

## **Lab #4: Enumerating Metasploitable 2**

**Course Name:** Ethical Hacking and Offensive Security(HOD401)

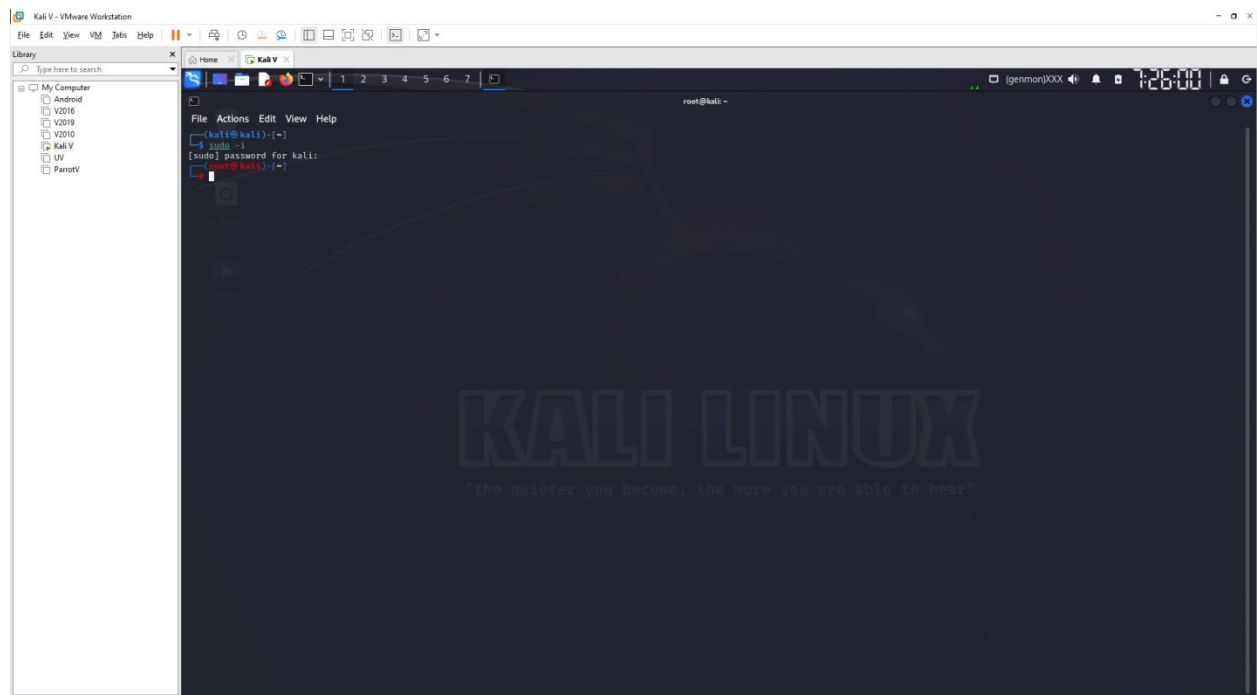
**Student Name:** Nguyễn Trần Vinh – SE160258

