

php 新年新气象

Twosee / 陈曹奇昊

JetBrains - 码上道

2022 / 01



个人介绍



Twosee - 陈曹奇昊

KK集团后端研究员

24岁

● Swoole核心开发者、Swow创始人

长期活跃于PHP或异步网络IO相关的
各大开源项目社区

● PHP官方开发组成员

PHP内核贡献者，扩展开发者

● 异步网络IO相关开源项目贡献者

libuv贡献者、saber库作者...

Swoole 新气象

 github.com/swoole

支持PHP-8.x 开启 v5 版本时代

全面适配 PHP-8.x 并接入强类型声明
v5 版本不再兼容 PHP-7.x , v4.8 将成为 LTS

逐步增强底层服务治理能力

name_resolver 配置项、 max_retries失败时
自动重试、 max_concurrency限制最大请求

Swoole Dashboard

强大的PHP专属开源服务监控系统

Swoole 新气象

 github.com/swoole

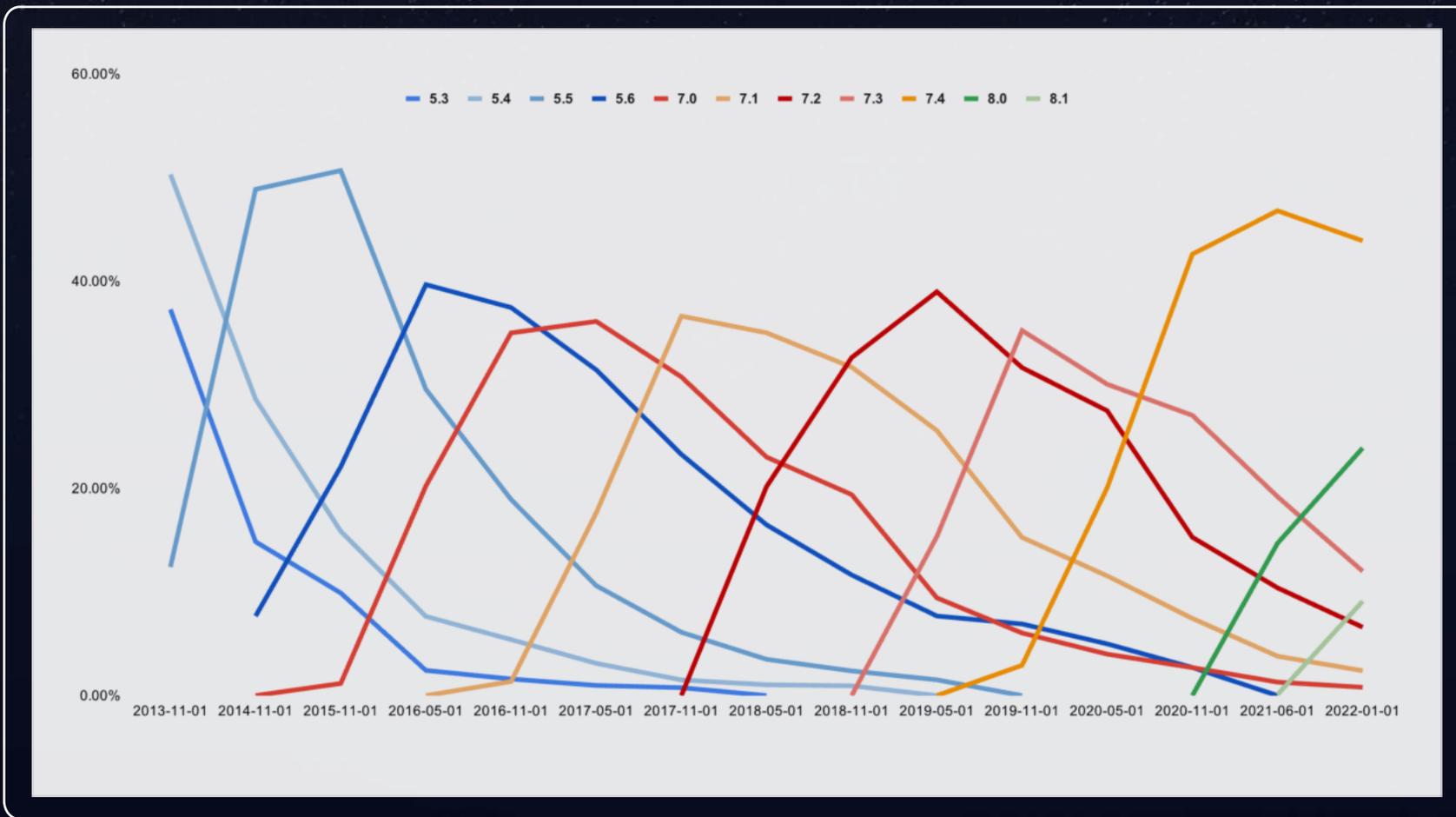
 支持PHP-8.x 开启 v5 版本时代

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PHP 版本情况统计

PHP-7.4和PHP-8.0共占70%



数据来自 packagist | 图源 stitcher.io



Swoole社区的弄潮儿

拥抱变化，敢为人先

 github.com/swoole





PHP 8 拥有更完整的类型系统

结合各种大刀阔斧的改进，PHP 8 的普及将是大势所趋

```
Repository Diff: StubGenerator.php
4003753d 5c7b6a49 (StubGenerator.php) 13 differences

/** @return $this */
public function setNoinspection(bool $enable = true): static
{
    $this->noinspection = $enable;
}

$swow > StubGenerator > generate()
    $declarations[] = $this->generateFunctionDeclaration($functionOrClass);
    } elseif ($functionOrClass instanceof ReflectionClass) {
        $declarations[] = $this->generateClassDeclaration($functionOrClass);
    } else {
        throw new InvalidArgumentException('Unknown type ' . get_class($functionOrClass));
    }
}

protected static function convertValueToString($value): string
{
    switch ($value) {
        case is_int($value):
        case is_float($value):
            return (string) $value;
        case is_null($value):
            return 'null';
        case is_bool($value):
            return $value ? 'true' : 'false';
        case is_string($value):
            return '\\' . (ctype_print($value) ? $value : bin2hex($value)) . '\\';
        case is_array($value):
            return '[]';
        default:
            return var_export($value, true);
