

Welcome!



ConFoo

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

<http://joind.in/2783>

## Derick Rethans



- Dutchman living in London
- PHP development
- Author of the `mcrypt`, `input_filter`, `dbus`, `translit` and `date/time` extensions
- Author of `Xdebug`
- Contributor to the Apache Zeta Components Incubator project (formerly eZ Components)
- Freelancer doing PHP (internals) development

Development Aid  
Live Debugging  
Profiling

# Xdebug Pimps Your Ride



# Error Messages

```
Warning: DOMDocument::load() [domdocument.load]: Document is empty in
/home/httpd/presentations,
line: 1 in /home/httpd/pres2/show2.php on line 165
```

```
| ( ! ) Warning: DOMDocument::load() [domdocument.load]: Document is empty in /home/httpd/
| presentations,_line:_1_in_/home/httpd/pres2/show2.php_on_line_165
|-----|-----|-----|-----|
| Call Stack
|-----|-----|-----|-----|
| #|Time_|Memory_|Function_|Location_|
| 1|0.0013|_787720|{main}(_)|../show2.php:0
| 2|0.0102|1398552|Presentation->display($_slideNr_=NULL_)|../show2.php:114
| 3|0.0103|1400336|DOMDocument->load(' /home/httpd/pres2/presentations/'|../show2.php:165
|_|_|_|_|_|)
```

- `xdebug.collect_include=?`
- `xdebug.var_display_max_children=?`  
`xdebug.var_display_max_data=?`  
`xdebug.var_display_max_depth=?`
- `xdebug.file_link_format=?`  
`xdebug.file_link_format=gvim://f@l`  
`xdebug.file_link_format=txmt://open/?url=file://f&line=l`  
`xdebug.file_link_format=???://f?l` Windows:  
`http://forums.netbeans.org/topic20597.html#85639` Linux:  
`http://xdebug.org/docs/stack_trace#file_link_format`

# Error Messages

## Pimped-Up with CSS

```
| ( ! ) Fatal error: Maximum execution time of 1 second exceeded in /home/httpd/html/test/|
|xdebug/docs/stack.php_on_line_66_|
| Call_Stack_|
| # | Time | Memory | Function_ | Location_|
| 1 | 0.0004 | 691504 | {main} ( ) | ../stack.php:0_|
| 2 | 0.0006 | 699472 | foo ( ) | ../stack.php:82_|
| Dump_$_SERVER_|
| $_SERVER['REQUEST_URI'] | string_ '/test/xdebug/docs/stack.php?level=7' (length=35) |
| Variables_in_local_scope_ (#2) |
|     $a | array (size=5) |
|         |
|         42 => boolean false |
|         'foo' => int 9121240 |
|         43 => |
|             object (stdClass) [1] |
|                 public 'bar' => int 100 |
|         |
|         44 => |
|             object (stdClass) [2] |
|         45 => _resource (4, _stream) |
|     $i | int_ 2176225 |
```

