

PHP系统问题排查实践



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Tclip 图片裁剪

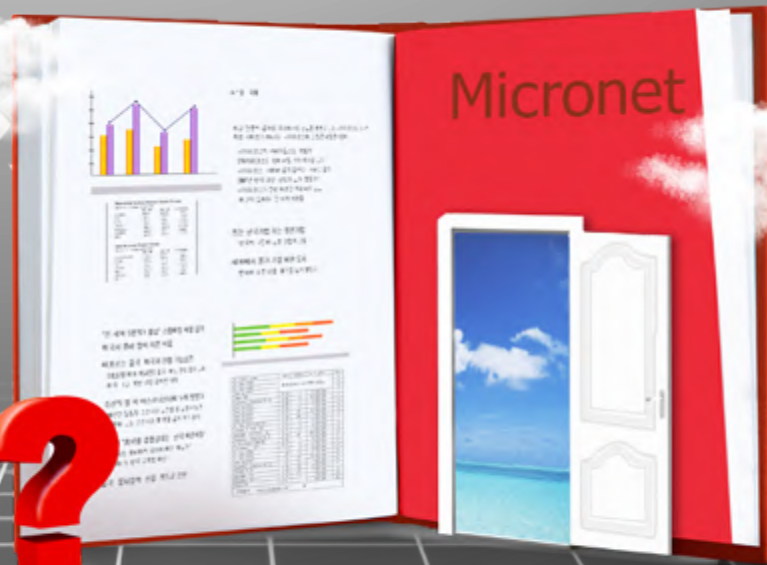
- PHP系统常见问题形式
- 解决问题的基本思路
- PHP程序导致CPU被占满
- 找出代理集群有问题的机器
- 程序后端执行过程中的坑
- Crond脚本执行填坑记

常见问题

Common Problem Q & A



常见问题形式



502 Bad Gateway

nginx/0.6.32

```
Warning: mysql_connect() [function.mysql-connect]: Too many connections  
in /opt/wwwroot/sogouinc/skin_index.php on line 25  
Connect failed!
```

常见问题形式

```
top - 18:33:45 up 5:37, 2 users, load average: 1.90, 1.50, 1.54
Tasks: 104 total, 9 running, 95 sleeping, 0 stopped, 0 zombie
Cpu(s): 84.4%us, 15.4%sy, 0.0%ni, 0.2%id, 0.0%wa, 0.0%hi, 0.0%si, 0.0%st
Mem: 2074992k total, 1538372k used, 536620k free, 201040k buffers
Swap: 2096472k total, 0k used, 2096472k free, 928984k cached
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
7776	apache	17	0	96548	74m	5676	R	80.5	3.7	2:34.34	httpd
7859	apache	16	0	66232	45m	5628	R	60.6	2.2	1:39.20	httpd
7909	apache	19	0	64680	43m	4800	R	36.9	2.1	0:09.66	httpd
3092	mysql	15	0	146m	35m	6488	S	9.7	1.8	54:12.15	mysqld
7616	apache	20	0	92096	70m	5724	R	9.7	3.5	5:54.69	httpd
2860	named	25	0	59592	12m	2072	S	0.7	0.6	2:37.56	named
1	root	15	0	2176	676	584	S	0.0	0.0	0:00.93	init
2	root	RT	-5	0	0	0	S	0.0	0.0	0:00.02	migration/0
3	root	39	19	0	0	0	S	0.0	0.0	0:00.01	ksoftirqd/0
4	root	RT	-5	0	0	0	S	0.0	0.0	0:00.01	migration/1