**Instructor Name:** Mai Hoàng Đình

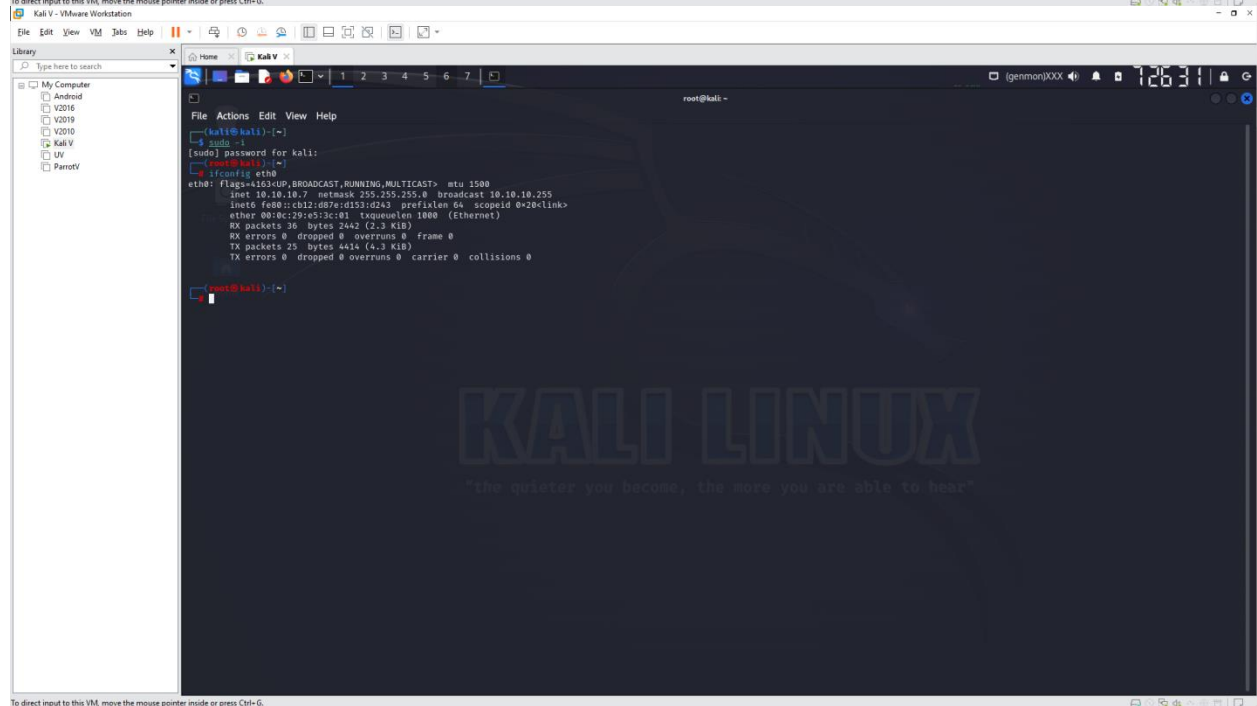
**Lab Due Date:** 23/09/2023

### **Lab Tasks**

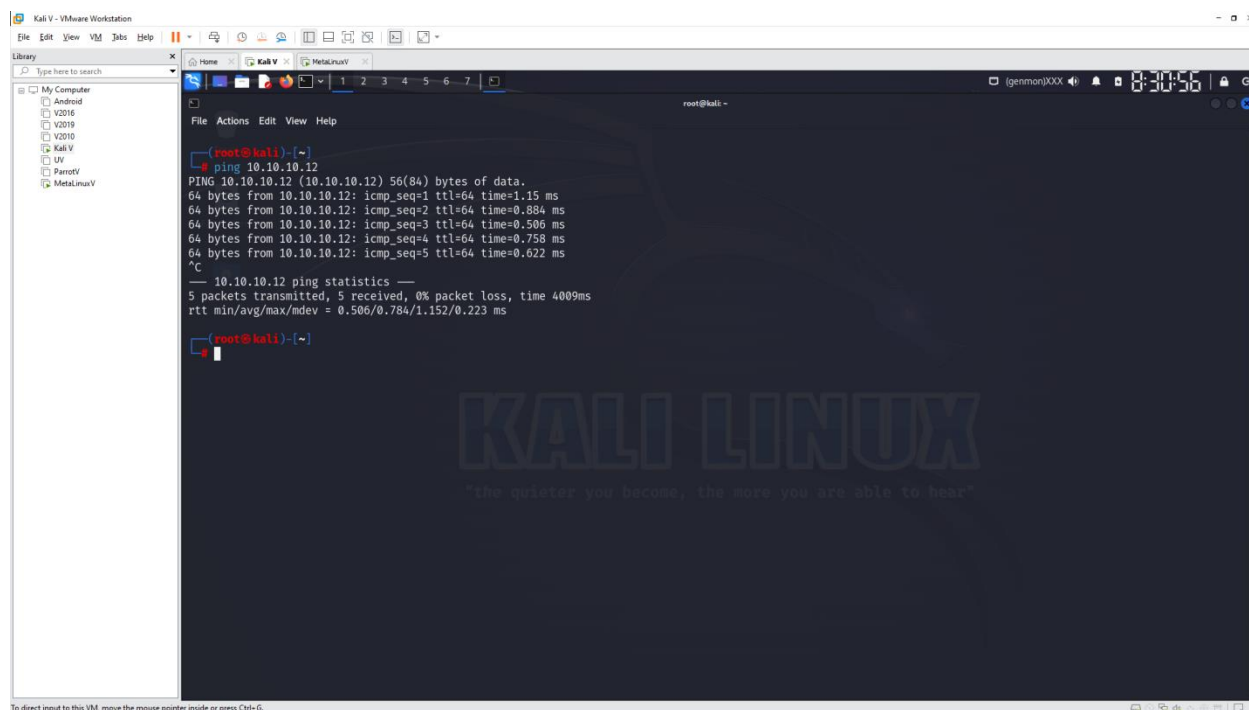
- Open Kali



To direct input to this VM, move the mouse pointer inside or press Ctrl-G.



To direct input to this VM, move the mouse pointer inside or press Ctrl-G.