# Error Messages

## Record and Delayed Display

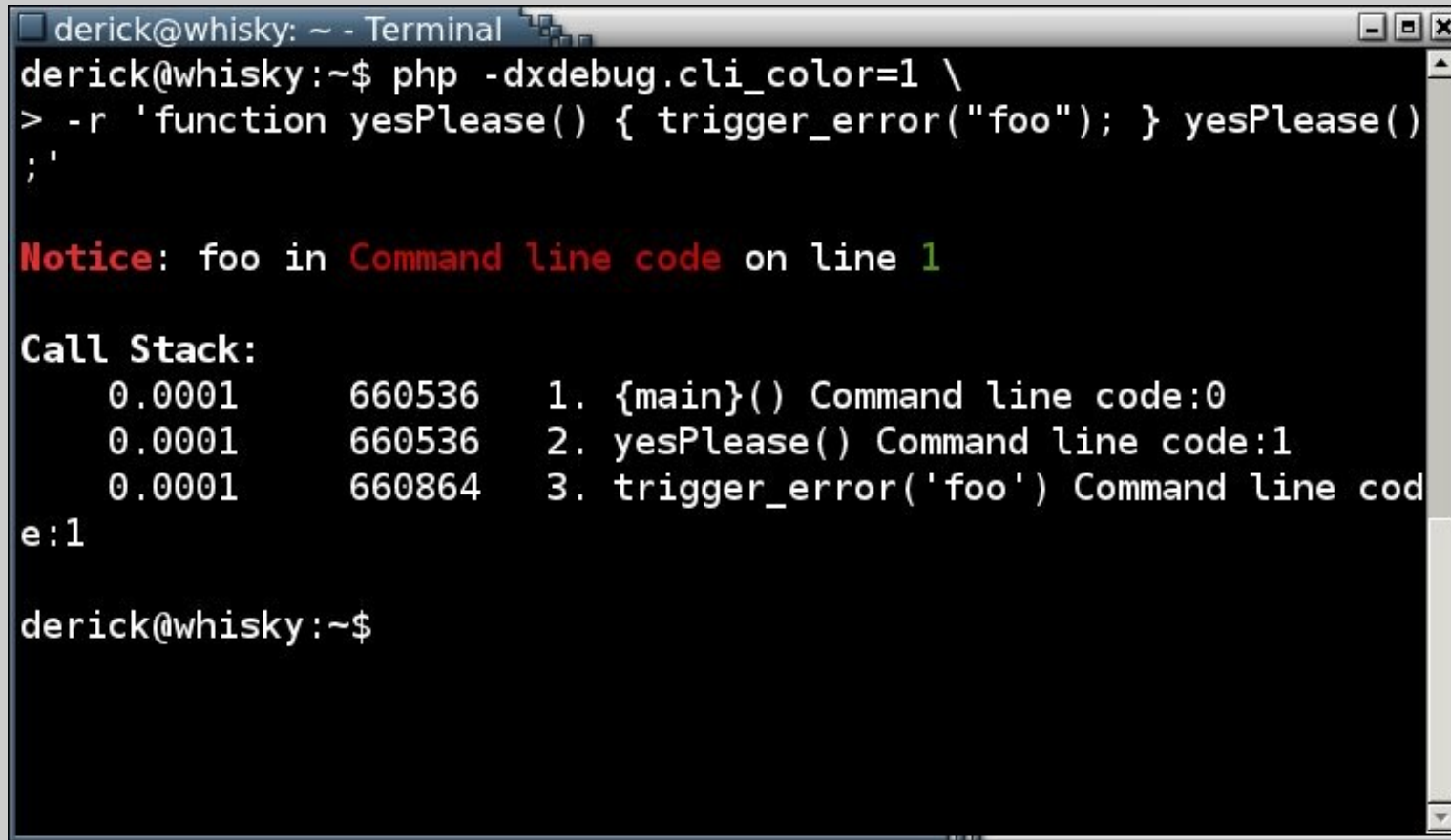
xdebug\_start\_error\_collection()  
xdebug\_stop\_error\_collection()  
xdebug\_get\_collected\_errors()

```
<?php
xdebug_start_error_collection();
?>
<html>
<body>
<div id='main'>
...
</div>
<div id='errors'>
    <?php echo xdebug_get_collected_errors(); ?>
</div>
</html>
```



# Colours on the Command Line

\*new in 2.2\*

A terminal window titled "derick@whisky: ~ - Terminal" showing a PHP CLI command and its output. The command is "php -dxdebug.cli\_color=1 \> -r 'function yesPlease() { trigger\_error(\"foo\"); } yesPlease();'". The output shows a notice: "Notice: foo in Command line code on line 1" and a call stack with three entries: 1. {main}() Command line code:0, 2. yesPlease() Command line code:1, and 3. trigger\_error('foo') Command line code:1. The terminal prompt "derick@whisky:~\$" is visible at the end.

```
derick@whisky: ~ - Terminal
derick@whisky:~$ php -dxdebug.cli_color=1 \
> -r 'function yesPlease() { trigger_error("foo"); } yesPlease()
;'

Notice: foo in Command line code on line 1

Call Stack:
  0.0001    660536    1. {main}() Command line code:0
  0.0001    660536    2. yesPlease() Command line code:1
  0.0001    660864    3. trigger_error('foo') Command line code:1
e:1

derick@whisky:~$
```

xdebug.cli\_color=1

# Scream

- PHP's @ operator hides warnings and errors
- `xdebug.scream=1` makes PHP ignore @



