



PHP Barcelona - Barcelona, Spain

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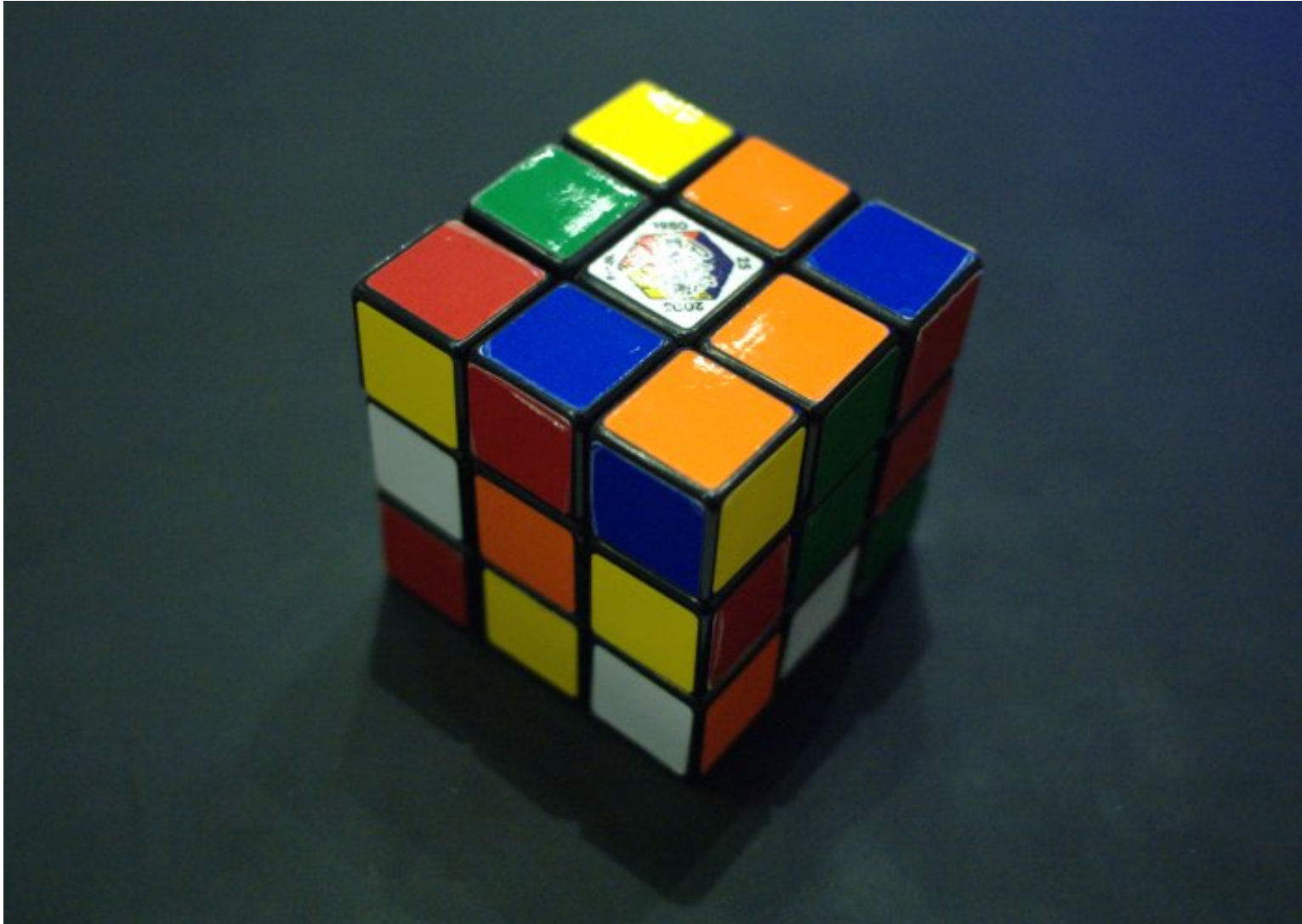
<http://derickrethans.nl/talks.php>

- 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`

Installing Xdebug

Gotchas

- `--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(ezcmailtest) [[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.