```
[20-Dec-2014 21:20:17] WARNING: [pool www] child  
31401 said into stderr: "NOTICE: PHP message: PHP  
Warning: PDO::__construct(): MySQL server has gone  
away in ./abstract.class.php on line 26"
```



解决问题基本思路

验证

排查问题

恢复服务

保留现场

恢复服务

✧ 摘机

- ✧ 摘除有问题的机器

✧ 回滚

- ✧ 回滚到之前版本

✧ 重启

- ✧ 重启服务

✧ 降级

- ✧ 提供基本的服务

保留现场

- ◇ 运行状态
 - ◇ 有问题时的状态数据
- ◇ 外部监控
 - ◇ 第三方监控数据
- ◇ 系统日志
 - ◇ 系统内部日志数据

排查问题

知识 + 工具 + 数据

知识

✧ 语言

- ✧ 基本语法，PHP运行机制

✧ 系统

- ✧ 操作系统，软件相关的知识

✧ 协议

- ✧ Tcp协议 Mysql通信协议

工具

✧ 系统

✧ top vmstat star

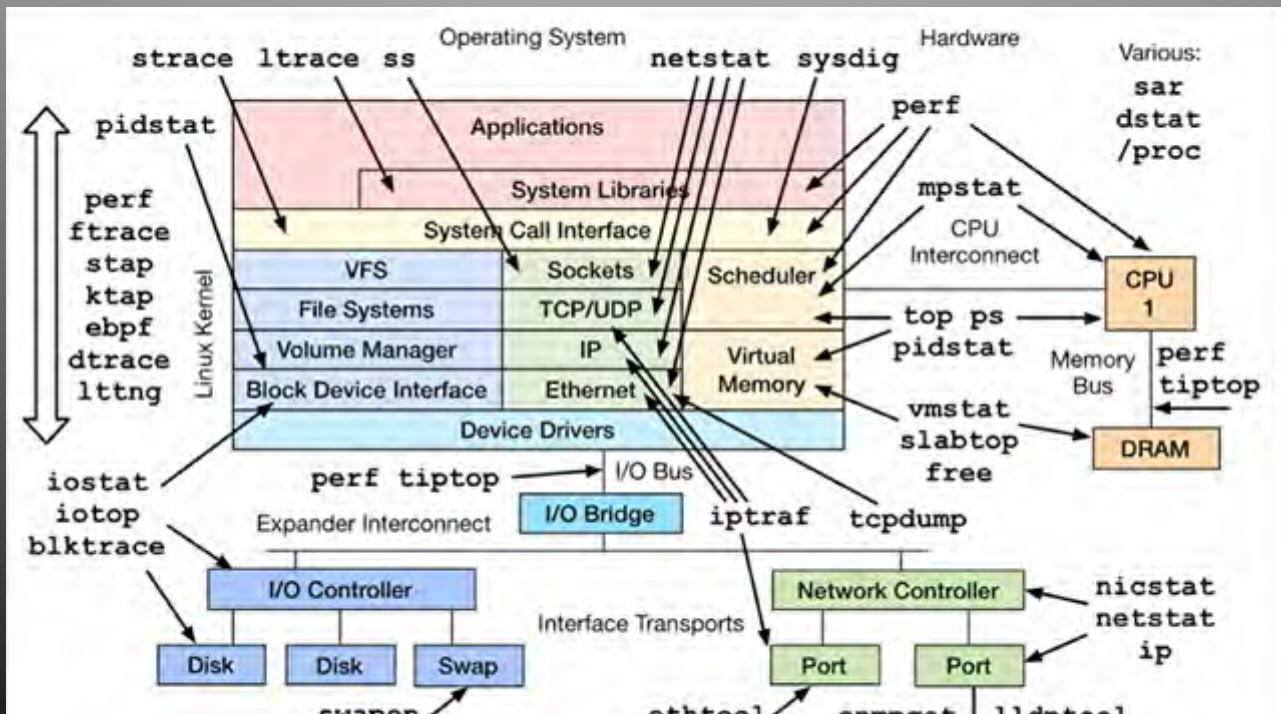
✧ 网络


✧ tcpdump wireshark netstat

✧ 进程

✧ gdb pstack strace

工具





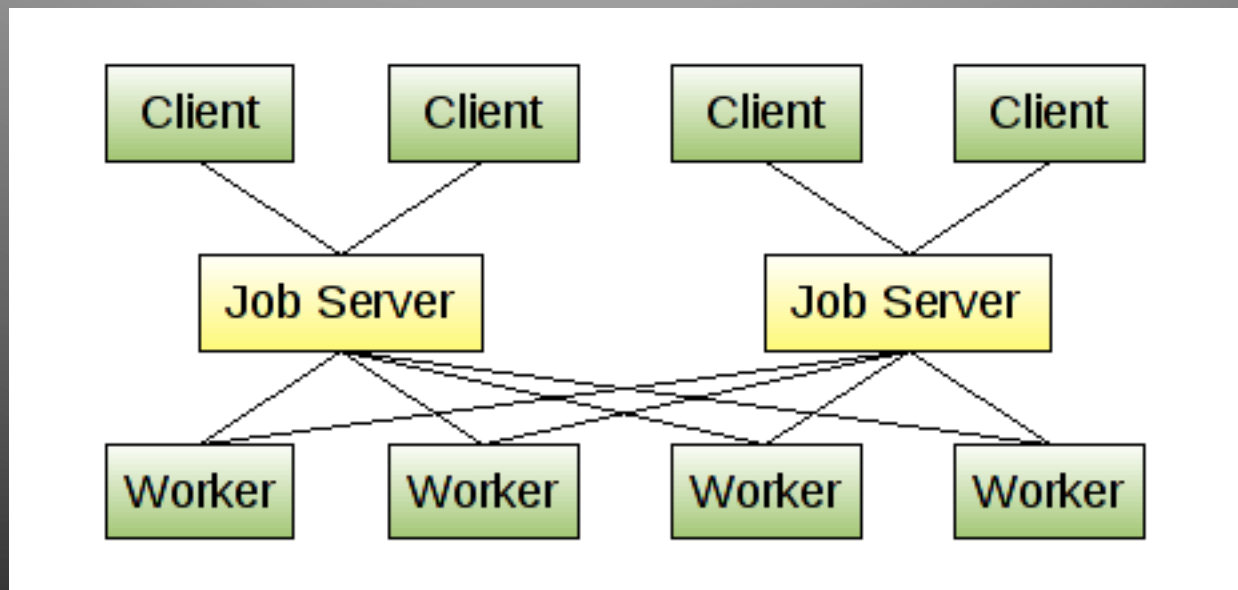
案例分析

现象

Server端宕机 -> CPU 100%



Gearman



解决过程

- ✧ 摘机 & 重启
- ✧ 查看日志
- ✧ GDB分析进程
- ✧ 验证

对有问题进程分析