# Recording headers

- Xdebug collects all headers being set, implicitly and explicitly
- It's very useful for testing and unit-tests
- `xdebug_get_headers()`

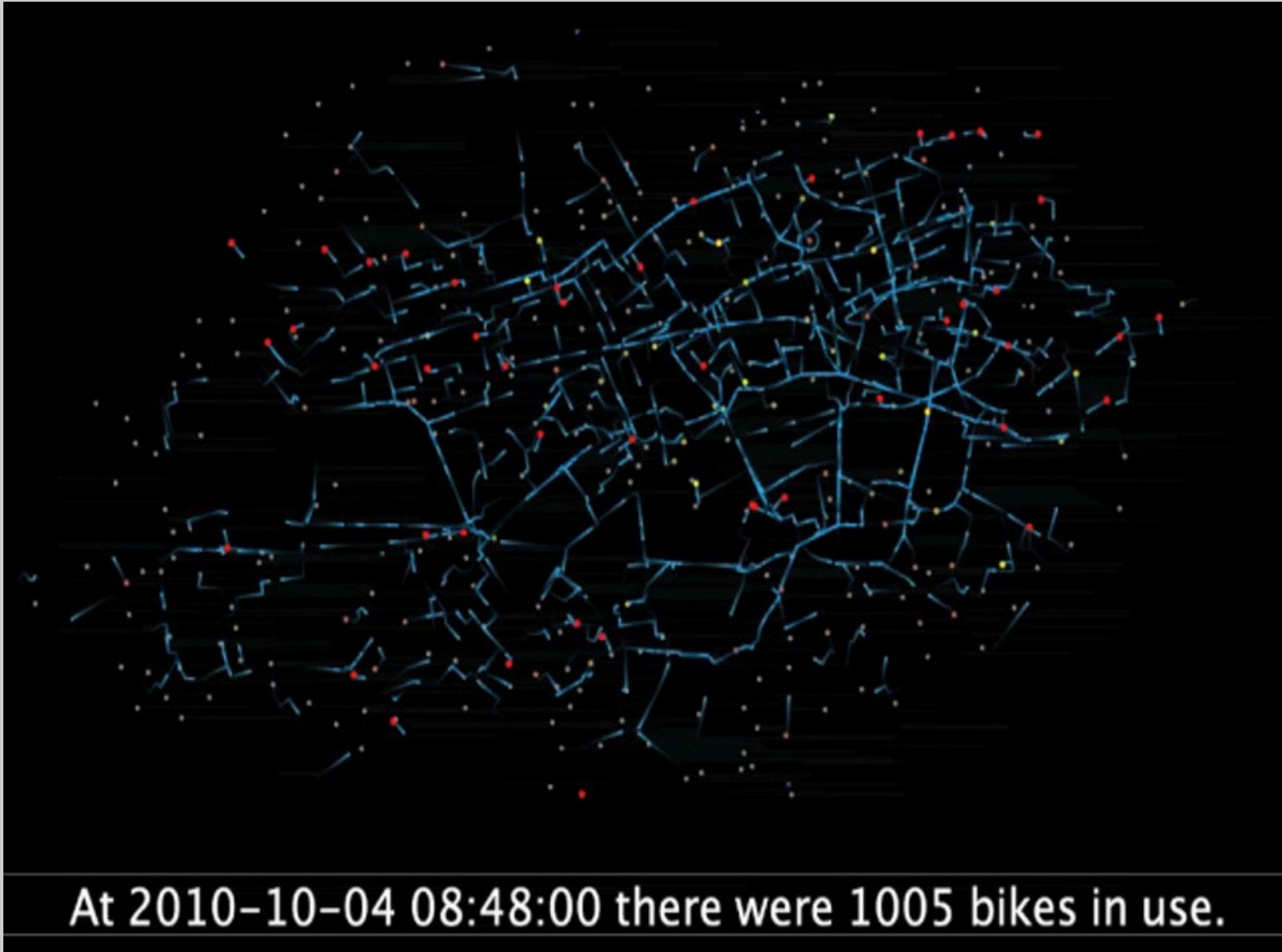
```
<?php
session_start();

setcookie( 'key', 'value', time() + 86400 );

header( "Status: 403" );

var_dump( xdebug_get_headers() );
?>
```