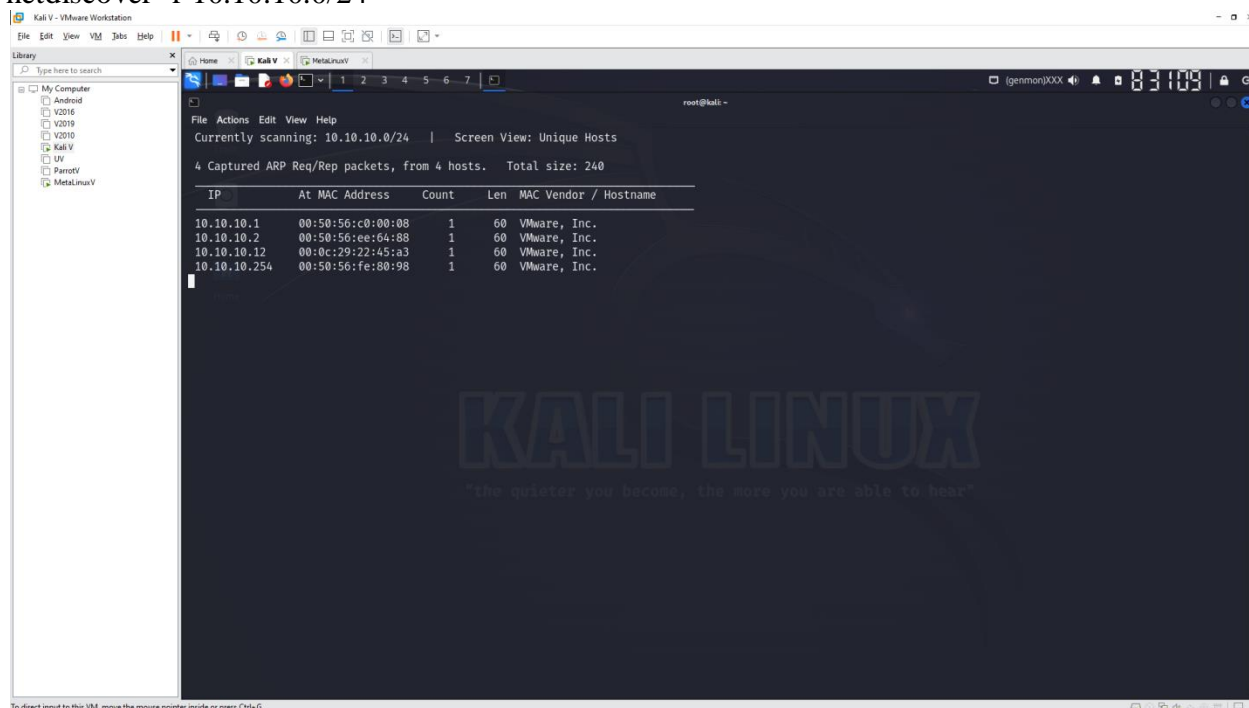


## Task 1: Finding Hosts & Open Ports

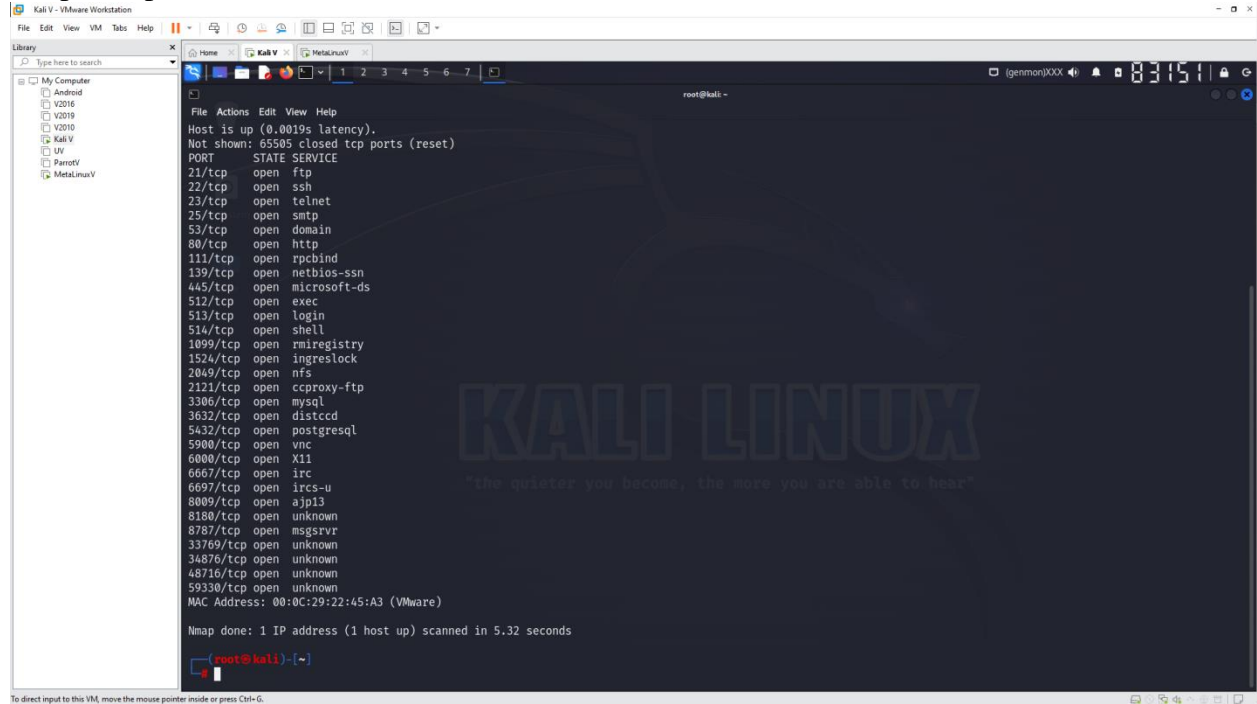
In Kali, execute this command to locate all hosts on your network.

Replace the subnet address below with the correct subnet for your machine. Usually all you need is the first 3 bytes of the IP address, as highlighted in the image above

