



# Fearless Dependency Upgrades

Sebastian Bergmann

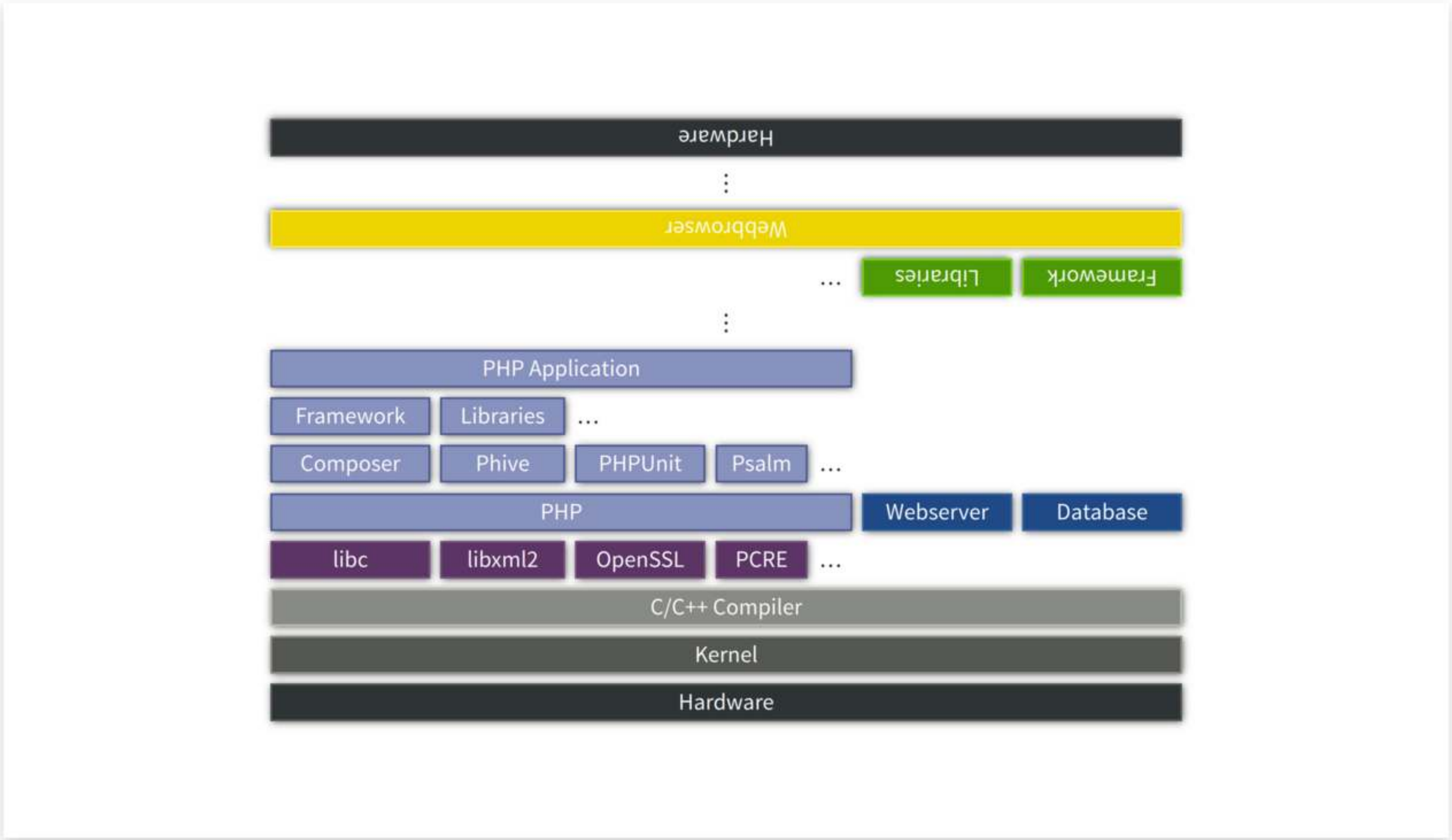




- **Sebastian** since 1978
- **Computers** since 1990
- **PHP** since 1998
- **Open Source** since 1998
- **PHPUnit** since 2000
- **thePHP.cc** since 2009







<https://thephp.cc/presentations/the-php-stacks-supply-chain>

# Dependency Management

Do not manage dependencies without a tool!

# Dependency Management

Understand and respect semantic versioning!