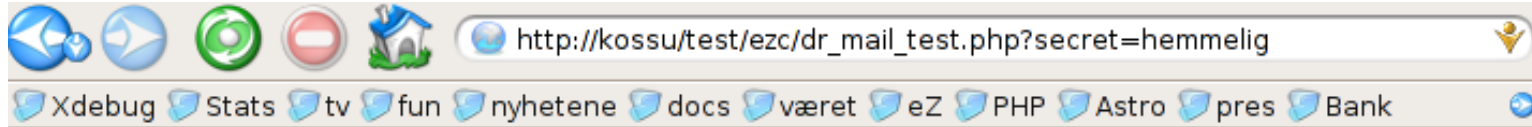
```
(!) ezcMailTransportException: An error ocured while sending or receiving mail. Failed to connect to the server: dolly.ez.no:ezcomponents. in /dat/dev/ezcomponents/trunk/Mail/src/transport/transport_connection.php on line 57
```

Call Stack				
#	Time	Memory	Function	Location
1	0.0005	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	ezcMailPop3Transport->portConnection->__construct(string(11), string(12))	../pop3_transport.php:101

```
Variables in local scope (#3)
$server = 'dolly.ez.no' (length=11)
$error = 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 );
}

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

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

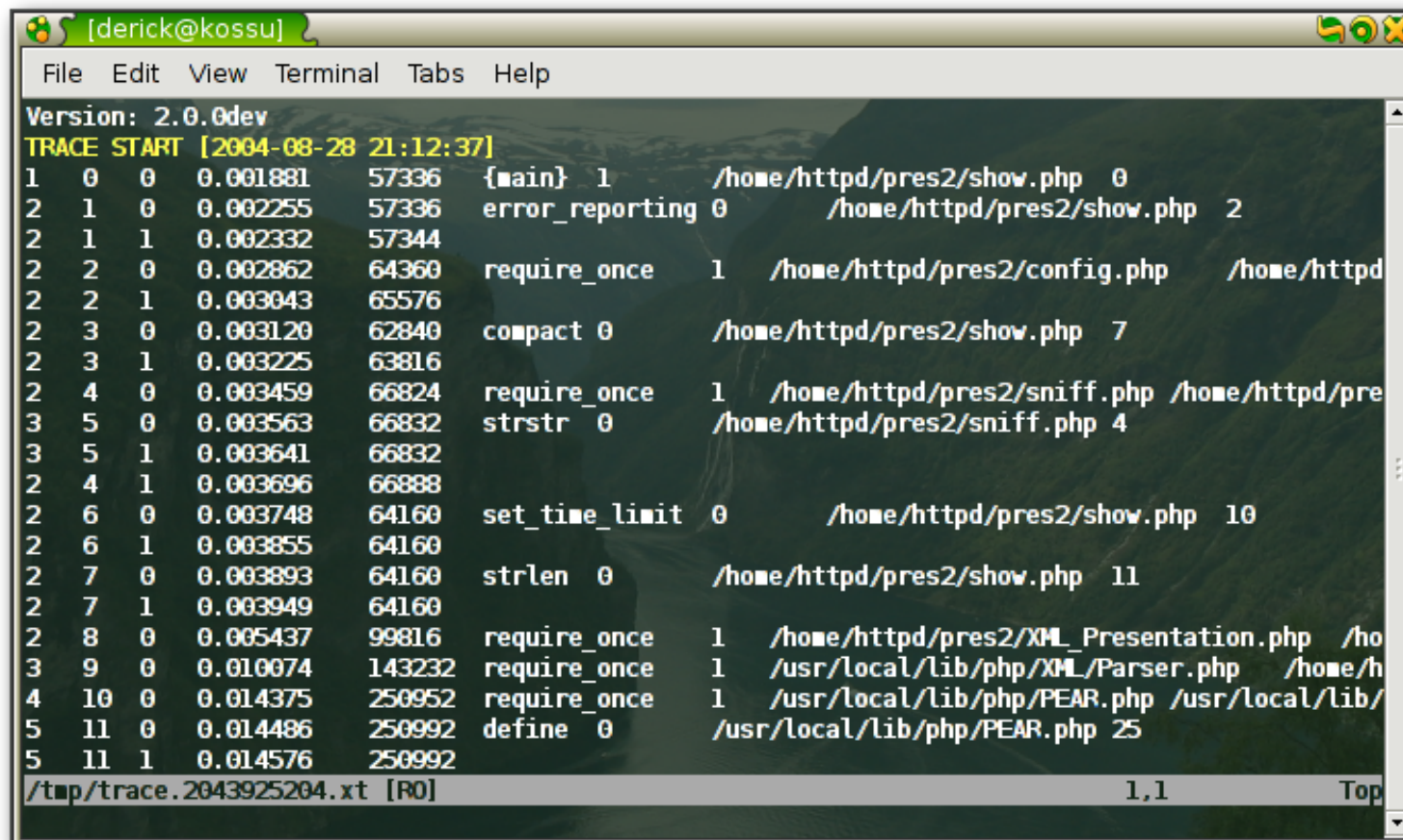
```
xdebug.auto_trace=1
xdebug.trace_output_dir=/tmp
xdebug.collect_params=1
xdebug.collect_return=1
xdebug.trace_output_name=trace.%c
```

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();
```

