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Github Repository: https://github.com/L3nnyK/CFCProjectWork.git

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Objective

CREATE A SCRIPT THAT MAPS NETWORK DEVICES FOR PORTS, SERVICES AND VULNERABILITES.

Tested on a fresh install of Kali VM after cloning the git repository.

All VM's are running on the same network.

Ran 5 other target virtual machines.

- 1. METASPLOITABLE 2 BOX
- 2. PT001 BOX FROM THE PREVIOUS SCENARIOS
- 3. PT002 BOX FROM THE PREVIOUS SCENARIOS
- 4. PT003 BOX FROM THE PREVIOUS SCENARIOS
- 5. PT004 BOX FROM THE PREVIOUS SCENARIOS
- 6. PT005 BOX FROM THE PREVIOUS SCENARIOS

1. Initialising testing environment

Install relevant applications on the local computer.

Cloned a git repository to a fresh Kali VM running on the same network.

```
(kali® kali)-[~]
$ git clone https://github.com/L3nnyK/CFCProjectWork.git
Cloning into 'CFCProjectWork' ...
remote: Enumerating objects: 261, done.
remote: Counting objects: 100% (129/129), done.
remote: Compressing objects: 100% (101/101), done.
remote: Total 261 (delta 54), reused 84 (delta 24), pack-reused 132
Receiving objects: 100% (261/261), 4.16 MiB | 8.79 MiB/s, done.
Resolving deltas: 100% (124/124), done.
```

Navigated to the CFCProjectWork/PenTesting directory in its initialized state, with no results.

Option 1 in the menu sets up and initialized the system.

It requires sudo permissions in order to run the update and install the necessary applications if not present.

Once the updates & installations have been completed the script will return to the initial menu and will only exit if done so by the user or if the user selects option 0.

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The script also does a wget from the github repository to initialize the namelist.lst and password.lst files in case the script is run without having cloned all files from GitHub.

The script installs searchsploit medusa hydra nmap masscan metasploit-framework firefox

The **vulscan** nse script is also initialised from its git repository.

```
sudo apt-get update && sudo apt-get install -y searchsploit medusa hydra nmap masscan metasploit-framework firefox 2>/dev/null
#'Install vulscan nse script'
git clone https://github.com/scipag/vulscan scipag vulscan
ln -s `pwd`/scipag_vulscan /usr/share/nmap/scripts/vulscan
wget https://github.com/L3nnyK/CFCProjectWork/blob/6b1591c561d31b16130ae7544bae468fdfe00cef/PenTesting/namelist.lst https://github.
echo -e
#Run menu fucntion again to loop back.
menu
function INST()
sudo apt-get update && sudo apt-get install -y searchsploit medusa hydra nmap masscan metasploit-framework firefox 2>/dev/null
echo -e "\nObtaining user and passwordlist and placing them in the working directory.
wget https://github.com/L3nnyK/CFCProjectWork/blob/6b1591c561d31b16130ae7544bae468fdfe00cef/PenTesting/namelist.lst https://git
         '\n Files are namelist.lst and password.lst \n'
echo -e '
#Run menu fucntion again to loop back.
menu
}
```

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2. Execute network scans and attacks

Selection option 2 in the menu brings the user to the port and service scan menu.

It will first prompt the user for the target IP range.

In the testing environment the example given is the ideal range for scanning 192.168.153.0/24

```
Please select the appropriate action by entering the corresponding number followed by ENTER.

1) To setup and initialise the system.
2) To conduct port and service scans.
3) Vulnerability mapping menu.
4) View/Access the log files.

0) Quit.

2
You chose option 2.

Welcome to the network scan menu.

Before conducting scans or attacks please provide the requested inputs.

Please provide a target IP range.
(e.g 192.168.153.0/24):192.168.153.0/24
```

The script will map the range and create a corresponding directory. Before prompting the user via a menu to conduct a masscan or an nmap scan.

```
You have entered 192.168.153.0/24 as ip range.

[*] Mapping the range 192.168.153.0/24
mkdir: created directory '192.168.153.0'

[+] Directory created: 192.168.153.0

Please select the process you would like to start.

1) Conduct an masscan.
2) Conduct a nmap scan.

0)Quit.
```

When scripting this masscan is much quick so the user is encouraged to run the massscan first before narrowing down to an nmap scan.

