

# **PHP\_Reflect User Guide**

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# Chapter 1. Introduction



PHP\_Reflect is a PHP Library that adds the ability to reverse-engineer classes, interfaces, functions, constants, namespaces and more.

This manual documents the final stable version 1.4.2

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# Chapter 2. Features

- Uses containers that may be changed to store scanning results
- Select properties you want to retrieve (file, start and end lines, docblock, namespace ...)
- Ability to extend the parsing level: connect user callbacks to handle more tokens

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# Chapter 3. System Requirements

## Mandatory resources :

- PHP [<http://www.php.net>] 5.2.0 or newer
- pcre [<http://www.php.net/manual/en/book.pcre.php>] extension
- SPL [<http://www.php.net/manual/en/book.spl.php>] extension
- tokenizer [<http://www.php.net/manual/en/book.tokenizer.php>] extension

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# Chapter 4. Installing PHP\_Reflect



The current version of PHP\_Reflect requires **PHP 5.2.0 or newer** to run. If you don't already have an up-to-date version of PHP installed it can be downloaded from the official PHP website <http://www.php.net/>.

## 4.1. Using PEAR installer

PHP\_Reflect should be installed using the PEAR Installer [<http://pear.php.net/>]. This installer is the backbone of PEAR, which provides a distribution system for PHP packages, and is shipped with every release of PHP since version 4.3.0.

Registering the channel:

```
pear channel-discover bartlett.laurent-laville.org
```

Installing the latest version available:

```
pear install bartlett/PHP_Reflect
```

Installing a specific version:

```
pear install bartlett/PHP_Reflect-1.2.0
```

## 4.2. Install manually

Do the following:

1. Download a release archive from <http://bartlett.laurent-laville.org/>
2. Extract it to a directory that is listed in the `include_path` of your `php.ini` configuration file

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# Chapter 5. Getting Started with PHP\_Reflect

## 5.1. Parse your first PHP source file

**Parsing with default options.**

```
<?php
require_once 'Bartlett/PHP/Reflect/Autoload.php';

$source = '/path/to/source_file.php';

try {
    $reflect = new PHP_Reflect();
    $reflect->scan($source);

    $classes      = $reflect->getClasses();
    // OR
    $classes      = $reflect['classes'];

    $interfaces   = $reflect->getInterfaces();
    // OR
    $interfaces   = $reflect['interfaces'];

    $traits       = $reflect->getTraits();
    // OR
    $traits       = $reflect['traits'];

    $functions    = $reflect->getFunctions();
    // OR
    $functions    = $reflect['functions'];

    $constants    = $reflect->getConstants();
    // OR
    $constants    = $reflect['constants'];

    $namespaces  = $reflect->getNamespaces();
    // OR
    $namespaces  = $reflect['namespaces'];

} catch (Exception $e) {
    echo 'Caught exception: ' . $e->getMessage() . PHP_EOL;
}
?>
```

---

# Chapter 6. Configure

## 6.1. Containers

You can change default containers (*namespaces, traits, interfaces, classes, functions, includes, globals*), and then have different getting methods (rather than standard *getInterfaces, ...*).

**Table 6.1. Containers options**

| key code     | container default name |
|--------------|------------------------|
| use          | namespaces             |
| namespace    | namespaces             |
| trait        | traits                 |
| interface    | interfaces             |
| class        | classes                |
| function     | functions              |
| require_once | includes               |
| require      | includes               |
| include_once | includes               |
| include      | includes               |
| variable     | globals                |

### Example.

```
<?php
require_once 'Bartlett/PHP/Reflect/Autoload.php';

$source = '/path/to/source_file.php';

try {
    $options = array('containers' => array('function' => 'userFunctions'));

    $reflect = new PHP_Reflect($options);
    $reflect->scan($source);

    $functions = $reflect->getUserFunctions();
    // OR
    $functions = $reflect['userFunctions'];
} catch (Exception $e) {
    echo 'Caught exception: ' . $e->getMessage() . PHP_EOL;
}>
```

## 6.2. Properties

You can choose what information to retrieve depending of element (key code).

**Table 6.2. Properties options**

| key code     | default property   |
|--------------|--|
| use          | file, startEndLines, docblock, alias   |
| namespace    | file, startEndLines, docblock, alias   |
| trait        | file, startEndLines, docblock, namespace, parent, methods                                |
| interface    | file, startEndLines, docblock, namespace, keywords, parent, methods                      |
| class        | file, startEndLines, docblock, namespace, keywords, parent, methods, interfaces, package |
| function     | file, startEndLines, docblock, namespace, keywords, signature, arguments, ccn            |
| require_once | file, startEndLines, docblock, namespace   |
| require      | file, startEndLines, docblock, namespace   |
| include_once | file, startEndLines, docblock, namespace   |
| include      | file, startEndLines, docblock, namespace   |
| variable     | file, startEndLines, docblock, namespace   |

