What's new in *PHP 7.4*

PHP User Group Rheinhessen #62

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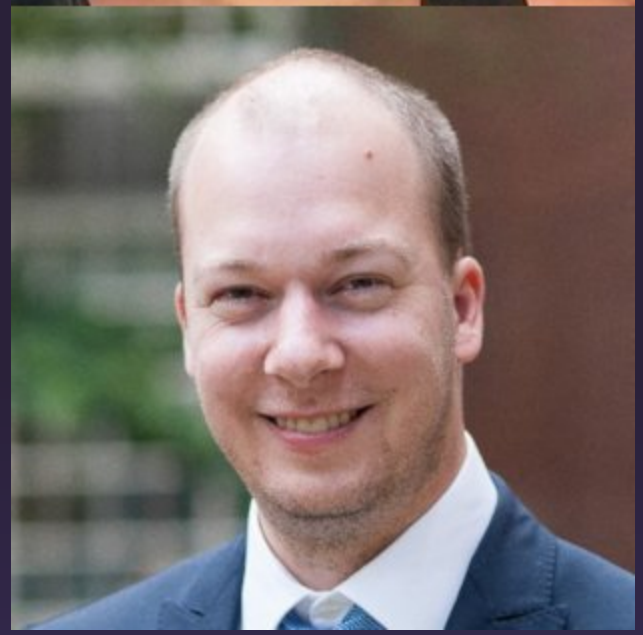
About