**X.Y.Z**

**Major . Minor . Bugfix**





[https://nitter.net/mpdude\\_de/status/995954776880885760](https://nitter.net/mpdude_de/status/995954776880885760)

# Dependency Management

Keep dependencies up to date!

## Lock file maintenance #1308

 Open renovate wants to merge 1 commit into [6.5.x](#) from [renovate/lock-file-maintenance](#) 

 Conversation 0  Commits 1  Checks 32  Files changed 1




renovate bot commented 6 days ago

Contributor  




This PR contains the following updates:


Update	Change
lockFileMaintenance	All locks refreshed


 This Pull Request updates lock files to use the latest dependency versions.

### Configuration

 **Schedule:** Branch creation - "before 2am" in timezone UTC, Automerge - At any time (no schedule defined).

 **Automerge:** Enabled.

 **Rebasing:** Whenever PR is behind base branch, or you tick the rebase/retry checkbox.

 **Immortal:** This PR will be recreated if closed unmerged. Get [config help](#) if that's undesired.

☐ If you want to rebase/retry this PR, check this box

[Read more](#) about the use of [Renovate Bot](#) within `ocramius/*` projects.

<https://github.com/Roave/BetterReflection/pull/1308>



## Lock file maintenance #1308

 Open renovate wants to merge 1 commit into 6.5.x from renovate/lock-file-maintenance 

 Conversation 0  Commits 1  Checks 32  Files changed 1

Changes from all commits ▾ File filter ▾ Conversations ▾ Jump to ▾ 

12  composer.lock 

```
@@ -2075,16 +2075,16 @@
2075 2075     },
2076 2076     {
2077 2077         "name": "phpunit/php-code-coverage",
2078 -         "version": "9.2.17",
2078 +         "version": "9.2.18",
2079 2079         "source": {
2080 2080             "type": "git",
2081 2081             "url": "https://github.com/sebastianbergmann/php-code-coverage.git",
2082 -         "reference": "aa94dc41e8661fe90c7316849907cba3007b10d8",
2082 +         "reference": "12fddc491826940cf9b7e88ad9664cf51f0f6d0a",
2083 2083     },
2084 2084     "dist": {
2085 2085         "type": "zip",
2086 -         "url": "https://api.github.com/repos/sebastianbergmann/php-code-coverage/zipball/aa94dc41e8661fe90c7316849907cba3007b10d8",
2087 -         "reference": "aa94dc41e8661fe90c7316849907cba3007b10d8",
2086 +         "url": "https://api.github.com/repos/sebastianbergmann/php-code-coverage/zipball/12fddc491826940cf9b7e88ad9664cf51f0f6d0a",
2087 +         "reference": "12fddc491826940cf9b7e88ad9664cf51f0f6d0a",
2088 2088         "shasum": ""
2089 2089     },
2090 2090     "require": {
```

<https://github.com/Roave/BetterReflection/pull/1308>

✖ Lock file maintenance #853

## Summary

jobs

- ✔ PHPUnit tests (lowest, 8.0, ubuntu-l...
- ✔ PHPUnit tests (lowest, 8.0, windows...
- ✔ PHPUnit tests (lowest, 8.1, ubuntu-l...
- ✔ PHPUnit tests (lowest, 8.1, windows...
- ✔ PHPUnit tests (lowest, 8.2, ubuntu-l...
- ✔ PHPUnit tests (lowest, 8.2, windows...
- ✔ PHPUnit tests (highest, 8.0, ubuntu-...
- ✔ PHPUnit tests (highest, 8.0, window...
- ✔ PHPUnit tests (highest, 8.1, ubuntu-...
- ✔ PHPUnit tests (highest, 8.1, window...
- ✔ PHPUnit tests (highest, 8.2, ubuntu-...
- ✔ PHPUnit tests (highest, 8.2, window...
- ✔ PHPUnit tests (locked, 8.0, ubuntu-l...
- ✔ PHPUnit tests (locked, 8.0, windows...
- ✔ PHPUnit tests (locked, 8.1, ubuntu-l...
- ✔ PHPUnit tests (locked, 8.1, windows...
- ✔ PHPUnit tests (locked, 8.2, ubuntu-l...
- ✔ PHPUnit tests (locked, 8.2, windows...

### Mutation tests (locked, 8.1, ubuntu-latest)

- > ☒ Set up job
- > ☒ Checkout
- > ☒ Install PHP
- > ☒ Install dependencies

▼  Infection

<https://github.com/Roave/BetterReflection/pull/1308>

# Dependency Management

Do not update dependencies during deployment!



