Debug PHP with Xdebug

with examples for Vagrant with Ubuntu

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Contents

Why use Xdebug

Common Approach

```
var_dump($thing);
// or
print_r($data);
// or
error_log(print_r($someArray, true));
// or
echo __METHOD__ . '' . __LINE__;
```

Why use Xdebug

Common Approach

```php
var_dump($thing);
// or
print_r($data);
// or
error_log(print_r($someArray, true));
// or
echo __METHOD__ . '' . __LINE__;
```

Remove that again

don't commit these lines into VCS

Traditional Way

1. insert outputs
2. reload page
3. look for output
4. change some code

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2. reload page
3. look for output
4. change some code
5. repeat 1. until error is fixed
6. clean up outputs
7. load final version of the page

Xdebug Way

1. add breakpoints

Xdebug Way

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2. reload page

Xdebug Way

1. add breakpoints
2. reload page
3. step into the code

Advantages

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- Better understanding of what the code is doing

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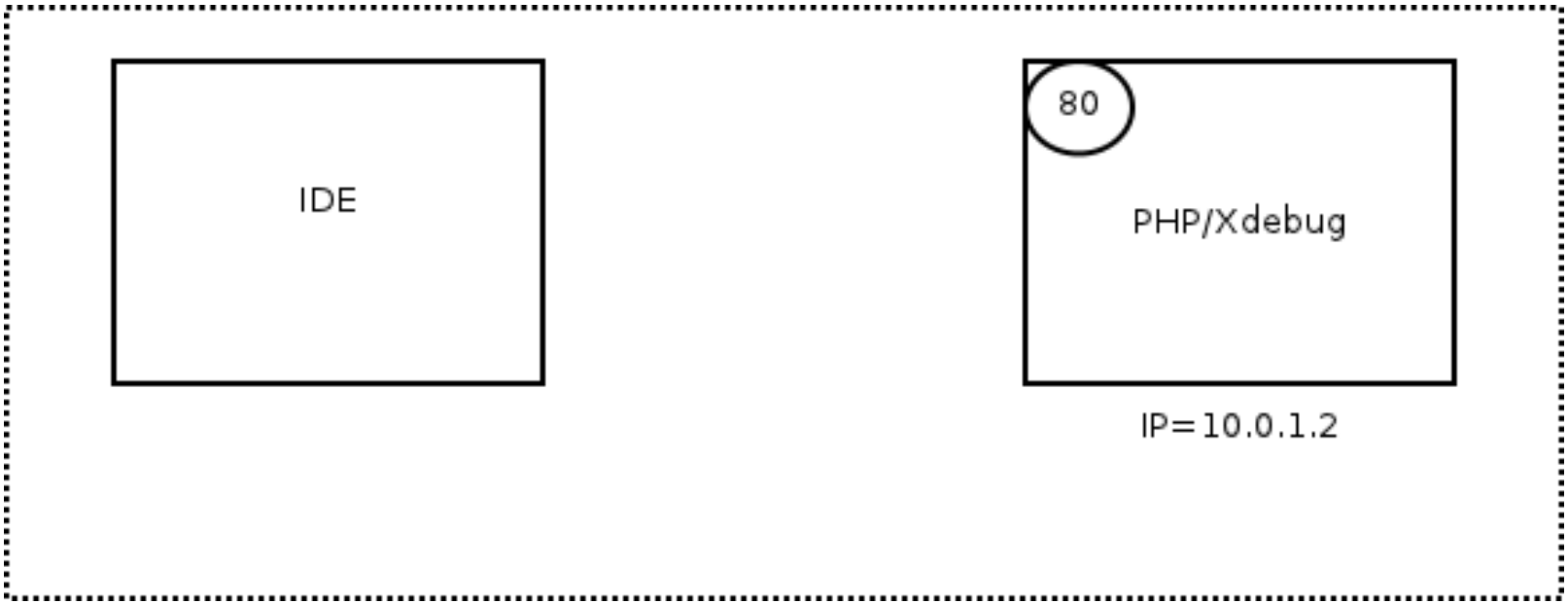
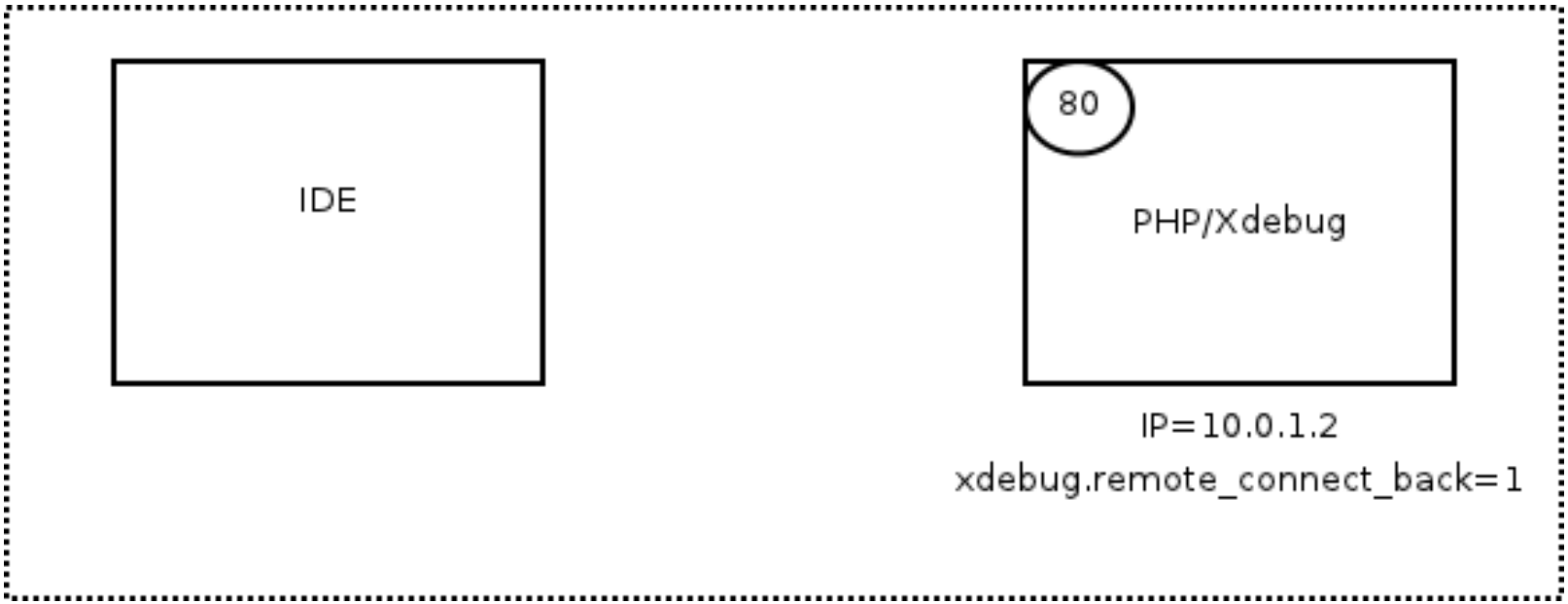
- Better understanding of what the code is doing
- Does not require code changes