```
$ sudo gdb -p 10434
(gdb) print (char *)executor_globals.active_op_array->filename
$13 = 0x2924118 "/home/gearman_manager/pecl-manager.php"
(gdb) print executor_globals->current_execute_data->opline->lineno
$14 = 55
(gdb) c
Continuing.
^C
Program received signal SIGINT, Interrupt.
0x000000031d32306d0 in sigprocmask () from /lib64/libc.so.6
(gdb) print executor_globals->current_execute_data->opline->lineno
$15 = 71
(gdb) c
Continuing.
^C
Program received signal SIGINT, Interrupt.
0x000000000006250e1 in zend_hash_find ()
(gdb) print executor_globals->current_execute_data->opline->lineno
$16 = 53
```

有问题代码行

```
while(!$this->stop_work){ //此处是第51行
    if(@$thisWorker->work() ||
        $thisWorker->returnCode() == GEARMAN_IO_WAIT ||
        $thisWorker->returnCode() == GEARMAN_NOT_CONNECTED ||
        $thisWorker->returnCode() == GEARMAN_NO_JOBS) {
        if ($thisWorker->returnCode() == GEARMAN_SUCCESS) continue;
        if (!@$thisWorker->wait()){
            if ($thisWorker->returnCode() == GEARMAN_NO_ACTIVE_FDS){
                sleep(5);
            }
        }
    }
}