# Tracing



# Function trace

```
TRACE START [2010-03-24 11:03:12]
0.0022    787776    -> {main}() /home/httpd/pres2/show2.php:0
0.0028    803160    -> require(/home/derick/dev/ezcomponents/trunk/Base/src/
ezc_bootstrap.php)/home/httpd/pres2/show2.php:2
0.0029    803552    -> dirname('/home/derick/dev/ezcomponents/trunk/Base/src/
ezc_bootstrap.php')/home/derick/dev/ezcomponents/trunk/Base/src/ezc_bootstrap.php:12
0.0030    803968    -> explode('/', '/home/derick/dev/ezcomponents/trunk/Base/src')/home/
derick/dev/ezcomponents/trunk/Base/src/ezc_bootstrap.php:13
0.0031    807352    -> count(array (0 => '', 1 => 'home', 2 => 'derick', 3 => 'dev', 4 =>
'ezcomponents', 5 => 'trunk', 6 => 'Base', 7 => 'src'))/home/derick/dev/ezcomponents/trunk/Base/src/
ezc_bootstrap.php:15
0.0032    807800    -> array_slice(array (0 => '', 1 => 'home', 2 => 'derick', 3 => 'dev', 4
=> 'ezcomponents', 5 => 'trunk', 6 => 'Base', 7 => 'src'), 0, -2)/home/derick/dev/ezcomponents/
trunk/Base/src/ezc_bootstrap.php:17
0.0033    808952    -> join('/', array (0 => '', 1 => 'home', 2 => 'derick', 3 => 'dev', 4
=> 'ezcomponents', 5 => 'trunk'))/home/derick/dev/ezcomponents/trunk/Base/src/ezc_bootstrap.php:17
0.0065    1002544    -> require(/home/derick/dev/ezcomponents/trunk/Base/src/base.php)/home/
derick/dev/ezcomponents/trunk/Base/src/ezc_bootstrap.php:18
```

## Some settings:

```
xdebug.auto_trace=1
xdebug.trace_output_dir=/tmp
xdebug.collect_params=1
xdebug.collect_return=1
xdebug.collect_includes=1
xdebug.collect_assignments=1
```

# Function 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

# Swatting Bugs



- DBGp, common Debugging protocol
- Cross-language: PHP, Python, Perl...

## Clients:

- Eclipse/PDT (Java based — free)
- Komodo (Linux, Windows, Mac — commercial)
- MacGDBp (free)
- Netbeans (Java-based — free)
- PHPStorm (Java-based — commercial)
- Zend Studio for Eclipse (Eclipse-based — commercial)
- Stand-alone client (Linux (for now)):
- (and many others: )

# Activating the Remote Debugger

php.ini settings:

```
xdebug.remote_enable=1
```

```
xdebug.remote_host=localhost
```

```
xdebug.remote_port=9000
```

php.ini settings:

```
xdebug.remote_enable=1
```

```
xdebug.remote_host=localhost
```

```
xdebug.remote_port=9000
```

```
xdebug.remote_connect_back=1
```

On the shell:

```
export XDEBUG_CONFIG="idekey=xdebugrocks"
```

With a browser:

```
http://pres/show.php?
```

```
XDEBUG_SESSION_START=xdebugrocks
```