    }
}

public function setNoinspection(bool $enable = true): static
{
    $this->noinspection = $enable;
}

$swow > StubGenerator > generate()
    $declarations[] = $this->generateFunctionDeclaration($functionOrClass);
    } elseif ($functionOrClass instanceof ReflectionClass) {
        $declarations[] = $this->generateClassDeclaration($functionOrClass);
    } else {
        throw new InvalidArgumentException('Unknown type ' . $functionOrClass::class);
    }
}

return match (true) {
    is_int($value), is_float($value) => (string) $value;
    is_null($value) => 'null';
    is_bool($value) => $value ? 'true' : 'false';
    is_string($value) => '\\' . (ctype_print($value) ? $value : bin2hex($value)) . '\\';
    is_array($value) => '[]';
    default => var_export($value, true);
};

protected function getConstantMap(): array
{
    $swow > StubGenerator > generateConstantDeclarationOfNamespace()

    return $declaration;
}
```

只有亲自尝试把项目升级到PHP 8，才能体会到的快乐



IDE强类型声明支持 助力开发

拥抱官方StubGenerator

强类型函数参数提示

The screenshot shows an IDE with three main panels:

- Left Panel (Project Explorer):** Lists files in the 'stubs' directory, including 'php_swoole_channel_coro_stub.php' and 'php_swoole_channel_coro_arginfo.h'.
- Middle Panel (PHP Code):** Shows a 'go(function () { ... })' block with comments and function calls like '\$channel->push()' and '\$channel->pop()'. A tooltip shows the return type 'data: mixed, [timeout: float(int = -1)]'.
- Bottom Panel (Class Definition):** Shows the 'class Channel' with methods: 'push(mixed \$data, float \$timeout = -1): bool', 'pop(float \$timeout = -1): mixed', 'stats(): array', 'close(): bool', 'length(): int', and 'isEmpty(): bool'.
- Right Panel (Generated C Definitions):** Shows the corresponding C code for the 'push' method, including 'ZEND_BEGIN_ARG_INFO_EX' and 'ZEND_ARG_TYPE_INFO' macros.