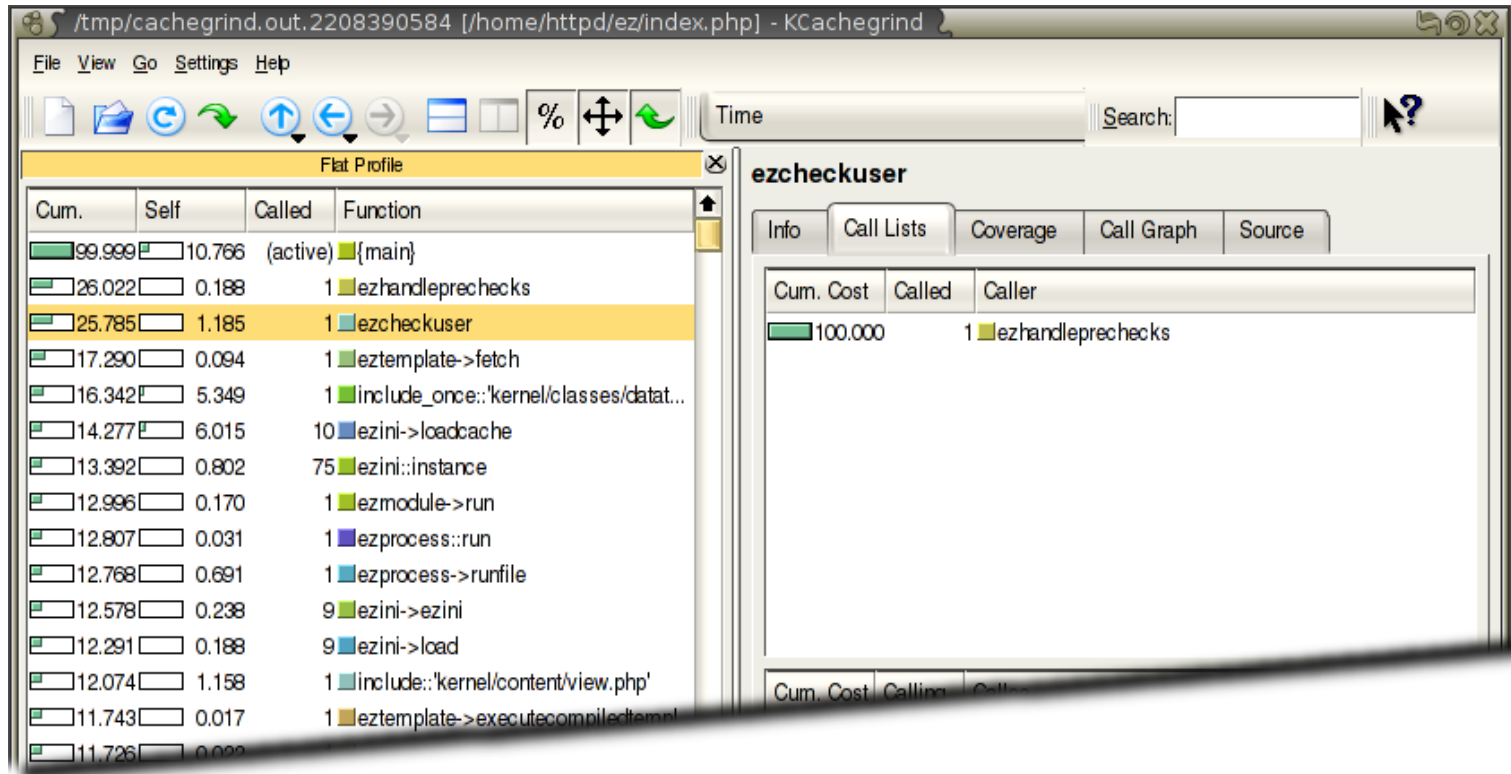
Options to `xdebug_start_code_coverage()`:

- `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 web interface. The 'Flat Profile' table lists functions with their cumulative and self times. The 'ezcheckuser' call list shows the caller 'ezhandleprechecks' with a cumulative cost of 100.000.

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
```


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://tinyurl.com/6otvm4
```

- 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