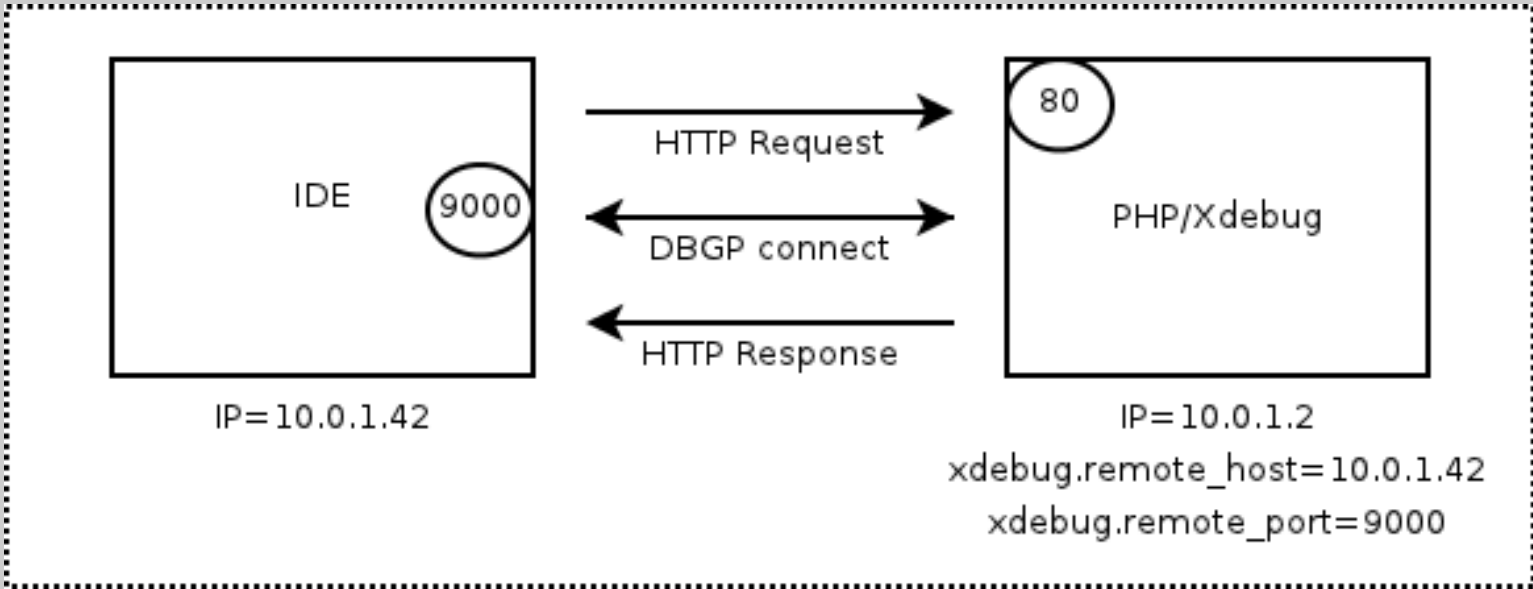
```
http://pres/show.php?XDEBUG_SESSION_STOP=1
```

With browser extensions:

easy Xdebug (FireFox), Xdebug Helper (Chrome), Xdebug Toggler for Safari, Xdebug launcher for Opera:

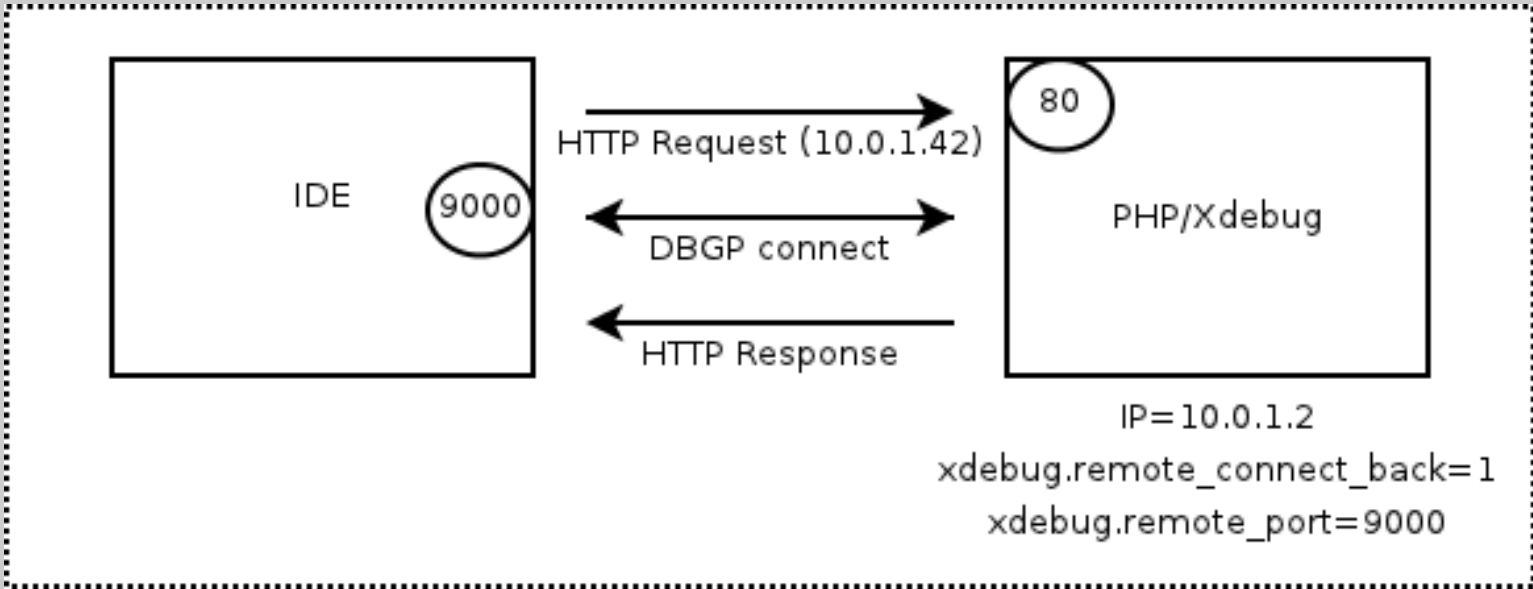
# Debugging Connections

## Single-user



# Debugging Connections

## Multi-user



www.derickrethans.nl - NetBeans IDE 6.9.1

File Edit View Navigate Source Refactor Run Debug Team Tools Window Help

<default> Search (Ctrl+I)

Proj... Files Services Start Page x test.php x index.php x

www.derickrethans.nl

- Source Files
  - cache
  - html
    - cache
    - content
    - errorhandling
    - files
    - images

index.php - Navigator

```

1 <?php
2 require 'php/config.php';
3 $url = trim( $_SERVER['REQUEST_URI'], '/' );
4 $doppler = true;
5
6 if ( $_SERVER['SERVER_NAME'] == 'www.derickrethans.nl' )
7 {
8     header( "Location: http://derickrethans.nl/$url" );
9 }
10
11 //check common thingies
12 if ( $url == '' )
13 {
14     $title = "Home";

```

Variables Call Stack Breakpoints Tasks

Name	Type	Value
Superglobals		
api	drBlogApi	
d	ezcDbHandlerSqlite	
transactionNestingLevel	integer	0
transactionErrorFlag	boolean	0
identifierQuoteChars	array	

Filters: [ ] [ ] [ ]

netbeans-xdebug running 4 | 1 | INS

test.php (~dev/php/xdebug-demos/cli-debug) - ActiveState Komodo IDE 6.1 - Debugger

File Edit Code Navigation View Debug Project Tools Help

Start Page test.php x

```
4 private $priv;
5 protected $prot;
6 public $publ;
7
8 function __construct($a)
9 {
10     $this->priv = $a * 2;
11     $this->prot = $a * 2.5;
12     $this->publ = $a * M_PI;
13 }
14
15
16 function foo($a)
17 {
```

Break at /home/derick/dev/php/xdebug-demos/cli-debug/test.php, line 11.