How it works



How it works



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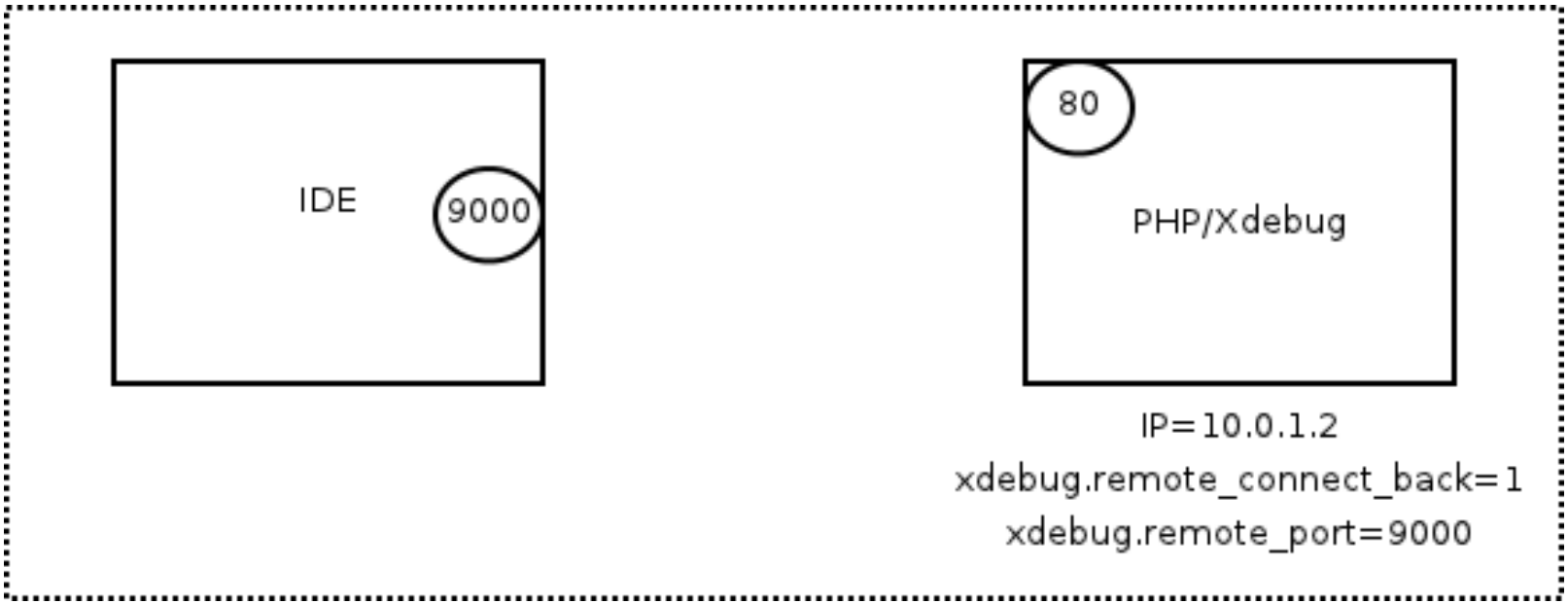
IDE
9000
80
PHP/Xdebug
IP=10.0.1.2
xdebug.remote_connect_back=1
xdebug.remote_port=9000