PHP编写 Stub文件

生成C定义

Swoole 新气象

 github.com/swoole



逐步增强底层服务治理能力

- 增加 Server 配置项 `max_concurrency` 可限制 HTTP1/2 服务的最大并发请求
- 增加 `Coroutine\Http\Client` 配置项：`max_retries`，请求失败时自动重试
- 增加 `name_resolver` 配置项，可使用服务发现组件替换 DNS

Swoole 新气象

 github.com/swoole



Swoole Dashboard

强大的PHP专属开源服务监控系统

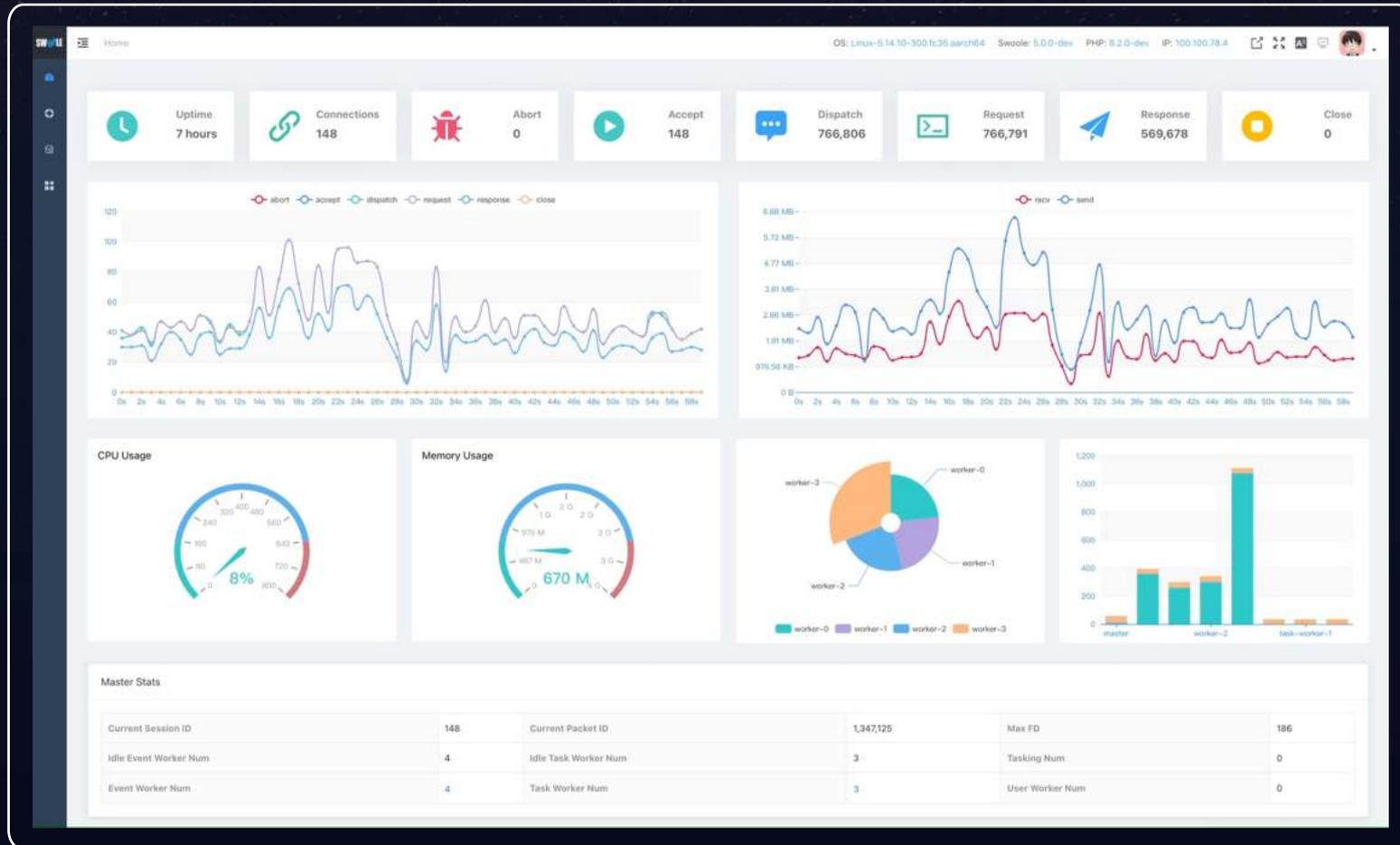


Swoole Dashboard

为PHP和Swoole量身打造的监控系统

PHP编写，一行代码开启后端支持

```
$http->set(['admin_server' => '0.0.0.0:9502',]);
```



Swoole Dashboard

为PHP和Swoole量身打造的监控系统

主页面

查看已加载的扩展

查看已加载的源文件

查看已声明的类

查看已注册的函数

查看已定义的常量

查看已声明的接口

查看全局变量

查看所有对象

查看所有进程

查看所有协程

查看所有连接信息

查看所有事件

查看所有定时器

查看Composer依赖

Home / ZendVM / Objects

OS: Linux-5.14.10-300.fc35.aarch64 Swoole: 5.0.0-dev PHP: 8.2.0-dev IP: 100.100.78.4

Source File: Class Name:

Object ID	Object Hash	Class Name	Source File	Memory Size	Actions
1	00000000000000001000000000000000	Composer\Autoload\ClassLoader	/media/psf/下载/swoole-dashboard-backend-demo/vendor/composer/ClassLoader.php:43	56 B	<input type="button" value="Var Dump"/>
2	00000000000000002000000000000000	Swoole\Server\Port	-	670 B	<input type="button" value="Var Dump"/>
3	00000000000000003000000000000000	Swoole\Http\Server	-	1.40 KB	<input type="button" value="Var Dump"/>
4	00000000000000004000000000000000	Swoole\Connection\Iterator	-	56 B	<input type="button" value="Var Dump"/>
5	00000000000000005000000000000000	Swoole\Connection\Iterator	-	56 B	<input type="button" value="Var Dump"/>
6	00000000000000006000000000000000	Swoole\Server\Port	-	1.13 KB	<input type="button" value="Var Dump"/>
7	00000000000000007000000000000000	Swoole\Connection\Iterator	-	56 B	<input type="button" value="Var Dump"/>
8	00000000000000008000000000000000	Closure	-	56 B	<input type="button" value="Var Dump"/>
9	00000000000000009000000000000000	Swoole\Server\Port	-	331 B	<input type="button" value="Var Dump"/>