`netdiscover -r 10.10.10.0/24`



nmap -sS -p- 10.10.10.12

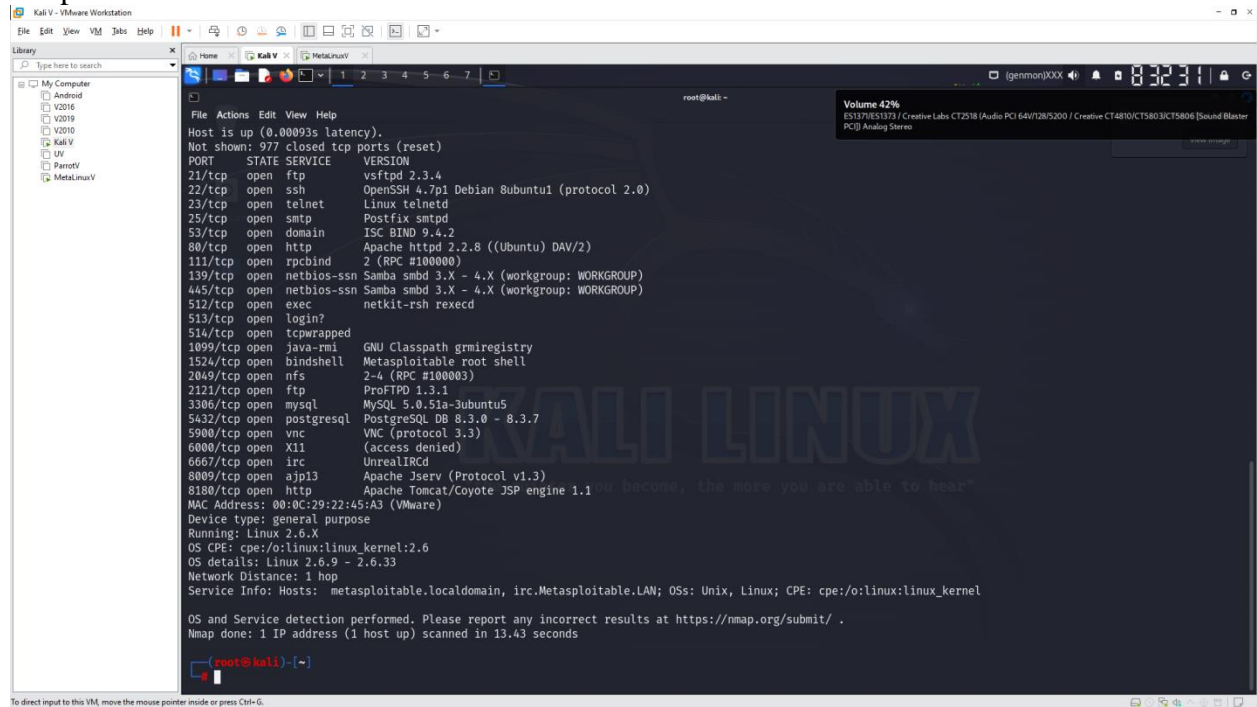


```
File Actions Edit View Help
Host is up (0.0019s latency).
Not shown: 65505 closed tcp ports (reset)
PORT      STATE SERVICE
21/tcp    open  ftp
22/tcp    open  ssh
23/tcp    open  telnet
25/tcp    open  smtp
53/tcp    open  domain
80/tcp    open  http
111/tcp   open  rpcbind
139/tcp   open  netbios-ssn
445/tcp   open  microsoft-ds
512/tcp   open  exec
513/tcp   open  login
514/tcp   open  shell
1099/tcp  open  rmiregistry
1524/tcp  open  ingreslock
2049/tcp  open  nfs
2121/tcp  open  ccproxy-ftp
3306/tcp  open  mysql
3632/tcp  open  distccd
5432/tcp  open  postgresql
5900/tcp  open  vnc
6000/tcp  open  x11
6667/tcp  open  irc
6697/tcp  open  ircs-u
8009/tcp  open  ajp13
8180/tcp  open  unknown
8787/tcp  open  msgsrvr
33769/tcp open  unknown
34876/tcp open  unknown
48716/tcp open  unknown
59330/tcp open  unknown
MAC Address: 00:0C:29:22:45:A3 (VMware)

Nmap done: 1 IP address (1 host up) scanned in 5.32 seconds

(root@kali)-[~]
```

nmap -sS -sV -O 10.10.10.12

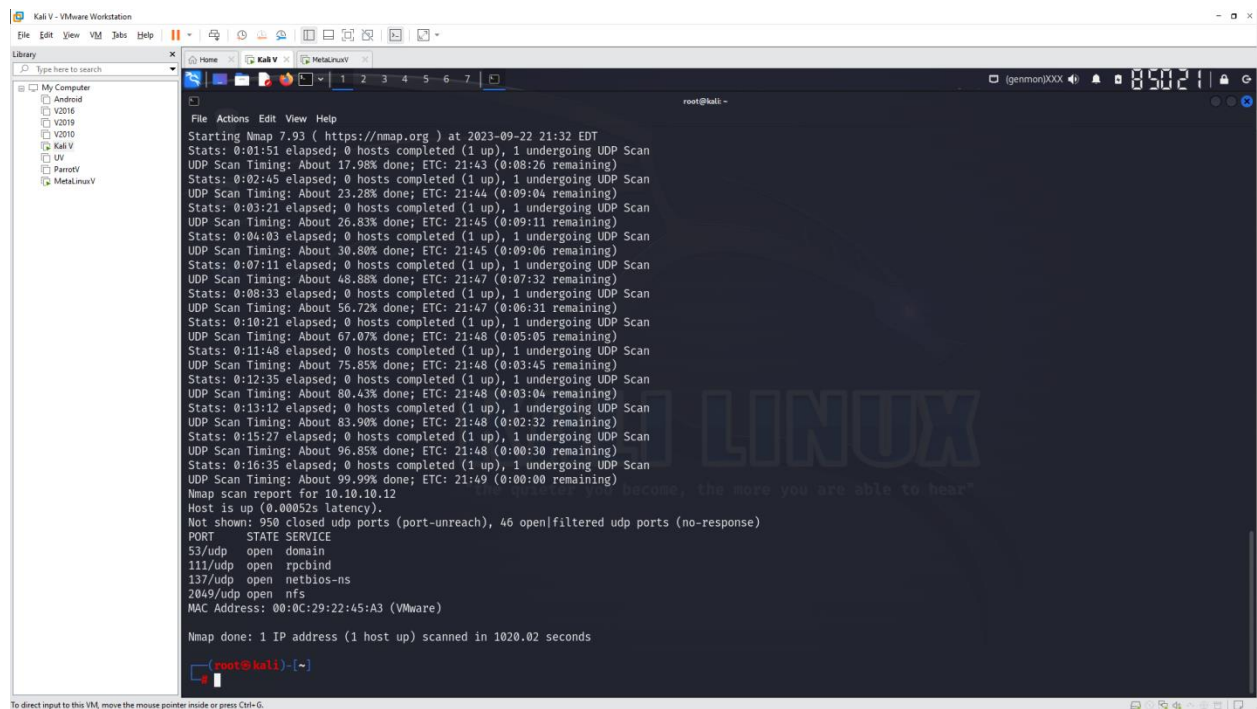


```
File Actions Edit View Help
Host is up (0.00093s latency).
Not shown: 977 closed tcp ports (reset)
PORT      STATE SERVICE VERSION
21/tcp    open  ftp      vsftpd 2.3.4
22/tcp    open  ssh      OpenSSH 4.7p1 Debian Subuntu (protocol 2.0)
23/tcp    open  telnet   Linux telnetd
25/tcp    open  smtp     Postfix smtpd
53/tcp    open  domain   ISC BIND 9.4.2
80/tcp    open  http     Apache httpd 2.2.8 ((Ubuntu) DAV/2)
111/tcp   open  rpcbind  2 (RPC #100000)
139/tcp   open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp   open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
512/tcp   open  exec     netkit-rsh rexecd
513/tcp   open  login?
514/tcp   open  tcpwrapped
1099/tcp  open  java-rmi  GNU Classpath grmiregistry
1524/tcp  open  bindshell Metasploitable root shell
2049/tcp  open  nfs      2-4 (RPC #100003)
2121/tcp  open  ftp      ProFTPD 1.3.1
3306/tcp  open  mysql    MySQL 5.0.51a-3ubuntu5
5432/tcp  open  postgresql PostgreSQL DB 8.3.0 - 8.3.7
5900/tcp  open  vnc      VNC (protocol 3.3)
6000/tcp  open  x11      (access denied)
6667/tcp  open  irc      UnrealIRCd
8009/tcp  open  ajp13    Apache Jserv (Protocol v1.3)
8180/tcp  open  http     Apache Tomcat/Coyote JSP engine 1.1
MAC Address: 00:0C:29:22:45:A3 (VMware)
Device type: general purpose
Running: Linux 2.6.X
OS CPE: cpe:/o:linux:linux_kernel:2.6
OS details: Linux 2.6.9 - 2.6.33
Network Distance: 1 hop
Service Info: Hosts: metasploitable.localdomain, irc.Metasploitable.LAN; OSs: Unix, Linux; CPE: cpe:/o:linux:linux_kernel

OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 13.43 seconds

(root@kali)-[~]
```