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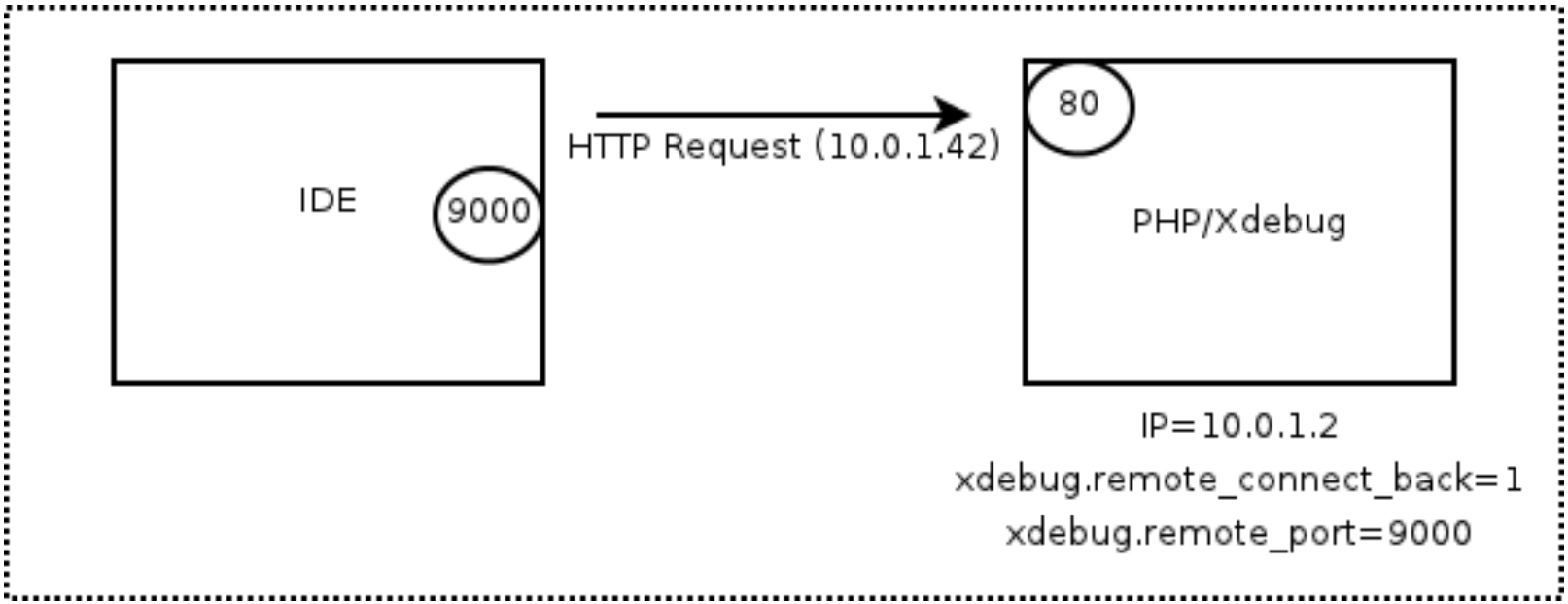
IDE
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HTTP Request (10.0.1.42)
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PHP/Xdebug