10	0000000000000000a000000000000000	Swoole\Connection\Iterator	-	56 B	<input type="button" value="Var Dump"/>

Total 46 10/page



Swoole Dashboard

查看某个变量或对象的细节

SWOLE

- Home
- ZendVM
- Extensions
- Included Files
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- Interfaces
- Globals
- Objects
- Resources
- Swoole
- Processes
- Coroutines
- Connections
- Events
- Timers
- Composer

Home / ZendVM / Globals

Globals Name	
ID	Value
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Total 13 10/page 1

PHP: 8.2.0-dev IP: 100.100.78.4

Detail
copy

```

{
  setting: {
    admin_server: "0.0.0.0:9502",
    worker_num: 4,
    reactor_num: 2,
    log_level: 2,
    task_worker_num: 3,
    output_buffer_size: 4294967295,
    max_connection: 1024,
    open_http_protocol: true,
    open_mqtt_protocol: false,
    open_eof_check: false,
    open_length_check: false
  },
  connections: {},
  host: "127.0.0.1",
  port: 9501,
  type: 1,
  mode: 2,
  ports: [
    {
      host: "127.0.0.1",
      port: 9501,
      type: 1,
      sock: 4,
      setting: {
        admin_server: "0.0.0.0:9502",
        worker_num: 4,
        reactor_num: 2,
        log_level: 2,
        task_worker_num: 3
      }
    },
    connections: {}
  ],
  {
    host: "127.0.0.1",
    port: 9504,
    type: 2,
    sock: 5,
    setting: {
      admin_server: "0.0.0.0:9502",
      worker_num: 4,
      reactor_num: 2,
      log_level: 2,
      task_worker_num: 3,
      output_buffer_size: 4294967295,
      max_connection: 1024,
      open_http_protocol: true,
      open_mqtt_protocol: false,
      open_eof_check: false,
      open_length_check: false
    }
  },
  connections: {}
}

```



Swoole Dashboard

查看所有连接状态并可以进行控制

SWOOLE

[Home](#) / [Swoole](#) / [Connections](#)

OS: Linux-5.14.10-300.fc35.aarch64 Swoole: 5.0.0-dev PHP: 8.2.0-dev IP: 100.100.78.4