nmap -sU 10.10.10.12



```
File Actions Edit View Help
Starting Nmap 7.93 ( https://nmap.org ) at 2023-09-22 21:32 EDT
Stats: 0:01:51 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 17.98% done; ETC: 21:43 (0:08:26 remaining)
Stats: 0:02:45 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 23.28% done; ETC: 21:44 (0:09:04 remaining)
Stats: 0:03:21 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 26.83% done; ETC: 21:45 (0:09:11 remaining)
Stats: 0:04:03 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 30.80% done; ETC: 21:45 (0:09:06 remaining)
Stats: 0:07:11 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 48.88% done; ETC: 21:47 (0:07:32 remaining)
Stats: 0:08:33 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 56.72% done; ETC: 21:47 (0:06:31 remaining)
Stats: 0:10:21 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 67.07% done; ETC: 21:48 (0:05:05 remaining)
Stats: 0:11:48 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 75.85% done; ETC: 21:48 (0:03:45 remaining)
Stats: 0:12:35 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 80.43% done; ETC: 21:48 (0:03:04 remaining)
Stats: 0:13:12 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 83.90% done; ETC: 21:48 (0:02:32 remaining)
Stats: 0:15:27 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 96.85% done; ETC: 21:48 (0:00:30 remaining)
Stats: 0:16:35 elapsed; 0 hosts completed (1 up), 1 undergoing UDP Scan
UDP Scan Timing: About 99.99% done; ETC: 21:49 (0:00:00 remaining)
Nmap scan report for 10.10.10.12
Host is up (0.00052s latency).
Not shown: 950 closed udp ports (port-unreach), 46 open/filtered udp ports (no-response)
PORT      STATE SERVICE
53/udp    open  domain
111/udp   open  rpcbind
137/udp   open  netbios-ns
2049/udp  open  nfs
MAC Address: 00:0C:29:22:45:A3 (VMware)

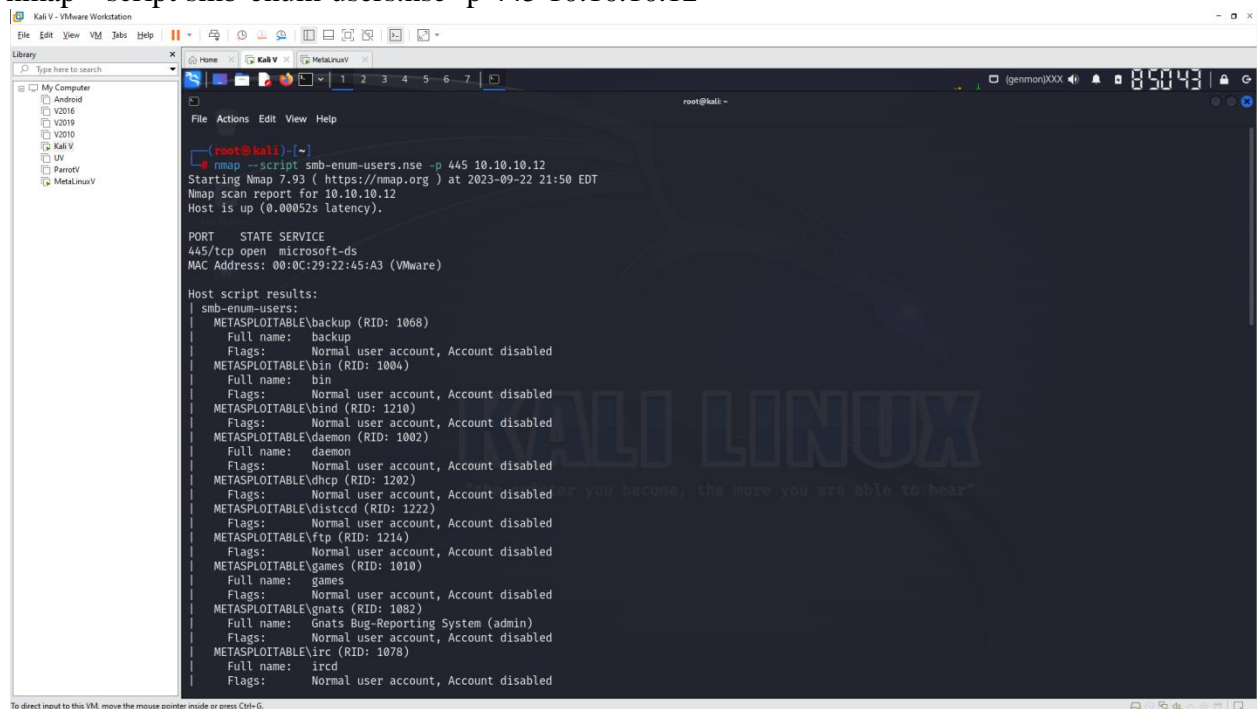
Nmap done: 1 IP address (1 host up) scanned in 1020.02 seconds

(root@kali)-[~]
```