Name	Type	Value
a	float	2.718281828459
▼ this	TheClass	
priv	float	5.4365636569181
prot	null	
publ	null	

Watch Locals Superglobals

Output Call Stack HTML

Ready ● \_\_construct UTF-8 Ln: 11 Col: 1 PHP

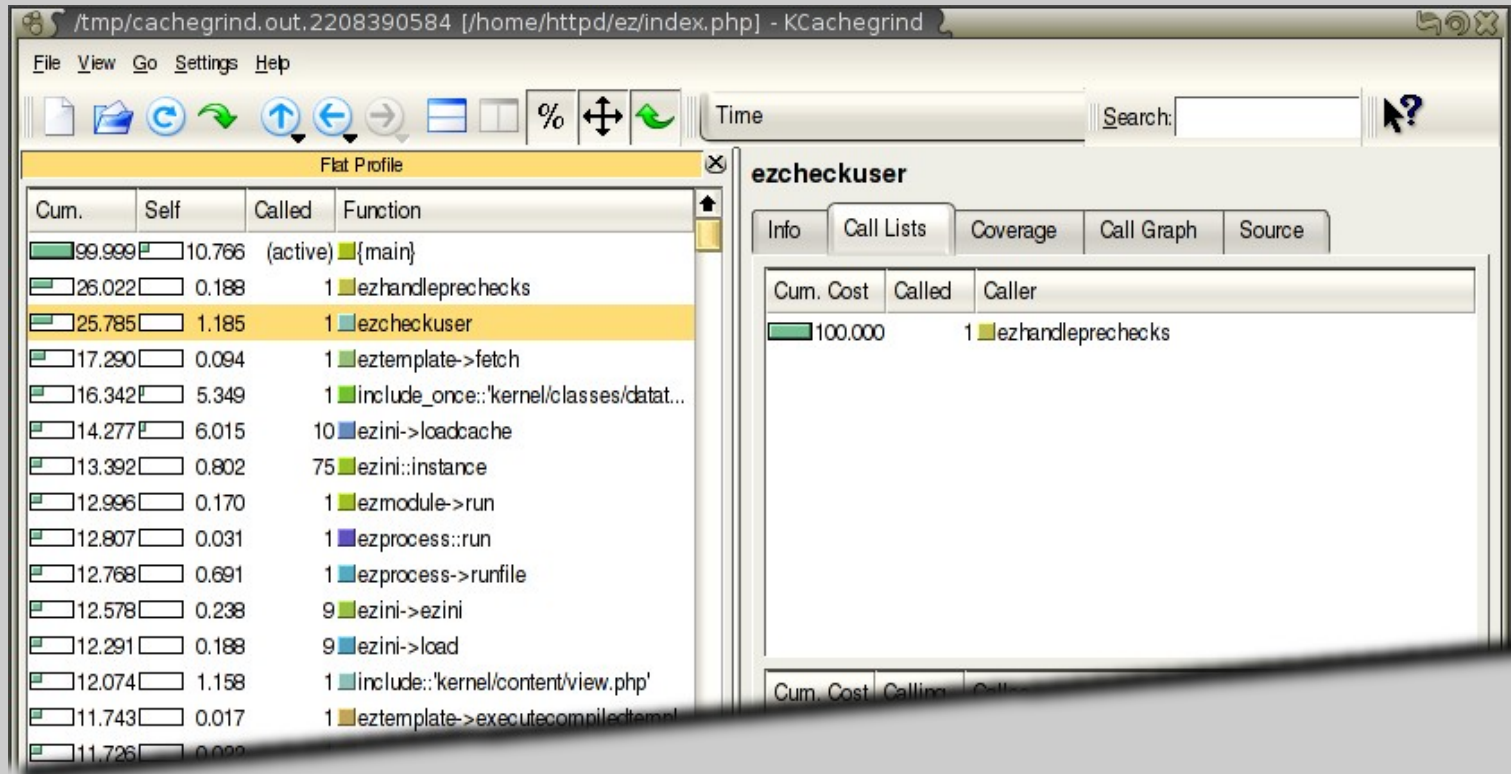
demo

# Profiling



# Profiling

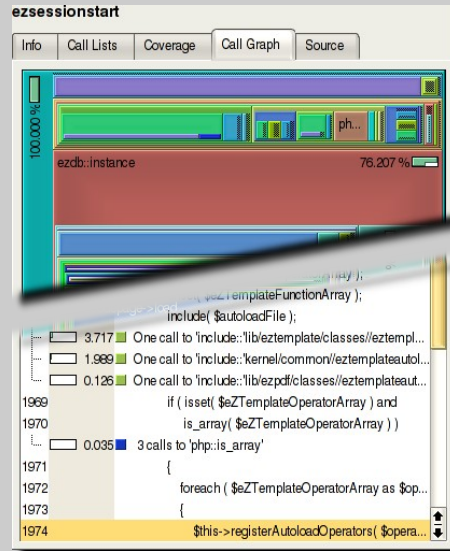
## KCacheGrind's Flat Profile and Call List



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

# Profiling

## KCacheGrind's Call Graph and Source Annotations



- Call graph
- Area shows time spend
- Stacked to show callees
- Source annotations
- Number of calls
- Total time per function

demo

# Xdebug

- It's Open Source and free (as in "free beer")
- Working on Xdebug takes up a lot of spare time
- I don't have a lot of spare time

The image shows two overlapping browser windows. The left window is titled "Xdebug: Donate - Iceweasel" and displays the Xdebug donation page. The right window is titled "Pledge — Donate To: 'Support cachegrind/KCachegrind profiling files properly' - Iceweasel" and displays the Pledge page for the same cause.


**Xdebug: Donate - Iceweasel**  
http://xdebug.org/donate.php

**XDEBUG EXTENSION FOR PHP | DONATING**  
[home](#) | [updates](#) | [download/SVN](#) | [documentation](#) | [support](#) | [donate](#) | [issue tracker](#)

**DONATING**

Xdebug is a complicated piece of software, and has always been released under an Open Source [licence](#), and this will continue in the far future. It has cost me thousands of hours to develop, support Xdebug. If you find Xdebug valuable, I would appreciate if you would consider a small donation. If you require an invoice, I can supply one.