# Dependency Management

Remove dependencies that are not  
(or no longer) needed!

# Dependency Management

The programming language is also a dependency.

```
commit ee0c4bd58db4184a0e02e569e4e4666a9380aaab
Author: Sebastian Bergmann <sb@sebastian-bergmann.de>
Date: Sat Sep 3 17:52:36 2022 +0200
```

Test with PHP 8.3

Δ .github/workflows/ci.yml

• 82: jobs:

- "8.0"
- "8.1"
- "8.2"
- "8.3"

steps:

- name: Configure Git to avoid issues with line endings

• 132: jobs:

- "8.0"
- "8.1"
- "8.2"
- "8.3"

steps:

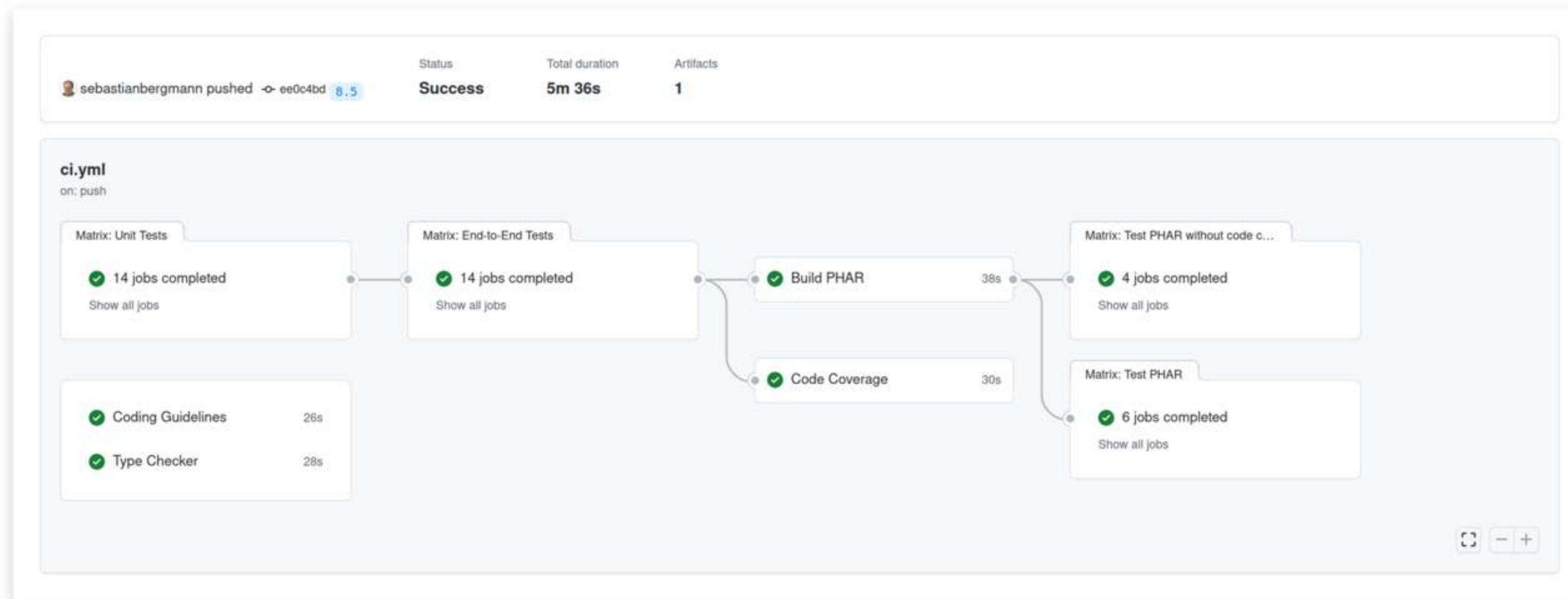
- name: Configure Git to avoid issues with line endings

• 306: jobs:

- "8.0"
- "8.1"
- "8.2"
- "8.3"

<https://github.com/sebastianbergmann/phpunit/commit/ee0c4bd58db4184a0e02e569e4e4666a9380aaab>





<https://github.com/sebastianbergmann/phpunit/actions/runs/2984962028>



### Test Failure with current PHP 8.3.0-dev #5356

sebastianbergmann opened this issue last week · 4 comments



sebastianbergmann commented last week

Owner

Author



Identified the change in PHP 8.3 that causes this using `git bisect` : [php/php-src@ f6c0c60](#) ([php/php-src#11169](#)) by [@nielsdos](#).



sebastianbergmann mentioned this issue last week

Fix GH-11104: STDIN/STDOUT/STDERR is not available for CLI without a script [php/php-src#11169](#)

Closed

<https://github.com/sebastianbergmann/phpunit/issues/5356#issuecomment-1539659147>









**Nikita Popov** @nikita\_ppv · Nov 15, 2020

Somewhat ironically, the largest hurdle to PHP version upgrades are open-source libraries that bump their minimum PHP version requirements too aggressively for ideological reasons, achieving the exact opposite of the desired effect.