## Task 2: Enumerating Users

### Enumerating with Nmap

`nmap --script smb-enum-users.nse -p 445 10.10.10.12`



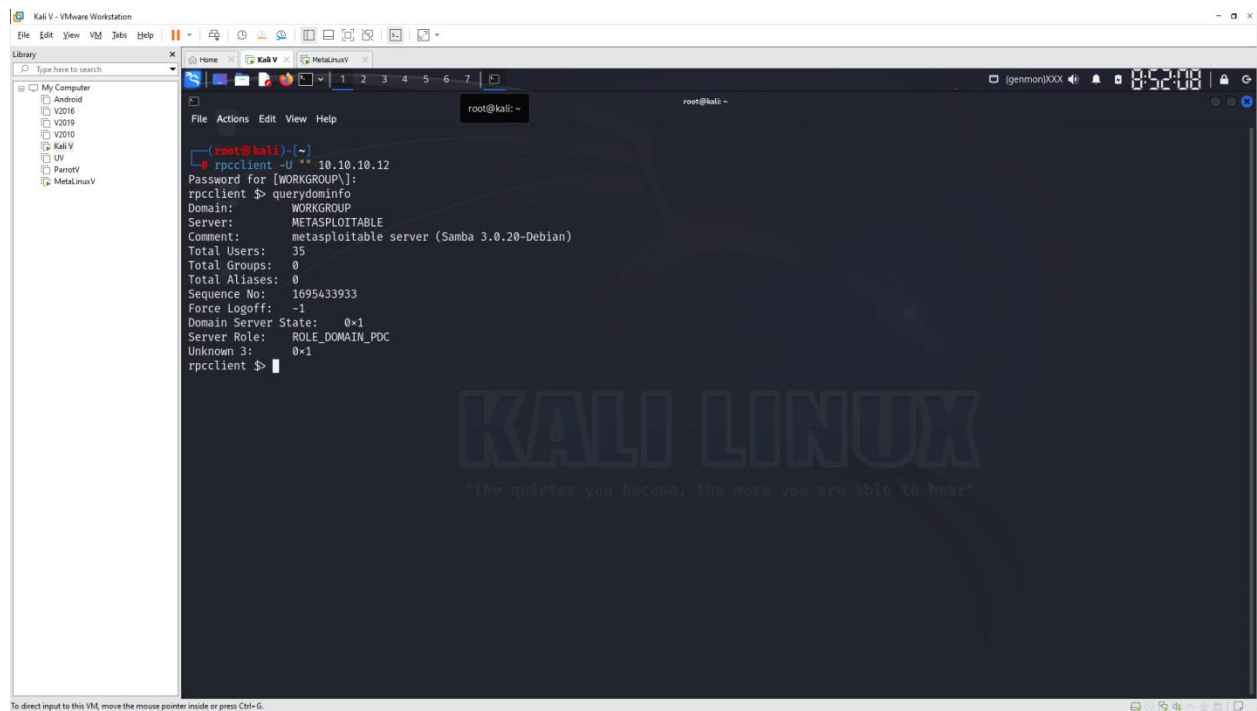
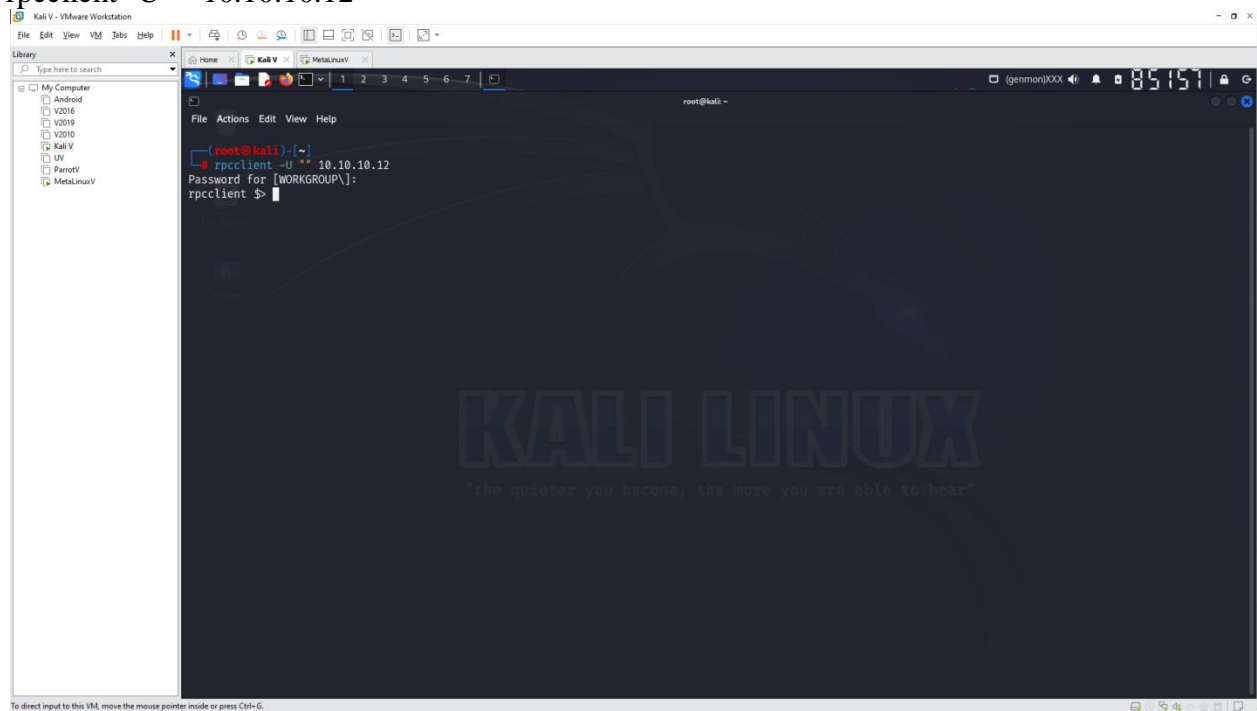
```
File Actions Edit View Help
(root@kali)-[~]
# nmap --script smb-enum-users.nse -p 445 10.10.10.12
Starting Nmap 7.93 ( https://nmap.org ) at 2023-09-22 21:50 EDT
Nmap scan report for 10.10.10.12
Host is up (0.00052s latency).

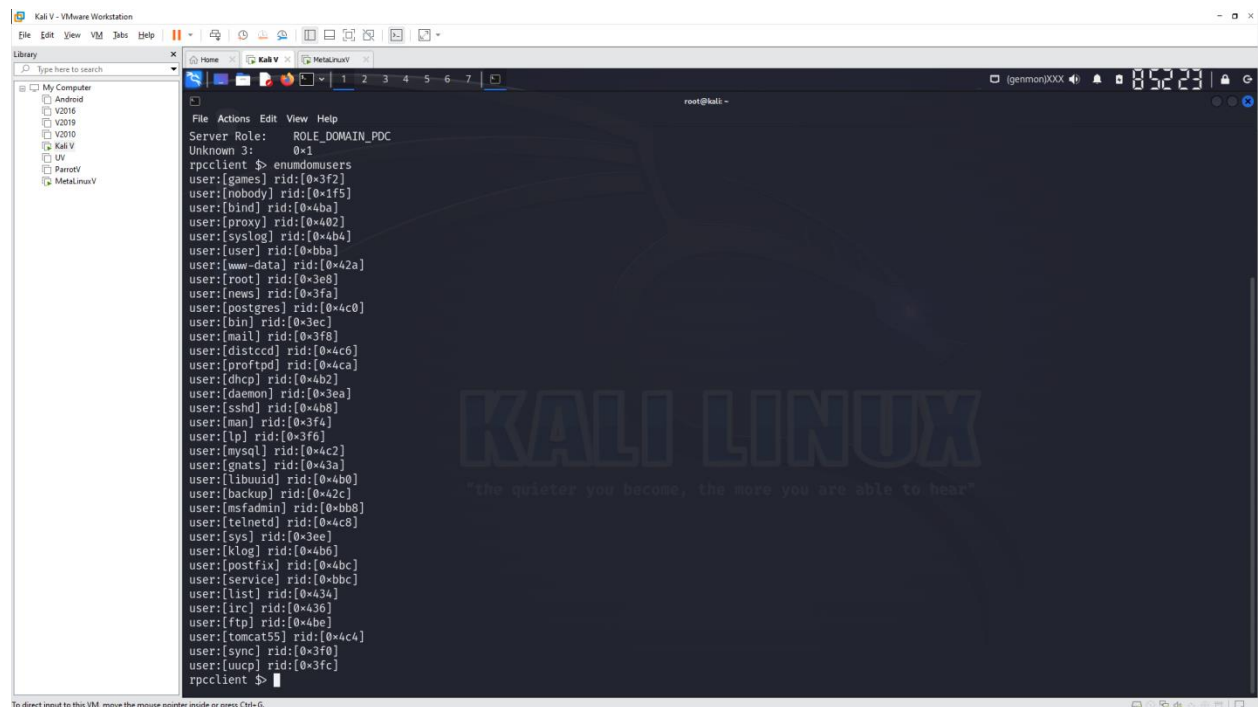
PORT      STATE SERVICE
445/tcp    open  microsoft-ds
MAC Address: 00:0C:29:22:45:A3 (VMware)

Host script results:
| smb-enum-users:
| METASPLOITABLE\backup (RID: 1068)
|   Full name: backup
|   Flags: Normal user account, Account disabled
| METASPLOITABLE\bin (RID: 1004)
|   Full name: bin
|   Flags: Normal user account, Account disabled
| METASPLOITABLE\bind (RID: 1210)
|   Full name: bind
|   Flags: Normal user account, Account disabled
| METASPLOITABLE\daemon (RID: 1002)
|   Full name: daemon
|   Flags: Normal user account, Account disabled
| METASPLOITABLE\dhcp (RID: 1202)
|   Full name: dhcp
|   Flags: Normal user account, Account disabled
| METASPLOITABLE\distd (RID: 1222)
|   Full name: distd
|   Flags: Normal user account, Account disabled
| METASPLOITABLE\ftp (RID: 1214)
|   Full name: ftp
|   Flags: Normal user account, Account disabled
| METASPLOITABLE\games (RID: 1010)
|   Full name: games
|   Flags: Normal user account, Account disabled
| METASPLOITABLE\gnats (RID: 1082)
|   Full name: Gnats Bug-Reporting System (admin)
|   Flags: Normal user account, Account disabled
| METASPLOITABLE\irc (RID: 1078)
|   Full name: ircd
|   Flags: Normal user account, Account disabled
```