Release Managers

- Peter Kokot
- Derick Rethans

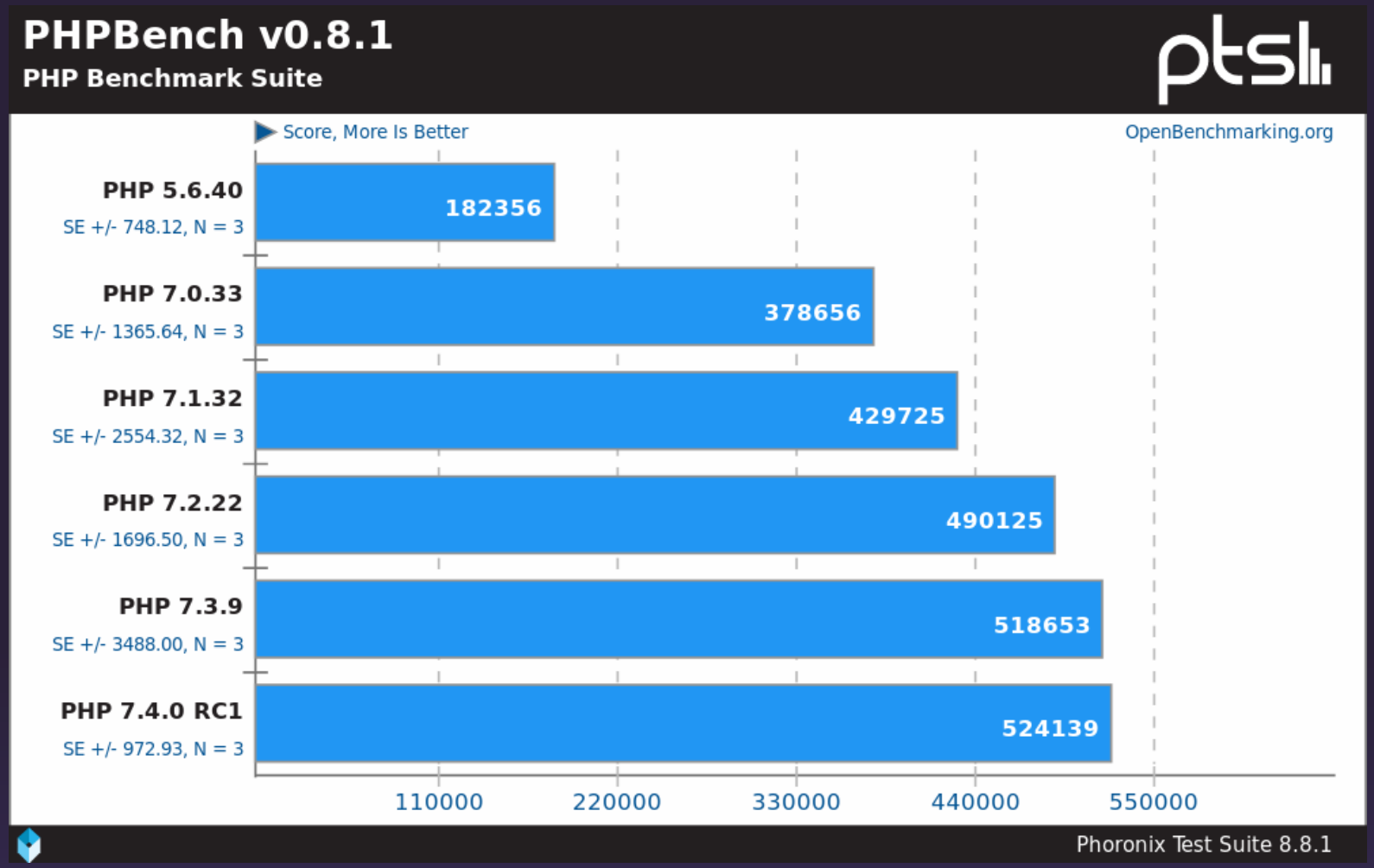
Timeline

- 06.06.2019: PHP 7.4 Alpha 1
- 18.07.2019: Alpha 2
- 28.11.2019: Release



Performance

PHP 7.4RC1 Benchmarks




LEGENDS
LEGENDS
RINGLING BROS. BARNUM & BAILEY

Spread Operator for Array (43:1)

The *spread* operator `...` can now be used with Arrays and Traversables.

```php
$parts = ['apple', 'pear'];
$fruits = ['banana', 'orange', ...$parts, 'watermelon'];
var_dump($fruits);
```

[Demo]

```php
function buildArray(): array {
  return ['red', 'green', 'blue'];
}
$arr1 = [...buildArray(), 'pink', 'violet', 'yellow'];
```

[Demo]

```php
function generator() {
    for ($i = 3; $i <= 5; $i++) {
        yield $i;
    }
}
$arr1 = [0, 1, 2, ...generator()];
```

[Demo]

Arrow functions 2.0 (51:8)

```php
$a = [1, 2, 3, 4, 5];
$b = array_map(fn($n) => $n * $n * $n, $a);
print_r($b);
```

[Demo]

```php
$factor = 10;
$calc = function($num) use($factor){
        return $num * $factor;
};

// PHP 7.4
$calc = fn($num) => $num * $factor;
echo $calc(2);
```

[Demo]

Null Coalescing Assignment Operator (37:4)

```php
$data['comments']['user_id'] = $data['comments']['user_id'] ?? 'value';

// PHP 7.4
$data['comments']['user_id'] ??= 'value';
```

[Demo]

Typed Properties 2.0 (70:1)

`bool`, `int`, `float`, `string`, `array`, `object`, `iterable`, `self`, `parent`, any class or interface name, and nullable types (`?type`), but not `void` and `callable`.

```php
class User {
  public int $id;
  public static iterable $staticProp;
  public string $str = "foo";
  public ?string $nullableStr; // does not default to `null`!
  protected string $name;
  private float $lat, $lon;
}
$user = new User();
$user->id = 123;
$user->str = ['bar']; // Fatal error: Uncaught TypeError

var_dump($user->nullableString) // Uncaught Error …
```

[Demo]

Covariant Returns and Contravariant Parameters (39:1)

Kovarianz und Kontravarianz (Wikipedia DE)

```php
// Kovarianz
interface Factory {
  function make(): object;
}
class UserFactory implements Factory {
  function make(): User;
}

// Kontravarianz
interface Concatable {
  function concat(Iterator $input);
}
class Collection implements Concatable {
  function concat(iterable $input) {/*…*/} // accepts all iterables, not just Iterator
}
```

Numeric literal separator (33:11)