Masscan

For a masscan the user is prompted for the port range. In testing it was run with –top-ports 1000.

```
You chose option 1.

For masscan, you must specify a target port or port range. [hint] try something like -p80,443 or 0-65535. I suggest --top-ports 1000 for starters: --top-ports 1000
```

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The script will run the scan and save the various outputs into the directory created. It will also inform the user where the outputs have been saved.

```
192.108.133.140. 0. → ARP [0] :00:21 remaining, found=75
192.108.153.1310: 0: → ARP [0] :00:15 remaining, found=79
192.108.153.143: 0: → ARP [0] :00:15 remaining, found=79
192.108.153.140: 0: → ARP [0] :00:12 remaining, found=81
192.108.153.140: 0: → ARP [0] :00:00 remaining, found=81
192.108.153.143: 0: → ARP [0] :00:00 remaining, found=81
192.108.153.143: 0: → ARP [0] :00:00 remaining, found=81
[4] transmit thread #0 complete
192.108.153.139: 0: → ARP [0] iting 8-secs, found=81
[4] exiting transmit thread #0 und=81
[4] exiting receive thread #0 found=81
[4] exiting receive thread #0 found=81
[4] all threads have exited

Scan outputs have been saved to the working directory 192.108.153.0 as masscan_output in binary format, masscan_output.xml and masscan_output.grepable

Please select the appropriate action by entering the corresponding number followed by ENTER.

1) To setup and initialise the system.
2) To conduct port and service scans.
3) Vulnerability mapping menu.
4) View/Access the log files.
```

NMAP Scan

```
Before conducting scans or attacks please provide the requested inputs.

Please provide a target IP range.
(e.g 192.168.153.0/24):192.168.153.0/24

You have entered 192.168.153.0/24 as ip range.

[*] Mapping the range 192.168.153.0/24

mkdir: cannot create directory '192.168.153.0': File exists
[+] Directory created: 192.168.153.0

Please select the process you would like to start.

1) Conduct an masscan.
2) Conduct a nmap scan.

0)Quit.

2

You chose option 2.

Conducting an nmap scan.

Starting Nmap 7.92 ( https://nmap.org ) at 2022-10-20 13:00 EDT
```

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The nmap scan works on a similar principle and also saves outputs to the working directory. For the purposes of this script a more comprehensive scan was assumed so it scans all ports, naturally, this takes a significant time to complete.

```
Selective filtered irs (6697/Kp; filtered irs-u (6697/Kp; filtered irs-u (6697/Kp; filtered irs-u (6697/Kp; filtered irs-u (6697/Kp; filtered unknown 5497/Kp; filtered unknown 5497/Kp; filtered unknown 5497/Kp; filtered unknown 5491/Kp; filtered unknow
```

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Vulnerability mapping menu

The vulnerability mapping menu offers **searchsploit** and **nse** as options for further mapping as well as a sub-menu for bruteforce attacks.

```
You chose option 3.

Welcome to the vulnerability mapping menu.

Please select the vulnerability mapping process you would like to start.

1) Extract more information using searchsploit.

2) Extract more information using the nmap scripting engine.

3) Bruteforce attacks menu.
```

A number of helper functions had to be written in order to generate a list of targets based on the nmap scans as well as present the user with options to navigate the directories in the even other scans have been conducted on another defined IP range.

Searchsploit

Prior to conducting the searchsploit mapping. The helper function DIRECTORYSELECT is called to allow the user to select the correct directory.