You can donate through PayPal by clicking on the Xdebug/donate logo:



**Pledge — Donate To: "Support cachegrind/KCachegrind profiling files properly" - Iceweasel**  
http://pledgie.com/campaigns/14641

Welcome derickr My Dashboard Log Out

**Pledgie**

HOME CATEGORIES POPULAR ANIMALS ART CHARITY CREATIVE EDUCATION HEALTH HELP TECH WORLD

**21** Pledges

Support cachegrind/KCachegrind profiling files properly

By [derickr](#) (21)

[Donor's List](#), [Modify This Campaign](#), [Comments](#)

We've raised £628.00, but still need £172.00!

78.50%


£0.00 £800.00

Make A Pledge

Amount:

Do not show my name on the donor's list.

Add A Badge & Share With Friends

Badge:  **DONATE** pledgie.com £172.00 To Go!

Right now, as part of its profiling capabilities, Xdebug (<http://xdebug.org>) dumps profiling information into files that use KCacheGrind's format. When this functionality was added to Xdebug there was not yet a formal specification (<http://kcachegrind.sourceforge.net/html/CallgrindFormat.html>) of this format, and thus the reverse-engineered implementation has subsequently acquired some issues. Since version 0.6, KCacheGrind is a bit more strict about the interpretation of the file format, which now causes an issues with Xdebug: [https://bugs.kde.org/show\\_bug.cgi?id=256425](https://bugs.kde.org/show_bug.cgi?id=256425)

The donations belonging to this pledge will allow me to correctly address the issue to restore the



- Xdebug site: <http://xdebug.org>
- Xdebug documentation:  
<http://xdebug.org/docs.php>
- DBGp specification: <http://xdebug.org/docs-dbgp.php>
- Rate this talk! :-:joindin:-:
- If you like Xdebug: <http://xdebug.org/donate.php>
- These slides: <http://derickrethans.nl/talks.html>