

# 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](https://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](https://github.com/swoole)

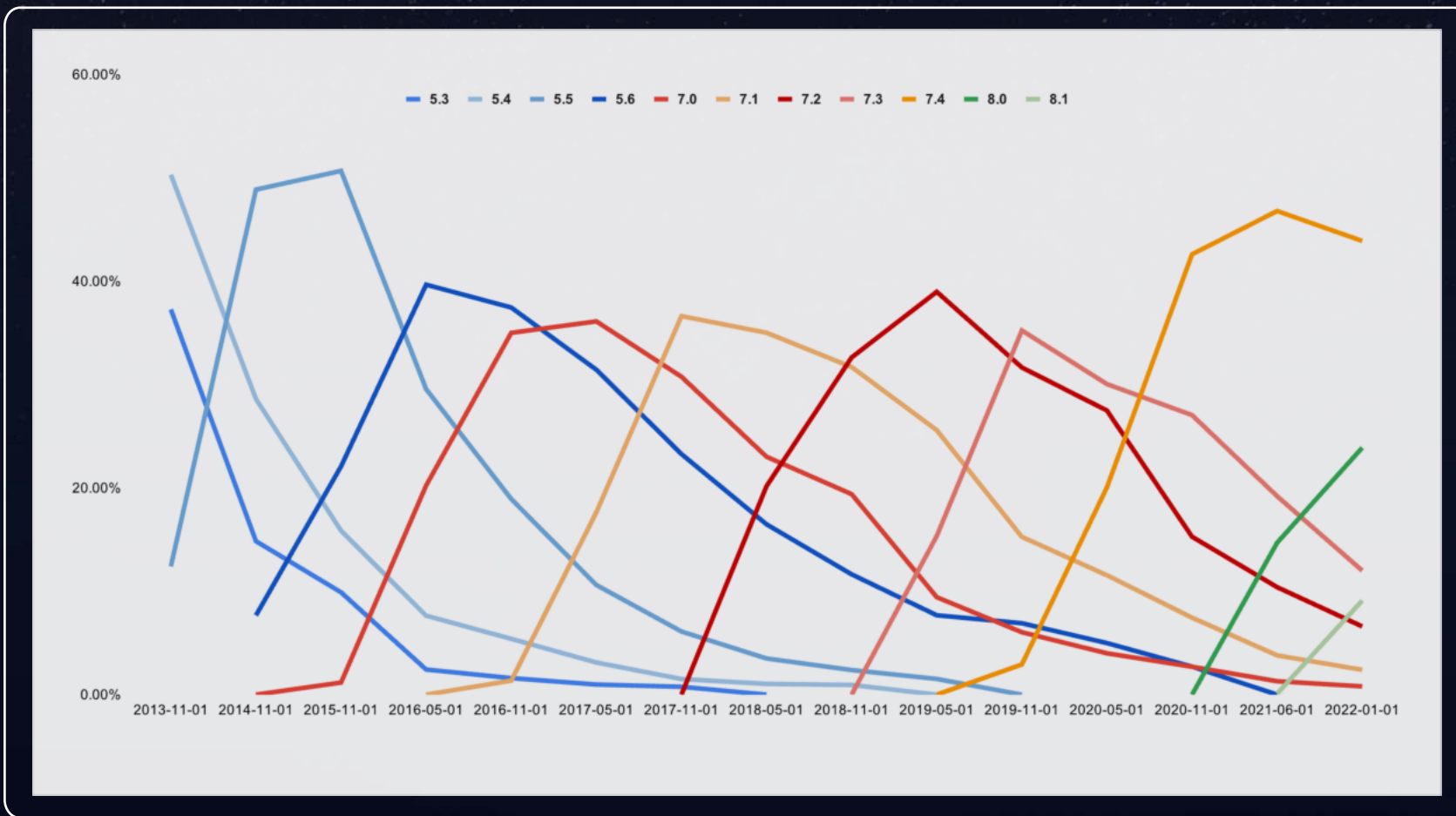
 支持PHP-8.x 开启 v5 版本时代

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v5 版本不再兼容 PHP-7.x , v4.8 将成为 LTS



# 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](https://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
Side-by-side viewer | Do not ignore | Highlight words | 13 differences

4003753d | 5c7b6a49 (StubGenerator.php)

/** @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);
}
}

protected static function convertValueToString($value): string
{
    return match (true) {
        is_int($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;
}