/**
 * Check the running time of the current child. If it has
 * been too long, stop working.
 */
//此处是第71行
if($this->max_run_time > 0 && time() - $start > $this->max_run_time)
```

进一步跟踪

```
$gdb -p 10434
(gdb)b zif_gearman_worker_return_code
Breakpoint 1, zif_gearman_worker_return_code (ht=0, return_value=
    at /home/php_src/pecl/gearman-1.1.1/php_gearman.c:3186
3186      in /home/php_src/pecl/gearman-1.1.1/php_gearman.c
(gdb) p return_value
$3 = (zval *) 0x2a1b648
```

```
(gdb) p *$3
$9 = {value = {lval = 25, dval = 1.2351641146031164e-322, str = {
    refcount__gc = 1, type = 1 '\001', is_ref__gc = 0 '\0'}}
```


解决方案

```
while(!$this->stop_work){ //此处是第51行
    if(@$thisWorker->work() ||
        $thisWorker->returnCode() == GEARMAN_IO_WAIT ||
        $thisWorker->returnCode() == GEARMAN_NOT_CONNECTED ||
        $thisWorker->returnCode() == GEARMAN_NO_JOBS) {
        //下面一行是新增的
        if ($thisWorker->returnCode() == GEARMAN_NOT_CONNECTED) sleep(5);
        if ($thisWorker->returnCode() == GEARMAN_SUCCESS) continue;

        if (!@$thisWorker->wait()){
            if ($thisWorker->returnCode() == GEARMAN_NO_ACTIVE_FDS){
                sleep(5);
            }
        }
    }
}
```

现象

```
[20-Dec-2014 21:20:17] WARNING: [pool www] child  
31401 said into stderr: "NOTICE: PHP message: PHP  
Warning: PDO::__construct(): MySQL server has gone  
away in ./abstract.class.php on line 26"
```


相关代码

```
<?php
$this->resource = new PDO(
    $this->type.':'.implode(';', $dsn).';charset=gbk',
    $this->dbconf['username'],
    $this->dbconf['password'],
    $this->dbconf['driver_options']
);
$this->resource->setAttribute(PDO::ATTR_ERRMODE, PDO::
?>
```

解决过程

- ✧ 把超时时间改回原来值
- ✧ 分析PHP-FPM日志
- ✧ 使用工具进行抓包分析
- ✧ 摘除有问题的机器，持续观察

Tcpdump抓包

```
tcpdump -i eth0 -s 3000 port 3306 -w ~/sql.pcap
```

Wireshark正常包

Follow TCP Stream (tcp.stream eq 3934)

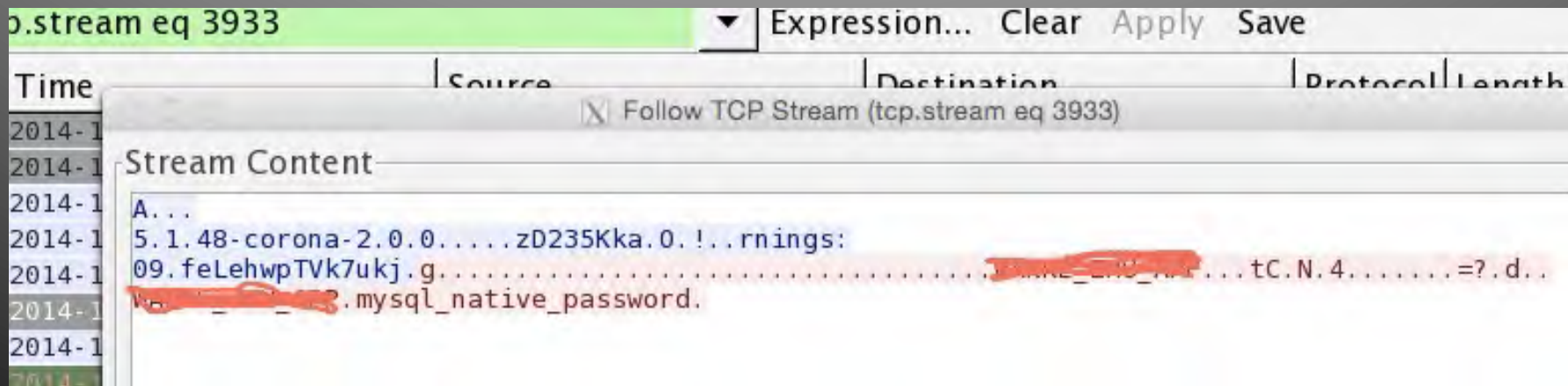
Stream Content