Session ID	FD	Socket Name	Server Port	Connect Time	Last Send Time	Last Received Time	Send Queued Bytes	Recv Queued Bytes	Number Of Bytes Send	Number Of Bytes Received	Actions
1	39	127.0.0.1:59926	127.0.0.1:9503	19-10:45.949	18-17:37.997	18-17:37.996	0 B	0 B	8.52 MB	8.30 MB	Close Reset
2	40	127.0.0.1:59928	127.0.0.1:9503	19-10:45.949	18-17:51.988	18-17:51.988	0 B	0 B	8.48 MB	8.26 MB	Close Reset
3	41	127.0.0.1:59930	127.0.0.1:9503	19-10:45.949	18-17:46.986	18-17:46.985	0 B	0 B	8.46 MB	8.24 MB	Close Reset
4	42	127.0.0.1:59932	127.0.0.1:9503	19-10:45.949	18-17:49.995	18-17:49.995	0 B	0 B	8.51 MB	8.29 MB	Close Reset
5	43	127.0.0.1:59934	127.0.0.1:9503	19-10:45.949	18-17:48.995	18-17:48.992	0 B	0 B	8.57 MB	8.35 MB	Close Reset
6	44	127.0.0.1:59936	127.0.0.1:9503	19-10:45.949	18-17:48.997	18-17:48.996	0 B	0 B	8.46 MB	8.23 MB	Close Reset
7	45	127.0.0.1:59940	127.0.0.1:9503	19-10:45.949	18-17:50.442	18-17:50.442	0 B	0 B	8.50 MB	8.27 MB	Close Reset
8	46	127.0.0.1:59942	127.0.0.1:9503	19-10:45.949	18-17:44.41	18-17:44.40	0 B	0 B	8.54 MB	8.32 MB	Close Reset
9	47	127.0.0.1:59944	127.0.0.1:9503	19-10:45.950	18-17:49.00	18-17:48.999	0 B	0 B	8.48 MB	8.26 MB	Close Reset
10	48	127.0.0.1:59946	127.0.0.1:9503	19-10:45.950	18-17:45.696	18-17:45.695	0 B	0 B	8.44 MB	8.22 MB	Close Reset

Total 148 10/page [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) ... [15](#) Go to

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- [Constants](#)
- [Interfaces](#)
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- [Objects](#)
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- [Swoole](#)
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- [Coroutines](#)
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- [Composer](#)



Swoole Dashboard

查看所有协程状态、调用栈等

SWOLE

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- Objects
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- Swoole
- Processes
- Coroutines
- Connections
- Events
- Timers
- Composer

Home / Swoole / Coroutines
OS: Linux-5.14.10-300.fc35.aarch64 Swoole: 5.0.0-dev PHP: 8.2.0-dev IP: 100.100.78.4

ID	Elapsed	Stack Usage	Called Function	Source File	Actions
12159	1 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	Back Trace
11953	20 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	Back Trace
11931	22 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	Back Trace
11924	23 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	Back Trace
11881	26 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	Back Trace
11867	28 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	Back Trace
11839	30 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	Back Trace
11815	32 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	Back Trace
11794	33 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	Back Trace
11790	33 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	Back Trace