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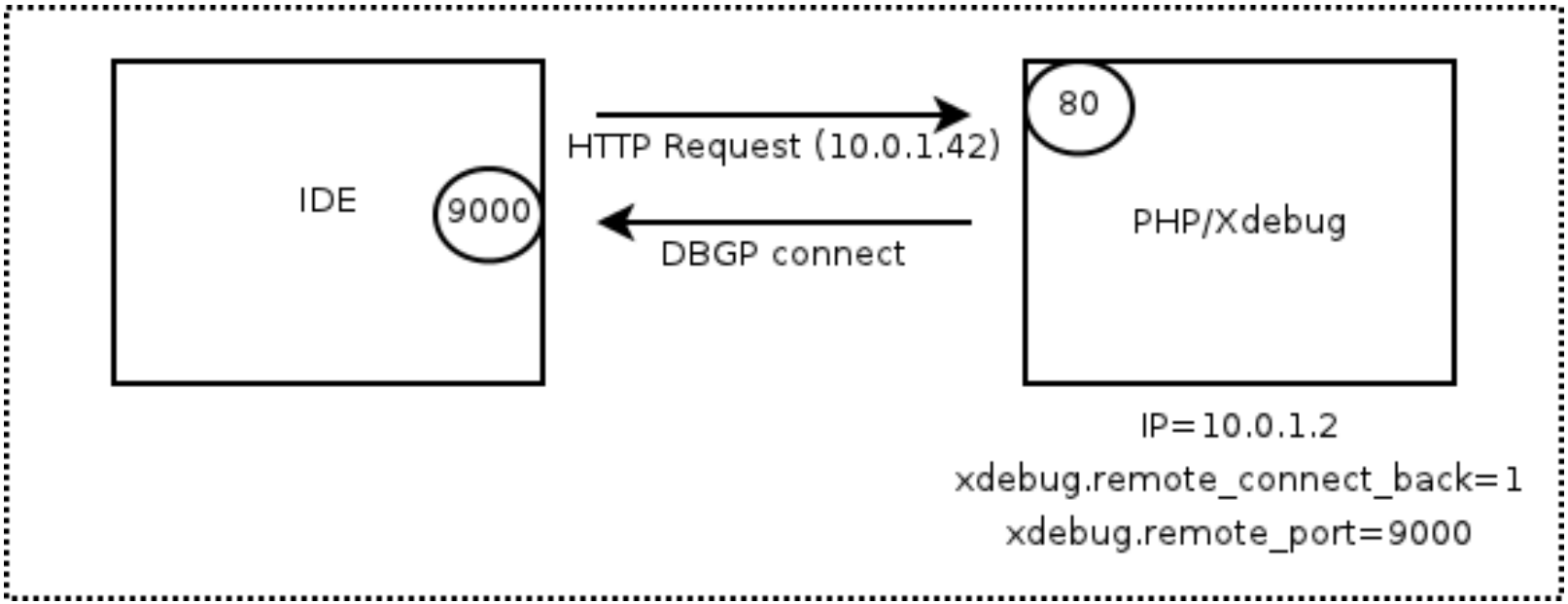
How it works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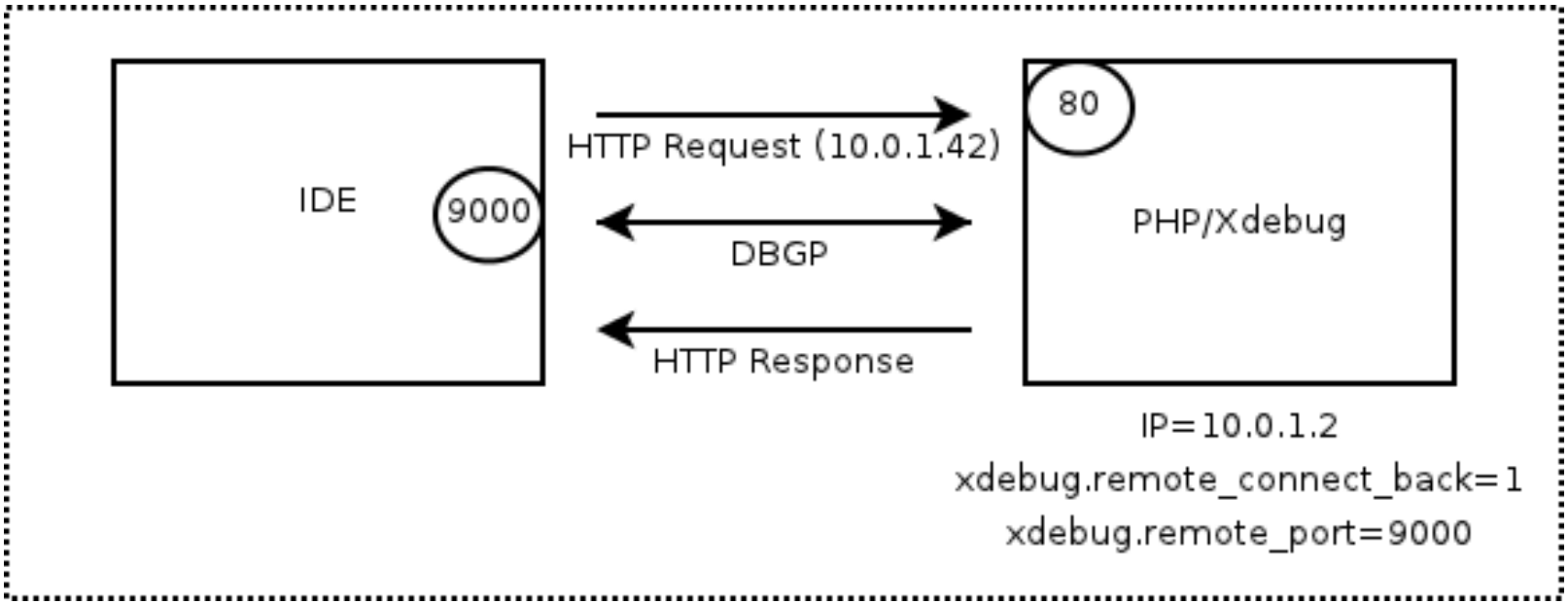
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Browser extensions