5



86



296



**Nikita Popov** @nikita\_ppv · Nov 15, 2020

Making code compatible with a new PHP version is usually trivial. However, making the test suite compatible with the newer PHPUnit version this requires can often be very time consuming, requiring larger rewrites of testing/mock code.



5



6



68



**Nikita Popov**

@nikita\_ppv

And if your own library wants to retain a longer support window, you're in for a world of pain trying to juggle incompatible PHPUnit versions in your CI.

10:14 PM · Nov 15, 2020

[https://nitter.net/nikita\\_ppv/status/1328084058795089921](https://nitter.net/nikita_ppv/status/1328084058795089921)



**Sebastian Bergmann**

@s\_bergmann

I changed PHPUnit's policy for PHP support going forward. I am working hard on adding support for PHP 8 to PHPUnit 8. Yet I am still confronted with a constant stream of "Sebastian is not doing enough" and "Sebastian harms the PHP ecosystem".

6:05 PM · Nov 29, 2020





Ocramius commented on Oct 4 • edited ▾

Member



## Dependency ranges **CANNOT** be un-bounded

Set PHP constraint to normal industry default and recommended setting

Even if PHP were to follow SemVer, a constraint that only defines a lower bound via `>=` is a clear mistake, as it will cause issues when dependencies are updated in many years to come (on PHP 9, 10, etc.).

In practice, a `composer update` on a future system running PHP 10 may install `laminas/laminas-diactoros:2.18.0` (assuming we'd relax the range there), leading to clear incompatibilities.

The "industry default" is 100% erroneous here.

Regardless if the dependency is PHP or not, please respect SemVer, and only support what you are 100% confident will work. Ranges that support unreleased major versions are bugs.

<https://github.com/laminas/laminas-diactoros/issues/117#issuecomment-1267306142>





**Jordi Boggiano**

@seldaek

Replying to [@asgrim](#) and [@Ocranius](#)

Also please for safety use `--ignore-platform-req=php+`

With the plus sign it allows using php 8.2 where 8.1 is required by a pkg, but not using php 8.0 if 8.1 is required.

7:26 PM · Oct 4, 2022

<https://nitter.net/seldaek/status/1577349406382342144>



<https://thephp.cc/articles/the-death-star-version-constraint>





Without automated tests,  
all behaviour is undefined.



„It may be impossible to know the "correct" behavior or safe way to refactor when making changes to or around legacy code that has no tests. This is especially true when no specification is available, or when other code may rely on flaws in the code.”

<https://wiki.c2.com/?CharacterizationTest>



„In these situations, it is typically best to assume that the old behavior must be preserved unless explicit changes are required.”

<https://wiki.c2.com/?CharacterizationTest>

„In order to preserve the old behavior, **characterization tests** are written that use the system as it has already been used.”

<https://wiki.c2.com/?CharacterizationTest>

```
2 require __DIR__ . '/includes/config.php';
3 require __DIR__ . '/includes/db.php';
4
5 $result = $DB->query(
6     'SELECT *
7       FROM order, customer
8       WHERE order.customer_id = customer.customer_id
9       AND order.date
10      BETWEEN "' . $_GET['year'] . '-01-01"
11              AND "' . $_GET['year'] . '-12-31";'
12 );
13
14 $orders = [];
15
```

htdocs/orders\_as\_json.php



```
11         AND "" . $_GET['year'] . '-12-31";'
12     );
13
14     $orders = [];
15
16     foreach ($result as $row) {
17         $orders[] = [
18             'Order ID' => $row['order_id'],
19             'Date'      => (new DateTimeImmutable($row['date']))->format('F, j Y'),
20             'Customer' => $row['name'] . ', ' . $row['address']
21         ];
22     }
23
24     header('Content-Type: application/json; charset=utf-8');
25     print json_encode($orders) . PHP_EOL;
```

htdocs/orders\_as\_json.php

```

11         AND "" . $_GET['year'] . "-12-31";
12     );
13
14     $orders = [];
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16     foreach ($result as $row) {
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18             'Order ID' => $row['order_id'],
19             'Date'      => (new DateTimeImmutable($row['date']))->format('F, j Y'),
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21         ];
22     }
23
24     header('Content-Type: application/json; charset=utf-8');
25     print json_encode($orders) . PHP_EOL;