Total 906

10/page
<
1
2
3
4
5
6
...
91
>

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Swoole Dashboard

支持精确查看执行到源文件中的哪一行

SWOOLE

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- Objects
- Resources
- Swoole**
- Processes
- Coroutines
- Connections
- Events
- Timers
- Composer

```

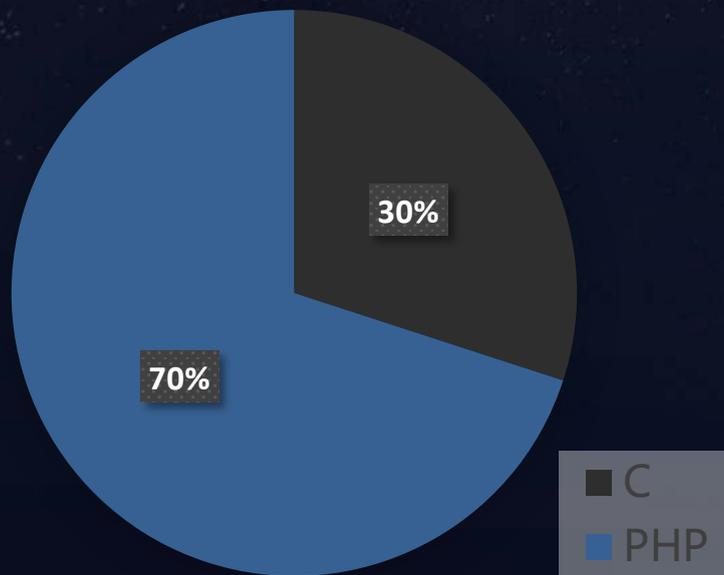
35     }
36 }
37
38 $n = 10;
39 while ($n-- > 0) {
40     TestClass::$testValue[] = base64_encode(random_bytes(rand(100, 800)));
41 }
42
43 if (function_exists('str_starts_with')) {
44     function str_starts_with($haystack, $needle)
45     {
46         return strpos($haystack, $needle) === 0;
47     }
48 }
49
50 $sport_dgram = $server->listen("127.0.0.1", 9504, SWOOLE_SOCKET_DGRAM);
51 $sport_dgram->on('Packet', function ($s, $p, $c) {
52     var_dump($p, $c);
53 });
54
55 $sport = $server->listen("127.0.0.1", 9503, SWOOLE_SOCKET_TCP);
56
57 $sport->on('Receive', function ($serv, $fd, $tid, $data) {
58     if ($data == 'slow client') {
59         $serv->send($fd, str_repeat('A', rand(2 * 1024 * 1024, 16 * 1024 * 1024)));
60         return;
61     } elseif (str_starts_with($data, 'slow_worker')) {
62         sleep(10000);
63         return;
64     } elseif (str_starts_with($data, 'random_traffic')) {
65         $serv->send($fd,
66             "Swoole Reply: " . random_bytes(rand(65536, 512 * 1024)));
67         return;
68     } elseif (str_starts_with($data, 'recv_only')) {
69         return;
70     }
71     $serv->send($fd, "Swoole Reply: $data");
72 });
73
74 $sport->set(['open_http_protocol' => false]);
75
76 $server->set([
77     'admin_server' => '0.0.0.0:9502',
78     'worker_num' => 4,
79     'reactor_num' => 1,
80     'log_level' => SWOOLE_LOG_INFO,
81     'task_worker_num' => 3,
82 ]);
83
84 $server->on('workerStart', function (Server $serv, $wid) {
85     if ($wid == 3) {
86         $n = 5;
87         while ($n-- > 0) {
88             go(function () {
89                 System::sleep(rand(10000, 99999999));
90             });
91         }
92         TestClass::fun();
93     } elseif ($wid == 1) {
94         $n = 3;
95         while ($n-- > 0) {
96             Timer::tick(($n + 1) * 2000, function () {
97                 echo "[" . date('Y-m-d H:i:s') . "]\ntimer callback\n";
98             });
99         }
100     }

```



Swow - 探索下一代协程技术

致力于使用最小C核心及多数PHP代码以支持PHP高性能网络编程



追求性能与效率的平衡

最小C核心

仅实现性能敏感型功能和无法用PHP实现的功能，实现性能与效率的完美平衡

全新协程模型

破除多个技术障碍，释放协程调度能力

最强跨平台支持

platform Win32 | GNU/Linux | macOS | FreeBSD

architecture x86-64 | ARM64 | mips64el | riscv64

甚至支持在 Windows Arm64 上原生运行

Swow 新气象

 github.com/swow

v1.0 版本即将到来

已攻克大量技术难题，计划今年在足够的生产验证后发布第一个正式版本

OS 创想

让 ZendVM 真的像是虚拟机

全面自动化

测试自动化、分析自动化、发布自动化...