Sudo privileges are required to update the searchsploit database afterwhich the script will automatically look for the nmap results and feed that into searchploit for further vulnerability scanning. This takes some time on the newly initialized machine but ensures the database is up to date and current.

```
function SEARCHSPLOIT()

{
    echo "Updating searchsploit database"
    sudo searchsploit -u
    echo -e "Conducting searchsploit based on nmap results, ./$DIR/\bnmapscan_output.xml."
    searchsploit -v --nmap ./$DIR/\mapscan_output.xml > searchsploit_output
    #echo -e "\n Scan outputs have been saved to the working directory ${tgtIP%/*} as nmapscan_output.nmap, nmapscan_output.xml and nmapscan_output \n"
    echo -e "\n Searchsploits outputs have been saved in ./$DIR/\bsearchsploit_output. \n"

The following NEW packages will be installed:
    exploitdb-papers

0 upgraded, 1 newly installed, 0 to remove and 1620 not upgraded.
Need to get 2561 MB of archives.
After this operation, 2953 MB of additional disk space will be used.
Get:1 http://mirror.aktkn.sg/kali kali-rolling/main amd64 exploitdb-papers all 20220730-0kali1 [2561 MB]
20% [1 exploitdb-papers 639 MB/2561 MB 25%]
```

The script will also inform the user where the output is saved.

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[i] /usr/bin/searchsploit -t ccproxy
[i] /usr/bin/searchsploit -t ccproxy ftp [i] /usr/bin/searchsploit -t msgsrvr [-] Skipping term: unknown (Term is too general. Please re-search manually: /usr/bin/searchsploit -t unknown) [i] /usr/bin/searchsploit -t bash
[i] /usr/bin/searchsploit -t bash shell Searchsploits outputs have been saved in ./192.168.153.0/searchsploit_output. Please select the appropriate action by entering the corresponding number followed by ENTER. 4) View/Access the log files.

NSE (Nmap Scripting Engine) vulscan

A helper function TGTLIST was created, to list out the hosts based on the results of the nmap scan and offer the user a menu to select the target IP.

```
function TGTLIST()
∃{
#Generate list of host from nmap scan.
    PS3="Please select the IP you wish to target for further scanning or attack."
    TARGETS=$(cat ./$DIR/nmapscan_output.gnmap | awk '/open/{print $2}')
         select SelectedTgt in $TARGETS
             echo -e "\nYou have selected the target $SelectedTgt\n"
             break:
             done
}
```

Once the target IP has been selected it can then be parsed by the NSE script.

For the purpose of this project it was decided to run -script=vulscan/vulscan.nse to provide further details and information on possible vulnerabilities.

https://github.com/scipag/vulscan

Vulscan is a module which enhances nmap to a vulnerability scanner. The nmap option -sV enables version detection per service which is used to determine potential flaws according to the identified product. The data is looked up in an offline version scip VulDB.

Once selected the script will conduct the nmap scan with the added NSE and saved the outputs to the working directory.

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```
[1002986] Webglimpse Search Engine Software Allows Cross-Site Scripting Attacks
[1002981] Namazu Search Engine Software Allows Cross-Site Scripting Attacks
[1002837] Allaire's JRun Java Server Discloses JDS Source Code to Remote Users When Used As a Connector With Commercial Web S [1002837] Allaire's August Java Server Discloses Web Server Directory Contents to Remote Users Requesting URLs Containing '%3f.js [1002629] Apache suFKE Wrapper Fails to Observe Minimum Group ID Security Settings in certain Situations [1002542] Apache web Server Virtual Hosting Split-Logfile Function Lets Remote Users Write Log Entries to Arbitrary Files on [1002526] Apache web Server Discloses Full Path to Remote Users in Response to Requests for Non-existent JSP Files I [1002423] Dracke Application Server Discloses Full Path to Remote Users in Response to Requests for Non-existent JSP Files I [1002403] Apache mode Jgrip Module Has Buffer Overflow That Can Be Exploited By Local Users Gain Elevated Privileges I [1002303] Several 3rd Party Apache Authentication Modules Allow Remote Users to Execute Arbitrary Code to Gain Access to the : edures to Obtain Arbitrary Database Information [1002193] Macromedia JRun Java Server Olscloses JSP Source Code to Remote Users to Execute Arbitrary Code to Gain Access to the : edures to Obtain Arbitrary Database Information [1002193] Apache Web Server Discloses Internal IP Addresses to Remote Users in Certain Configurations [1002193] Alsember of Party Database Information [1002193] Apache Web Server Discloses Internal IP Addresses to Remote Users in Certain Configurations [1002193] Ascente Web Server on Microsoft Windows Party Security Appliance Allows Remote Users in Certain Configurations [1002193] Apache Web Server on Microsoft Windows Partis to Enforce File and Directory Access Protections, Giving Remote Users [100152] Apache Web Server on Microsoft Windows Lets Remote Users to Bypass the Web Content Filtering Engine [1002193] Apache Web Server on Microsoft Windows Lets Remote Users [100152] Apach
```

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Bruteforce Attack – Medusa

```
Welcome to the vulnerability mapping menu.

