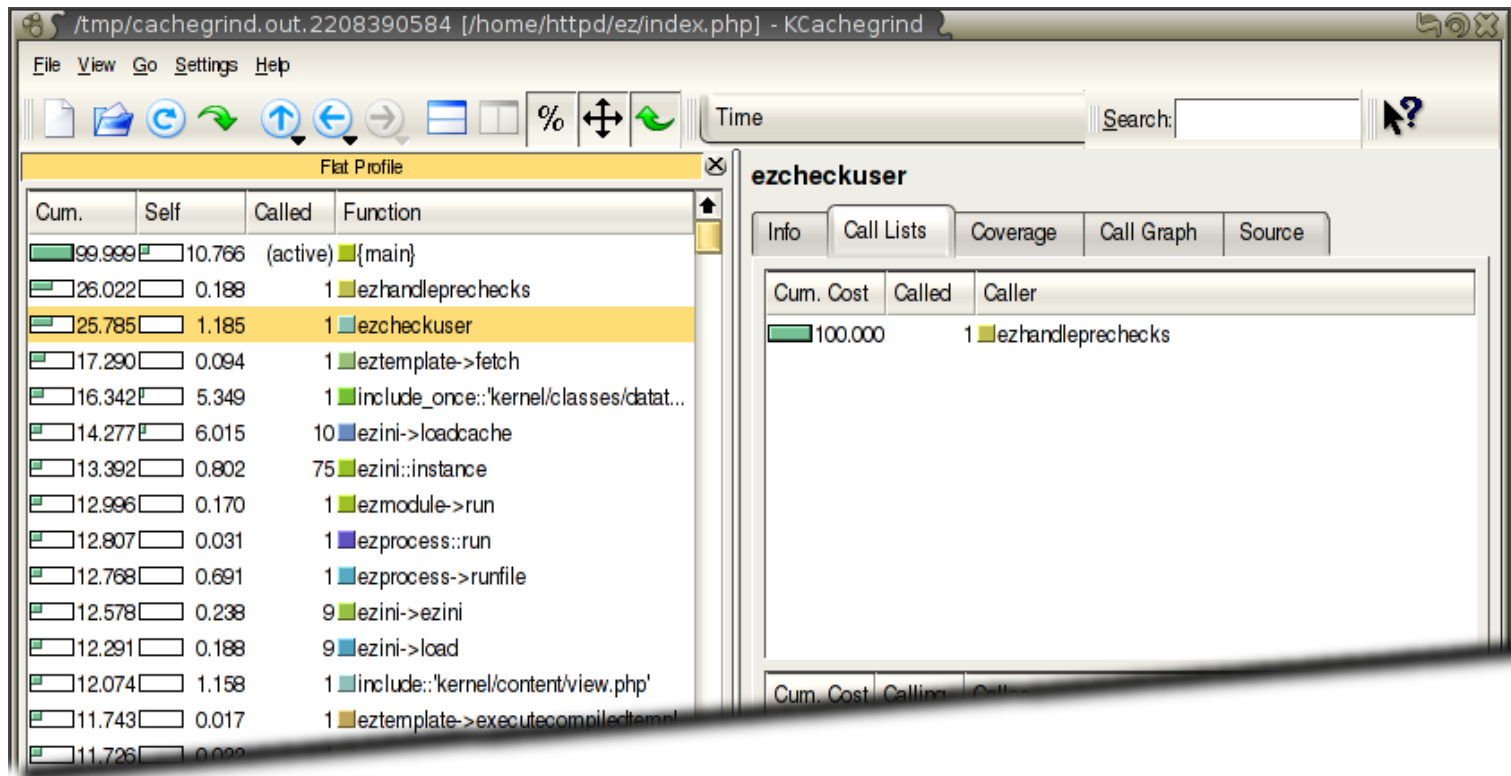
Options to `xdebug_start_code_coverage()`:

- `XDEBUG_CC_UNUSED`: Enables scanning of code to figure out which line has executable code.
- `XDEBUG_CC_DEAD_CODE`: Enables branch analyzation to figure out whether code can be executed.

<http://kossu/coverage/index.html>

Profiling

KCacheGrind's Flat Profile and Call List



The screenshot shows the KCacheGrind application window. The main window title is "/tmp/cachegrind.out.2208390584 [/home/httpd/ez/index.php] - KCacheGrind". The interface includes a menu bar (File, View, Go, Settings, Help), a toolbar with navigation icons, and a search field. The "Flat Profile" pane displays a table of functions with their cumulative and self times. The "ezcheckuser" pane shows a call list for the selected function.