Swow 新气象

 github.com/swow



OS 创想

让 ZendVM 真的像是虚拟机



```
twosee  ㉿#1
-----
Swow OS
-----
> r
OS is running...
> php hello_world.php
Hello world
> task * * * * * downloadWallpaper
> [✓] Task <downloadWallpaper> done at 2022-01-13 07:35:50
> [✓] Task <downloadWallpaper> done at 2022-01-13 07:36:50
> ps
-----
| id | state | round | elapsed | executing | source position |
-----
| 1 | waiting | 35 | 2m22s885ms | Swow\Sync\waitAll() | demo.php(59) |
| 3 | waiting | 63 | 2m11s254ms | sleep(60) | Debugger.php(1150) |
-----
> kill 3
Coroutine#3 killed
> killall
All coroutines has been killed
> ps
-----
| id | state | round | elapsed | executing | source position |
-----
| 1 | waiting | 35 | 2m29s970ms | Swow\Sync\waitAll() | demo.php(59) |
-----
>
```

在PHP的VM里开一个新的协程
运行简单的PHP脚本

一行命令开启定时任务

PS查看所有运行的协程

kill 杀掉定时任务对应的协程

killall 杀掉所有协程

再次PS查看所有运行的协程
只剩下主协程在运行

Swow 新气象

 github.com/swow



全面自动化

测试自动化、分析自动化、发布自动化...



全面自动化

全平台自动测试 & 高覆盖率、全自动发布
代码质量自动检测、PHP各版本兼容性检测

All checks have passed
24 successful checks

- tests / PHP 8.0 nts Test on windows-2019 (push)
- tests / PHP 8.0 ts Test on windows-2019 (push)
- bb/x86_64_freebsd_php8.1 — Build done.
- bb/arm64_arch_php8.0 — Build done.
- bb/arm64_arch_php8.1 — Build done.
- bb/arm64_macos_php8.0 — Build done.
- bb/arm64_macos_php8.1 — Build done.
- bb/mips64el_debian_php8.0 — Build done.
- bb/mips64el_debian_php8.1 — Build done.
- bb/riscv64_debian_php8.0 — Build done.
- bb/riscv64_debian_php8.1 — Build done.
- bb/x86_64_freebsd_php8.0 — Build done.
- codecov/patch — Coverage not affected when comparing 0418c0d...e7dee7
- codecov/project — 73.08% (+0.00%) compared to 0418c0d

1620 Lines (1386 sloc) | 64.1 KB

Summary

We regard a comparison have same result reported by run-test.php and same PHP output as "exactly same result", and breaking-change tests over not skipped tests as "real bc rate"

Tests have exactly same result	Tests ran	All tests found	Overall bc rate	Real bc rate
16016	13856	16072	0.3484%	0.4042%