Please select the vulnerability mapping process you would like to start.

1) Extract more information using searchsploit.

2) Extract more information using the nmap scripting engine.

3) Bruteforce attacks menu.

0)Quit.

3

You chose option 3.

Taking you to the brutefoce attacks menu.

Welcome to the Medusa bruteforce attack menu.

1) Medusa brute force attack.

0)Quit.
```

For bruteforce attacks **Medusa** was selected for its speed and the ability to specify the module attacked

A helper function was created to facilitate this, call MEDUSAMODLIST. This just translated tall the available modules into a list to offer the user a selectable menu.

```
function MEDUSAMODLIST()
{
PS3="Select the module you wish to bruteforce."
modlist=("cvs" "ftp" "http" "imap" "mssql" "mysql

select mod in "${modlist[@]}"
do
    echo "You selected $REPLY which is $mod."
    break;
done
}
```

The username list and password file are the same ones cloned from the git repository. If the user wanted to specify their own list they could replace or add to the files in the working directory.

Again once selected it will prompt the user to select the appropriate directory and then to select the module. In testing, this was run on ssh and was successful.

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```
You chose option 1.
1) 192.168.153.0/
2) payloads/
Please select directory for scanning/attacks based on nmap results.1
 You have selected 1.
1) 192.168.153.1
2) 192.168.153.139
3) 192.168.153.140
4) 192.168.153.141
5) 192.168.153.143
6) 192.168.153.145
7) 192.168.153.146
Please select the IP you wish to target for further scanning or attack.2
1) cvs 4) imap 7) nntp 10) postgres 13) rsh
2) ftp 5) mssql 8) pcanywhere 11) rexec 14) smbnt
3) http 6) mysql 9) pop3 12) rlogin 15) smtp
Select the module you wish to bruteforce.18
You selected 18 which is ssh.
                                                                                                                                                                                                       22) vnc
23) web-form
24) wrapper
                                                                                                                                              16) smtp-vrfy
17) snmp
18) ssh
  Executing medusa bruteforce attack on 192.168.153.139 using ssh.
 Medusa v2.2 [http://www.foofus.net] (C) JoMo-Kun / Foofus Networks <jmk@foofus.net>
```

ACCOUNT CHECK: [ssh] Host: 192.168.153.139 (1 of 1, 0 complete) User: msfadmin (1 of 24, 0 complete) Password: msfadmin (1 of 36 complete)

ACCOUNT FOUND: [ssh] Host: 192.168.153.139 User: msfadmin Password: msfadmin [SUCCESS]

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3. View the logged files

Every scan and attack is logged and saved in the working directory.

```
You chose option 4.

View or access the log files.

Listing the directories and relevant log files for your viewing.

192.168.153.0 192.168.153.139vulscan.nmap 192.168.153.141vulscan.nmap namelist.lst.1 password.lst.1 'PT Project.pdf' 192.168.153.139vulscan.gnmap 192.168.153.141vulscan.xml namelist.lst.2 password.lst.2 searchsploit_output 192.168.153.139vulscan.gnmap 192.168.153.141vulscan.gnmap namelist.lst.2 password.lst.2 searchsploit_output 192.168.153.139vulscan.gnmap namelist.lst.

192.168.153.139vulscan.gnmap 192.168.153.141vulscan.gnmap namelist.lst payloads vulner.sh

2) payloads/

Please select directory for scanning/attacks based on nmap results.1

You have selected 1.

You have selected the directory 192.168.153.0/.

masscan_output masscan_output.grepable masscan_output.xml nmapscan_output.gnmap nmapscan_output.html nmapscan_output.nmap nmapscan_output.xml

Converted and opening the nmap results in html format in your browser.
```

The view log files function will list the files in the working directory as well as prompt the user to select the directory.

It will the list the masscan and nmap results for the selected directory and convert the nmap xml output into html and display it via the firefox browser.