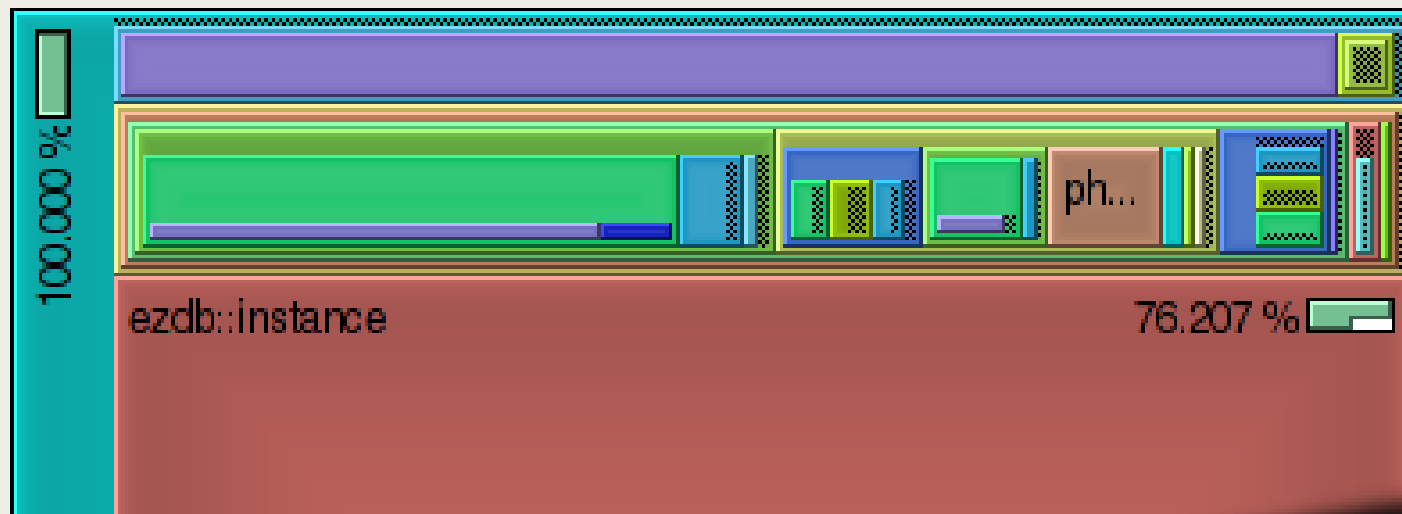
Cum.	Self	Called	Function
99.999	10.766	(active)	{main}
26.022	0.188	1	ezhandleprechecks
25.785	1.185	1	ezcheckuser
17.290	0.094	1	eztemplate->fetch
16.342	5.349	1	include_once: 'kernel/classes/datat...
14.277	6.015	10	ezini->loadcache
13.392	0.802	75	ezini::instance
12.996	0.170	1	ezmodule->run
12.807	0.031	1	ezprocess::run
12.768	0.691	1	ezprocess->runfile
12.578	0.238	9	ezini->ezini
12.291	0.188	9	ezini->load
12.074	1.158	1	include: 'kernel/content/view.php'
11.743	0.017	1	eztemplate->executecompiledtempl
11.726	0.022		

Cum. Cost	Called	Caller
100.000	1	ezhandleprechecks

```
xdebug.profiler_enable=1          ; enable profiler
xdebug.profile_output_dir=/tmp    ; output directory
xdebug.profile_output_name=cachegrind.out.%p
```

ezsessionstart

Info Call Lists Coverage Call Graph Source



```

...
include( $autoloadFile );
...

```

3.717	One call to 'include:lib/eztemplate/classes/eztempl...
1.989	One call to 'include:kernel/common/eztemplateautol...
0.126	One call to 'include:lib/ezpdf/classes/eztemplateaut...

demo

- DBGp, common Debugging protocol
- Cross-language: PHP, Python, Perl...
- Supported in Xdebug 2
- Clients: Komodo, Maguma Workbench, TruStudio (PHP Eclipse Plugin) and many other smaller ones

Other clients and plugins:

php.ini settings:

```
xdebug.remote_enable=1  
xdebug.remote_handler=dbgp  
xdebug.remote_mode=req  
xdebug.remote_host=localhost  
xdebug.remote_port=9000  
xdebug.extended_info=1
```

On the shell:

```
export XDEBUG_CONFIG="idekey=xdebugrocks  
remote_enable=1"
```

With a browser:

```
http://pres/show.php?  
XDEBUG_SESSION_START=xdebugrocks
```

With a firefox extension:

```
http://gmckinney.blogspot.com/2008/02/xdebug-firefox-  
addon-for-profiling-and-html
```

- Input commands as "command line parameters"
- `property_get -n $foo -d 2 -i 81`
- Output data as documented XML:

```
data_length
```

```
[NULL]
```

```
<response command="command_name" transaction_id="transaction_id"/>
```

```
[NULL]
```

- Cross-language: PHP, Python, Perl...
- Supported in Xdebug 2

demo



Xdebug site: <http://xdebug.org>

Xdebug documentation: <http://xdebug.org/docs.php>

DBGp specification: <http://xdebug.org/docs-dbgp.php>

These slides: <http://derickrethans.nl/talks.php>

Questions?: derick@xdebug.org