Behavior changes

ext/ftp/tests/002.phpt
Test PASSED in control but FAILED in experiment

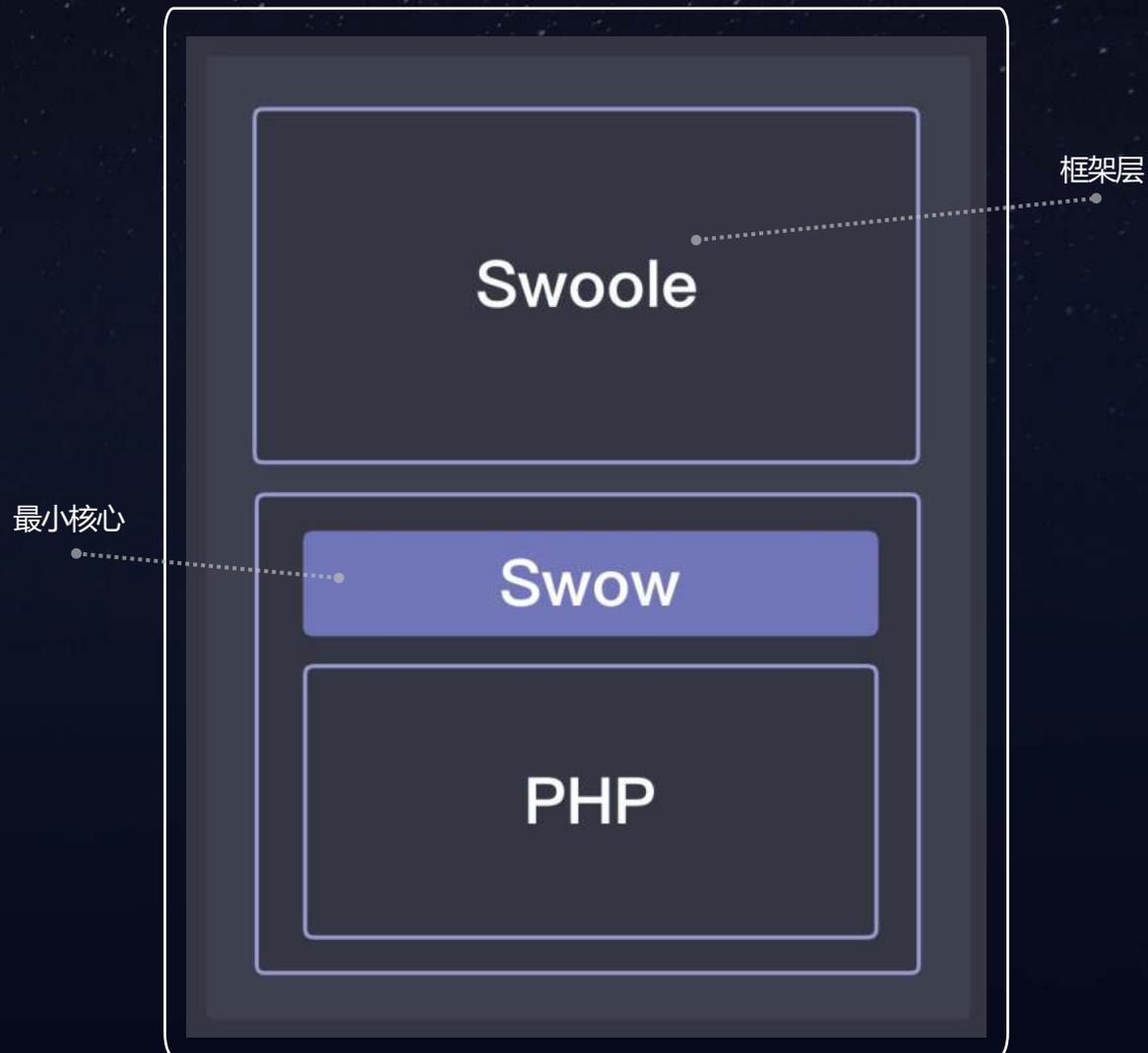
Assets 8

- php_swow-php8.0-x64-nts-VS16.dll 1.04 MB
- php_swow-php8.0-x64-ts-VS16.dll 1.06 MB
- Source code (zip)
- Source code (tar.gz)

Swow & Swoole

同步融合探索

Swow + Swoole = Swoole v6.0



未来开源愿景

致力于成为世界级开源团队
打造开发者信任并首选的编程语言
让 PHP 开发者拥有持续的归属感与成就感

- 积极参与 PHP 开源建设
- 探索 PHP 易用之道
- 开发破界 PHP 开源项目

php 易用之道

编程语言的下一个十年

PHP易用之道

探索降低PHP开发门槛和易用性的未来之道

<swoole-cli/micro> 二进制分发

类似于caddy的构建系统
定制并下载带扩展的PHP二进制

<黑科技> 二进制分发

研究出一个能够在静态二进制
动态加载扩展的方法



源码分发

部分对标OpenResty
足够傻瓜化的构建安装系统

二进制分发 <static-pie>

下一代GCC技术
需要等待一个普及周期

PHP Micro - 自执行SAPI



micro自执行SAPI提供了PHP『自执行文件』的可能性

只需要将构建的micro.sfx文件与任意PHP文件或者Phar包拼接为一个文件，这个文件就成为了一个可以直接运行的二进制文件。

兼容Windows、Linux、macOS。
可以实现一次打包多处运行。

PHP Micro - 无需编译 & 一次打包多处运行

```
# twosee @ Twosee-MacBook-Pro-M1-Max in ~/Downloads  
> cat micro.sfx http_server.php > http_server  
  
# twosee @ Twosee-MacBook-Pro-M1-Max in ~/Downloads  
> chmod +x http_server  
  
# twosee @ Twosee-MacBook-Pro-M1-Max in ~/Downloads  
> ./http_server  
Http Server is running on 127.0.0.1:9764  
█
```

```
# twosee @ Twosee-MacBook-Pro-M1-Max in ~  
> curl 127.0.0.1:9764  
Hello Swow!%█
```



Twosee



http_server

8.6 MB

Twosee

运行这个然后 curl 127.0.0.1:9764



李铭昕

可以



Twosee

这个在 m1 和 intel 都能运行

- JetBrains码上道 -

感谢聆听



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