Change PHP Language Level
8.1
8.0
7.4
7.3
7.2
7.1
7.0
5.6
Older... >
```

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 is visible over the 'push' call, showing the signature: 'data: mixed, [timeout: float(int = -1)]: you the github addr info'.
- Bottom Panel (Class Definition):** Shows the 'class Channel' definition 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 generated by StubGenerator, including function signatures like 'ZEND\_BEGIN\_ARG\_INFO\_EX' and 'ZEND\_END\_ARG\_INFO'.

PHP编写 Stub文件

生成C定义



# Swoole 新气象

 [github.com/swoole](https://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](https://github.com/swoole)



Swoole Dashboard

强大的PHP专属开源服务监控系统

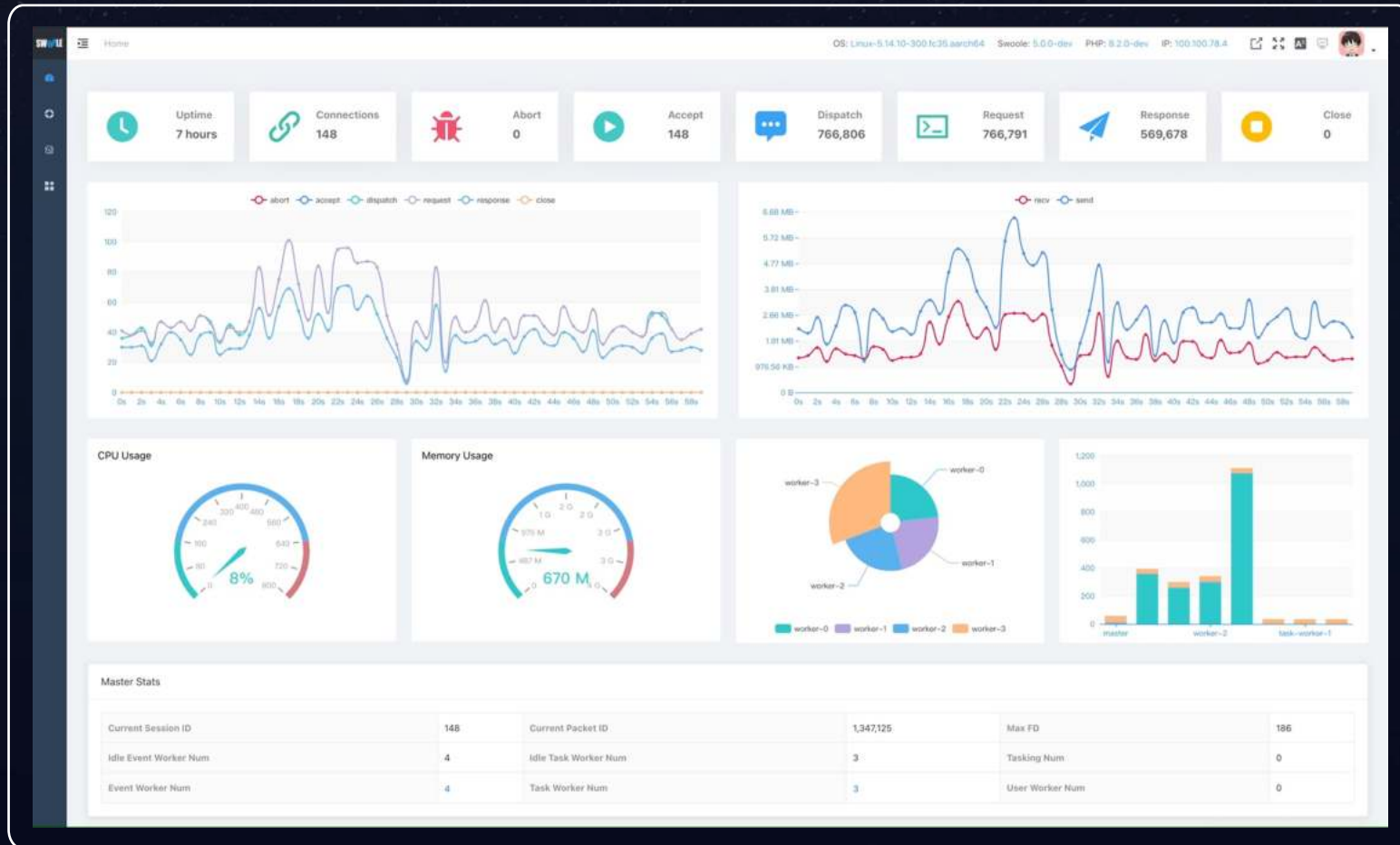


# Swoole Dashboard

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
- Classes
- Functions
- Constants
- 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