### Example 1.

```
<?php
require_once 'Bartlett/PHP/Reflect/Autoload.php';

$source = '/path/to/PEAR-1.9.2/PEAR.php';

try {
    $options = array(
        'properties' => array(
            'interface' => array(
                'keywords', 'parent', 'methods'
            ),
            'class' => array(
                'keywords', 'parent', 'methods', 'interfaces', 'package'
            ),
            'function' => array(
                'keywords', 'signature'
            ),
        )
    );
    $reflect = new PHP_Reflect($options);
    $reflect->scan($source);

    $classes = $reflect->getClasses();
```

```
print_r($classes['\\']['PEAR_Error']['docblock']);
print_r($classes['\\']['PEAR_Error']['methods']);

} catch (Exception $e) {
    echo 'Caught exception: ' . $e->getMessage() . PHP_EOL;
}
?>
```

Here we got only keywords and signature of each class methods. Class docblock is NULL (first print\_r result) because we have decided NOT to get this property as file, startLine + endLine (startEndLines).

```
<?php
Array
(
    [PEAR_Error] => Array
        (
            [keywords] =>
            [signature] => PEAR_Error($message = 'unknown error', $code = null,
                $mode = null, $options = null, $userinfo = null)
        )

    [getMode] => Array
        (
            [keywords] =>
            [signature] => getMode()
        )

    [getCallback] => Array
        (
            [keywords] =>
            [signature] => getCallback()
        )

    [getMessage] => Array
        (
            [keywords] =>
            [signature] => getMessage()
        )

    [getCode] => Array
        (
            [keywords] =>
            [signature] => getCode()
        )

    [getType] => Array
        (
            [keywords] =>
            [signature] => getType()
        )

    [getUserInfo] => Array
        (
```

```
        [keywords] =>
        [signature] => getUserInfo()
    )

[getDebugInfo] => Array
(
    [keywords] =>
    [signature] => getDebugInfo()
)

[getBacktrace] => Array
(
    [keywords] =>
    [signature] => getBacktrace($frame = null)
)

[addUserInfo] => Array
(
    [keywords] =>
    [signature] => addUserInfo($info)
)

[__toString] => Array
(
    [keywords] =>
    [signature] => __toString()
)

[toString] => Array
(
    [keywords] =>
    [signature] => toString()
)
)
```

### Example 2.

```
<?php
require_once 'Bartlett/PHP/Reflect/Autoload.php';

$source = '/path/to/PHPUnit/Framework/Testcase.php';

try {
    $options = array(
        'properties' => array(
            'function' => array(
                'signature', 'arguments'
            ),
        ),
    );
};
$reflect = new PHP_Reflect($options);
$reflect->scan($source);

$classes = $reflect->getClasses();
```

```
print_r($classes['\\']['PHPUnit_Framework_TestCase']['methods']);

} catch (Exception $e) {
    echo 'Caught exception: ' . $e->getMessage() . PHP_EOL;
}
?>
```

And here are results we got on STDOUT :

```
<?php
Array
(
    [methods] => Array
        (
            [__construct] => Array
                (
                    [signature] => __construct($name = NULL, array $data = array(), $dataName
                    [arguments] => Array
                        (
                            [0] => Array
                                (
                                    [name] => $name
                                    [defaultValue] => NULL
                                )
                            [1] => Array
                                (
                                    [typeHint] => array
                                    [name] => $data
                                    [defaultValue] => array()
                                )
                            [2] => Array
                                (
                                    [name] => $dataName
                                    [defaultValue] => ''
                                )
                        )
                )
        )

    ( ... more lines again ... )

    [prepareTemplate] => Array
        (
            [signature] => prepareTemplate(Text_Template $template)
            [arguments] => Array
                (
                    [0] => Array
                        (
                            [typeHint] => Text_Template

```

```
                [name] => $template
            )
        )
    )
)
)
```

**Example 3.** With this code below (filename reference is */tmp/ns\_sample.php*), we want to get namespaces :

- without imports
- only imports
- all at once

```
<?php
namespace Doctrine\Common\Cache;

use \Memcache;
use My\Full\Classname as Another;

class MemcacheCache extends CacheProvider
{
    public function setMemcache(Memcache $memcache)
    {
    }
}
```

```
<?php
require_once 'Bartlett/PHP/Reflect/Autoload.php';

$source = '/tmp/ns_sample.php';

try {
    $reflect = new PHP_Reflect();
    $reflect->scan($source);

    $namespaces_without_import = $reflect->getNamespaces();
    // OR
    $namespaces_without_import = $reflect->getNamespaces(PHP_Reflect::NAMESPACES_WITHOUT_IMPORT);

    $namespaces_only_import     = $reflect->getNamespaces(PHP_Reflect::NAMESPACES_ONLY_IMPORT);

    $namespaces_all             = $reflect->getNamespaces(PHP_Reflect::NAMESPACES_ALL);

    print_r($namespaces_without_import);
    print_r($namespaces_only_import);
    print_r($namespaces_all);
}
```

```
} catch (Exception $e) {  
    echo 'Caught exception: ' . $e->getMessage() . PHP_EOL;  
}  
?>
```