```

htdocs/orders\_as\_json.php

```
1 <?php
2 require __DIR__ . '/includes/config.php';
3 require __DIR__ . '/includes/db.php';
4
5 $result = $DB->query(
6     'SELECT *
7       FROM order, customer
8       WHERE order.customer_id = customer.customer_id
9             AND order.date
10            BETWEEN "' . $_GET['year'] . '-01-01"
11                  AND "' . $_GET['year'] . '-12-31";'
12 );
13
14 $orders = [];
15
```

htdocs/orders\_as\_json.php



```
1 <?php
2 define('MYSQL_HOSTNAME', 'localhost');
3 define('MYSQL_USERNAME', 'test');
4 define('MYSQL_PASSWORD', 'password');
5 define('MYSQL_DATABASE', 'test');
```

htdocs/includes/config.php

```
1 <?php
2 $DB = new mysqli(MYSQL_HOSTNAME, MYSQL_USERNAME, MYSQL_PASSWORD, MYSQL_DATABASE);
```

htdocs/includes/db.php

```
$ http http://localhost:8080/orders_as_json.php?year=2023
```

```
HTTP/1.1 200 OK
```

```
Connection: close
```

```
Content-Type: application/json; charset=utf-8
```

```
Date: Tue, 23 May 2023 01:23:45 GMT
```

```
Host: localhost:8080
```

```
X-Powered-By: PHP/8.3.0-dev
```

```
{  
  "Customer": "ACME GmbH, Foostrasse 123, 12345 Barhausen",  
  "Order ID": "1",  
  "Date": "May 23, 2023"  
}
```

```

9  #[Group('characterization')]
10 #[Large]
11 final class OrdersTest extends TestCase
12 {
13     public function test_can_be_retrieved_as_JSON_document_by_HTTP_request(): void
14     {
15         $response = $this->request(
16             'http://localhost:8080/orders_as_json.php?year=2023'
17         );
18
19         $this->assertSame(
20             [
21                 [
22                     'Order ID' => '1',
23                     'Date'     => 'May 23, 2023',

```

tests/end-to-end/OrdersTest.php



```
20         http://localhost:8080/orders_as_json.php?orderId=2023
17     );
18
19     $this->assertSame(
20         [
21             [
22                 'Order ID' => '1',
23                 'Date'     => 'May 23, 2023',
24                 'Customer' => 'ACME GmbH, Foostrasse 123, 12345 Barhausen',
25             ],
26         ],
27         json_decode($response['body'], true)
28     );
29
30     $this->assertContains(
```

tests/end-to-end/OrdersTest.php

```

25         ],
26     ],
27     json_decode($response['body'], true)
28 );
29
30 $this->assertContains(
31     'Content-Type: application/json; charset=utf-8',
32     $response['headers']
33 );
34 }
35
36 /**
37  * @return array{body: string, headers: list<string>}
38  */

```

tests/end-to-end/OrdersTest.php

```

32         $response['headers']
33     );
34 }
35
36 /**
37  * @return array{body: string, headers: list<string>}
38  */
39 private function request(string $url): array
40 {
41     return [
42         'body'    => file_get_contents($url),
43         'headers' => $http_response_header
44     ];
45 }
46 }

```

tests/end-to-end/OrdersTest.php



```
$ phpunit --no-progress --testdox
PHPUnit 10.1.3 by Sebastian Bergmann and contributors.
```

```
Runtime:      PHP 8.3.0-dev
Configuration: /home/sb/fearless-dependency-upgrades/phpunit.xml
```

```
Time: 00:00.987, Memory: 6.00 MB
```

### Orders

✓ Can be retrieved as JSON document by HTTP request

```
OK (1 test, 2 assertions)
```

-  <https://thephp.cc>
-  <https://talks.thephp.cc>
-  [sebastian@thephp.cc](mailto:sebastian@thephp.cc)
-  [@sebastian@thephpcc.social](#)  
[@sebastian@phpc.social](#)

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