> Enable improved code readability by supporting an underscore in numeric literals to visually separate groups of digits.

```
$threshold = 1_000_000_000;  // a billion!
$testValue = 107_925_284.88; // scale is hundreds of millions
$discount = 135_00;          // $135, stored as cents

6.674_083e-11; // float
299_792_458;   // decimal
0xCAFE_F00D;   // hexadecimal
0b0101_1111;   // binary
0137_041;      // octal
```

Preloading (48:0)

`opcache.preload` -Setting in `php.ini`

> Using this directive we will specify a single PHP file - which will perform the preloading task. Once loaded, this file is then fully executed - and may preload other files, either by including them or by using the `opcache_compile_file()` function.

```
// preload.php
<?php
function _preload($preload) {/* recursive preloading */}

set_include_path(get_include_path() . PATH_SEPARATOR . realpath("/var/www/ZendFramework/library"));
_preload(["/var/www/ZendFramework/library"]);
```

> preloaded files remain cached in opcache memory forever. Modification of their corresponding source files won’t have any effect without another server restart.

New custom object serialization mechanism (20:7)

```php
class A {
    private $prop_a;
    public function __serialize(): array {
        return ["prop_a" => $this->prop_a];
    }
    public function __unserialize(array $data) {
        $this->prop_a = $data["prop_a"];
    }
}
class B extends A {
    private $prop_b;
    public function __serialize(): array {
        return [
            "prop_b" => $this->prop_b,
            "parent_data" => parent::__serialize(),
        ];
    }
    public function __unserialize(array $data) {
        parent::__unserialize($data["parent_data"]);
        $this->prop_b = $data["prop_b"];
    }
}
```

FFI - Foreign Function Interface (24:15)

> …extend PHP with a simple FFI API designed after LuaJTI/FFI and Python/CFFI […]. This API allows loading shared libraries (.DLL or .so), calling C functions and accessing C data structures, in pure PHP.

```php
// create FFI object, loading libc and exporting function printf()
$ffi = FFI::cdef(
    "int printf(const char *format, ...);", // this is a regular C declaration
    "libc.so.6");
// call C's printf()
$ffi->printf("Hello %s!\n", "world"); // Hello world!

$x = FFI::new("int");
$x->cdata = 5;
var_dump($x->cdata); // int(5)
```

`mb_str_split` - Split multibyte string (10:1)

```php
print_r(mb_str_split("победа", 2));

// Array
// (
//     [0] => по
//     [1] => бе
//     [2] => да
// )
```

[Demo]

Change the precedence of the concatenation operator (31:4)

```php
echo "sum: " . $a + $b;

// current behavior: evaluated left-to-right
echo ("sum: " . $a) + $b;

// desired behavior: addition and subtraction have a higher precendence
echo "sum :" . ($a + $b);
```

[Demo]


MORE
THIS WAY

More 1/2

- Weak References: new class `WeakReference`
- E_WARNING for invalid containers: `$var = [123]; echo $var[0][1];`
- base_convert improvements: `base_convert("hello world", 16, 10); // 237`
- Escape PDO "?" parameter placeholder:

```
$s = $pdo->prepare('SELECT * FROM tbl WHERE json_col ?? ?'); $s->execute(['foo']);  ⇨ SELECT * FROM tbl WHERE json_col ? 'foo'
```

More 2/2

- Password Hashing Registry

```
print_r(password_algos());
Array (
    [0] => "2y" // Ident for "bcrypt"
    [1] => "argon2i"
    [2] => "argon2id"
)
```

- Argon2 support from sodium
- Allow throwing exceptions from `__toString()` (42:0)
- Always available hash extension (30:0)
- Improve openssl_random_pseudo_bytes() (30:0)
- Reflection for references (30:1): `final class ReflectionReference`

Deprecations

- Deprecate curly braces array and string syntax access
- Deprecate and remove ext/interbase
- Deprecate left-associative ternary operator:

```
return $a == 1 ? 'one' : $a == 2 ? 'two' : $a == 3 ? 'three' :
'other';
```

- Unbundle ext/wddx
- Unbundle ext/recode

Links

- All RFCs für PHP 7.4
- Blogpost on Kinsta
- Slides from Nikita Popov


Thanks for listening and discussing!