- Xdebug Helper for Firefox
- Xdebug Helper for Chrome
- Xdebug Toggler for Safari
- Xdebug launcher for Opera

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or

- HTTP GET/POST variable XDEBUG_SESSION_START
- Set a Cookie in the header XDEBUG_SESSION

VS Code launch.json

Install Extension: PHP Debug

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Install Extension: PHP Debug 

```
{
    "name": "Listen for XDebug",
    "type": "php",
    "request": "launch",
    "port": 9000,
    "pathMappings": {
        "/var/www/html": "${workspaceRoot}"
    }
}
```

VS Code launch.json

This will be automatically generated

```
{
    "name": "Launch currently open script",
    "type": "php",
    "request": "launch",
    "program": "${file}",
    "cwd": "${fileDirname}",
    "port": 9000
}
```

Installation on Ubuntu with PHP-FPM and Nginx

1. `apt-get install php-xdebug`

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3. `systemctl restart php7.3-fpm`

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Check your Target

Install on your target machine, e.g. Vagrant or Docker container.
Check the installation with `php -m | grep xdebug`.

Installation on Ubuntu with PHP-FPM and Nginx

1. `apt-get install php-xdebug`
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Common Pitfall

Check your PHP version with `php -v` or with `<?php phpinfo();`

PHP settings / Remote Debugging

```
zend_extension = xdebug.so
xdebug.remote_enable = On
xdebug.remote_connect_back = On
; xdebug.remote_host = 10.0.49.1
```

/etc/php/7.3/mods-available/xdebug.ini

These values are already present in Ubuntu. No need to edit! Make sure you enabled the plugin with `phpenmod`.

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Tailored Installation Instructions for install from source

https://xdebug.org/wizard.php

Profiler

What does it do?

Xdebugs Profiler is a powerful tool that gives you the ability to analyze your PHP code and determine bottlenecks or generally see which parts of your code are slow and could use a speed boost.

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  - duration
  - frequency of function calls
- generates files for external analysis (cache grind)

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Alternatives: XHprof and Blackfire

Cachegrind Analysis Tools

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- Analysis Tools
  - KCacheGrind (Linux)
  - QCacheGrind (Linux, Mac)
  - WinCacheGrind (Windows)
  - Webgrind (web-based)

Enable Profiler

```
; append this to xdebug.ini
xdebug.profiler_enable_trigger = On
xdebug.profiler_output_dir = /tmp/

; don't do this
; xdebug.profiler_enable
```

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systemctl restart php7.3-fpm
```

or

- Set HTTP GET/POST variable XDEBUG_PROFILE
- Set a Cookie in the header XDEBUG_PROFILE

Function Traces

What does it do?

Those so-called *function traces* can be a help for when you are new to an application or when you are trying to figure out what exactly is going on when your application is running. The function traces can optionally also show the values of variables passed to the functions and methods, and also return values.

Configuration

```
xdebug.trace_enable_trigger = On
xdebug.trace_output_dir = /application/log
; xdebug.auto_trace   ; trigger tracer every pageload
```

Resources & Further Readings

- Official Xdebug Documentation https://xdebug.org/docs
- Tailored Installation Instructions https://xdebug.org/wizard.php

https://github.com/5queezer/xdebug-slides/blob/master/slides.pdf