```

{
  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: {}
}

```

copy

Value

	<a href="#">Detail</a>
	<a href="#">Detail</a>
	<a href="#">Detail</a>
	<a href="#">Detail</a>
	<a href="#">Detail</a>
1	<a href="#">Detail</a>
2	<a href="#">Detail</a> <a href="#">Var Dump</a>
-1	



# 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

Socket Name

Server Port

Search

Clear

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	<span style="background-color: #ffc107; padding: 2px 5px;">Close</span> <span style="background-color: #dc3545; padding: 2px 5px;">Reset</span>
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	<span style="background-color: #ffc107; padding: 2px 5px;">Close</span> <span style="background-color: #dc3545; padding: 2px 5px;">Reset</span>
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	<span style="background-color: #ffc107; padding: 2px 5px;">Close</span> <span style="background-color: #dc3545; padding: 2px 5px;">Reset</span>
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	<span style="background-color: #ffc107; padding: 2px 5px;">Close</span> <span style="background-color: #dc3545; padding: 2px 5px;">Reset</span>
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	<span style="background-color: #ffc107; padding: 2px 5px;">Close</span> <span style="background-color: #dc3545; padding: 2px 5px;">Reset</span>
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	<span style="background-color: #ffc107; padding: 2px 5px;">Close</span> <span style="background-color: #dc3545; padding: 2px 5px;">Reset</span>
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	<span style="background-color: #ffc107; padding: 2px 5px;">Close</span> <span style="background-color: #dc3545; padding: 2px 5px;">Reset</span>
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	<span style="background-color: #ffc107; padding: 2px 5px;">Close</span> <span style="background-color: #dc3545; padding: 2px 5px;">Reset</span>
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	<span style="background-color: #ffc107; padding: 2px 5px;">Close</span> <span style="background-color: #dc3545; padding: 2px 5px;">Reset</span>
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	<span style="background-color: #ffc107; padding: 2px 5px;">Close</span> <span style="background-color: #dc3545; padding: 2px 5px;">Reset</span>

Total 148
10/page

1
2
3
4
5
6
...
15
Go to

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

JET BRAINS



# Swoole Dashboard

查看所有协程状态、调用栈等

SWOLE

- Home
- ZendVM
- Extensions
- Included Files
- Classes
- Functions
- Constants
- Interfaces
- Globals
- Objects
- Resources
- 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	<a href="#">Back Trace</a>
11953	20 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	<a href="#">Back Trace</a>
11931	22 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	<a href="#">Back Trace</a>
11924	23 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	<a href="#">Back Trace</a>
11881	26 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	<a href="#">Back Trace</a>
11867	28 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	<a href="#">Back Trace</a>
11839	30 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	<a href="#">Back Trace</a>
11815	32 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	<a href="#">Back Trace</a>
11794	33 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	<a href="#">Back Trace</a>
11790	33 seconds	8,144	Swoole\Server->send()	/media/psf/下载/swoole-dashboard-backend-demo/examples/server.php:71	<a href="#">Back Trace</a>

Total 906

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

Go to 1



# Swoole Dashboard

支持精确查看执行到源文件中的哪一行

SWOOLE

- Home
- ZendVM
- Extensions
- Included Files
- Classes
- Functions
- Constants
- Interfaces
- Globals
- 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, $std, $data) {
58     if ($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     }

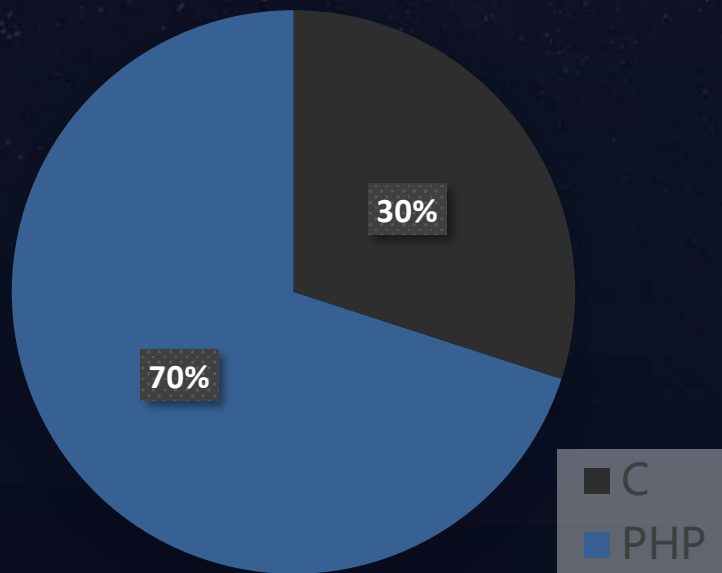
```