```
A...
5.1.48-
corona-2.0.0..a..GextlaNr.0.!.bj_id_0068.fe9mBPsfJlJTi7.
g.....WANKER...
.z..f.....s.>...6WANKER...mysql_native_password.....SET NAMES
GBK.....<...UPDATE `s` SET `value`='a:4:{s:8:\"auth_key\";s:32:
```

服务器返回信息



Wireshark异常包



o.stream eq 3933 Expression... Clear Apply Save

Time	Source	Destination	Protocol	Length
2014-1				
2014-1				
2014-1				
2014-1				
2014-1				
2014-1				
2014-1				
2014-1				

Follow TCP Stream (tcp.stream eq 3933)

Stream Content

```
A...  
5.1.48-corona-2.0.0.....zD235Kka.0.!.rnings:  
09.feLehwpTVk7ukj.g.....tC.N.4.....=?..d..  
[REDACTED].mysql_native_password.
```

解决方案

告诉相关负责人，把有问题的机器下线

坑

```
1 <?php
2 sleep(50);
3 echo "aaa\n";
4 file_put_contents("/tmp/test.txt",time());
5 ?>
```

`*/1 * * * * admin php test.php`

后端执行执行

php test.php &

exit 退出终端

Strace跟踪代码执行

```
[~]$ ps aux | grep test.php
56667    17191  0.2  0.0 256628 10856 ?        Sl   10:25   0:00 php ./test.php
56667    17241  0.0  0.0  69552   868 pts/3    R+   10:25   0:00 grep test.php
[~]$ strace -p 17191
Process 17191 attached - interrupt to quit
restart_syscall(<... resuming interrupted call ...>) = 0
write(1, "aaa\n", 4)          = -1 EIO (Input/output error)
close(2)                = 0
close(1)                 = 0
munmap(0x7f47825e8000, 4096) = 0
close(0)                 = 0
```

Why EIO

登录 -> 开始会话 -> 建立连接 -> 可读可写

退出 -> 关闭会话 -> 建立连接 -> 不能读写

解决方案

```
php test.php > ./test.log 2>&1 &
```

```
nohup php test.php &
```

第二个坑

```
<?php
$f = popen("/home/exfilter restart", "r");
while(!feof($f)) {
    $content = fgets($f, 1024);
    if (strpos($content, "start success") !== false) {
        break;
    }
}
pclose($f);
file_put_contents("/tmp/test.log", date("Y-m-d H:i:s"));
?>
```

坑

```
*/1 * * * * root /usr/bin/flock -xn /tmp/test.lock -c  
'/usr/bin/php /home/hailong/test.php > /tmp/  
test.tt 2>&1'
```

查看锁占用情况

```
[hailong@vhost ~]$ sudo /usr/sbin/lsof | grep test.lock
exfilter  29821          root    3r      REG          202,1
[hailong@vhost ~]$ ps aux | grep 29821
root      29821  0.1  0.2 175224 22596 ?        Ssl  07:46   0:00 /home/
56667    30068  0.0  0.0  69460   852 pts/0    S+   07:49   0:00 grep 2
```

解决方案

- ✧ 判断锁文件是否存在
- ✧ 判断进程是否存在



Thank you