And here are results we got on STDOUT :

```
<?php  
Array  
(  
    [Doctrine\Common\Cache] => Array  
        (  
            [startLine] => 2  
            [endLine] => 13  
            [file] => /tmp/ns_sample.php  
            [docblock] =>  
            [alias] => Cache  
            [import] =>  
        )  
)  
Array  
(  
    [\Memcache] => Array  
        (  
            [startLine] => 4  
            [endLine] => 4  
            [file] => /tmp/ns_sample.php  
            [docblock] =>  
            [alias] => Memcache  
            [import] => 1  
        )  
    [My\Full\Classname] => Array  
        (  
            [startLine] => 5  
            [endLine] => 5  
            [file] => /tmp/ns_sample.php  
            [docblock] =>  
            [alias] => Another  
            [import] => 1  
        )  
)  
Array  
(  
    [Doctrine\Common\Cache] => Array  
        (  
            [startLine] => 2  
            [endLine] => 13  
            [file] => /tmp/ns_sample.php  
            [docblock] =>  
            [alias] => Cache  
            [import] =>  
        )  
)
```

```
[\\Memcache] => Array
(
    [startLine] => 4
    [endLine] => 4
    [file] => /tmp/ns_sample.php
    [docblock] =>
    [alias] => Memcache
    [import] => 1
)

[My\\Full\\Classname] => Array
(
    [startLine] => 5
    [endLine] => 5
    [file] => /tmp/ns_sample.php
    [docblock] =>
    [alias] => Another
    [import] => 1
)
)
```

---

# Chapter 7. Connect other tokens

Extends PHP\_Reflect core, to match user needs, is possible with usage of the `connect()` function.

Take a real case. *PHP\_CompatInfo v2* need to know what are the internal functions used in a source code before to give the minimal php version requires.

To do so, we need to connect a new parser element to token `T_STRING`. I won't describe the code of this `T_STRING` parser here: it's not the purpose. But we will see how to do.

## Main script.

```
<?php
require_once 'Bartlett/PHP/Reflect/Autoload.php';

$source = '/path/to/PEAR-1.9.2/PEAR.php';

try {
    $options = array('containers' => array('core' => 'internalFunctions')); ❶

    $reflect = new PHP_Reflect($options);
    $reflect->connect(
        'T_STRING', 'PHP_CompatInfo_Token_STRING', ❷
        array('PHP_CompatInfo_TokenParser', 'parseTokenString') ❸
    );
    $reflect->scan($source); ❹

    $functions = $reflect->getInternalFunctions(); ❺
    // OR
    $functions = $reflect['internalFunctions']; ❻

    print_r($functions);
} catch (Exception $e) {
    echo 'Caught exception: ' . $e->getMessage() . PHP_EOL;
}
?>
```

- ❶ we add a new container to store internal PHP functions that will be scanned by our new parser element
- ❷❸ we connect a user callback that have logic to parse the new token `T_STRING`
- ❹ we scan the source file
- ❺❻ we get the results (OOP or array access interface)

## Synopsis of our new token `T_STRING`.

```
<?php

class PHP_CompatInfo_Token_STRING extends PHP_Reflect_Token_STRING
{
    public function getName()
    {
```

```
}

public function getType()
{
}

// private methods ...
}
```

**Synopsis of our callback (param #3 of connect function).**

```
<?php
class PHP_CompatInfo_TokenParser
{
    public static function parseTokenString()
    {
        list($subject, $context, $token) = func_get_args();
        extract($context);

        // ... more
    }
}
```

Final result gave list of 42 PHP functions used in PEAR.php script of PEAR 1.9.2

```
<?php
Array
(
    [0] => define
    [1] => function_exists
    [2] => version_compare
    [3] => zend_version
    [4] => substr
    [5] => ini_set
    [6] => strtolower
    [7] => get_class
    [8] => strcasecmp
    [9] => method_exists
    [10] => register_shutdown_function
    [11] => get_parent_class
    [12] => printf
    [13] => array_key_exists
    [14] => is_a
    [15] => is_null
    [16] => is_string
    [17] => is_callable
    [18] => trigger_error
    [19] => is_array
    [20] => array_push
    [21] => count
    [22] => array_pop
    [23] => in_array
    [24] => array_search
    [25] => is_object
```

```
[26] => end
[27] => is_int
[28] => reset
[29] => intval
[30] => sizeof
[31] => extension_loaded
[32] => ini_get
[33] => dl
[34] => array_reverse
[35] => each
[36] => call_user_func_array
[37] => debug_backtrace
[38] => sprintf
[39] => call_user_func
[40] => defined
[41] => implode
)
```



*PHP\_CompatInfo v2* is an excellent example of what is possible to do by connecting other tokens.

---

# Appendix A. Copyright

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```
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Credits to Sebastian Bergmann on base concept from phpunit/PHP_Token_Stream

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```