# 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](https://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](https://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](https://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

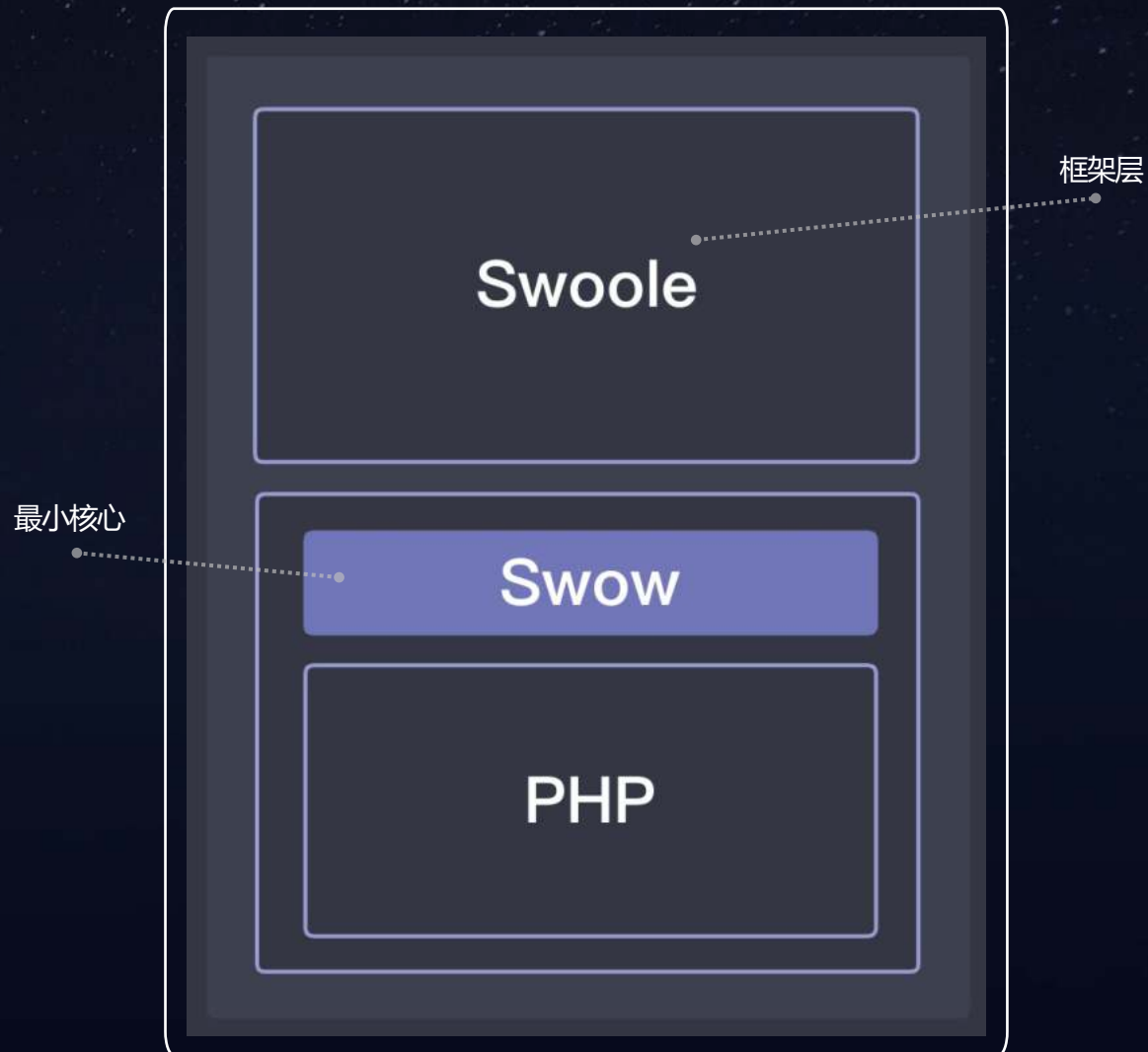
### Assets 8

- 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

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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

## <swolle-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



陈曹奇昊 (twosee)