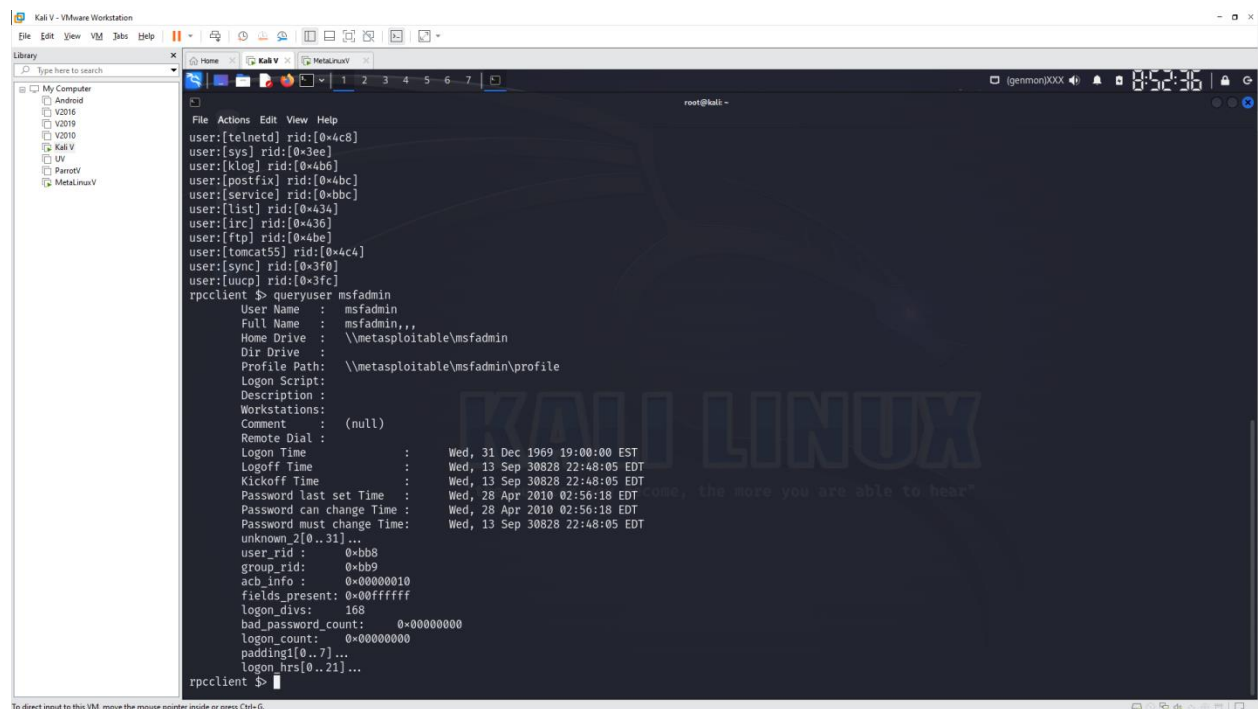
### Enumerating with rpcclient

rpcclient -U "" 10.10.10.12





```
File Actions Edit View Help
Server Role:  ROLE_DOMAIN_PDC
Unknown 3:    0x1
rpcclient $> enumdomusers
user:[games] rid:[0x3f2]
user:[nobody] rid:[0x1f5]
user:[bind] rid:[0x4ba]
user:[proxy] rid:[0x402]
user:[syslog] rid:[0x4b4]
user:[user] rid:[0xbba]
user:[www-data] rid:[0x62a]
user:[root] rid:[0x3e8]
user:[news] rid:[0x3fa]
user:[postgres] rid:[0x4c0]
user:[bin] rid:[0x3ec]
user:[mail] rid:[0x3f8]
user:[distccd] rid:[0x4c6]
user:[proftpd] rid:[0x4ca]
user:[dhcp] rid:[0x4b2]
user:[daemon] rid:[0x3ea]
user:[sshd] rid:[0x4b8]
user:[man] rid:[0x3f4]
user:[lp] rid:[0x3fe]
user:[mysql] rid:[0x4c2]
user:[gnats] rid:[0x43a]
user:[libuuid] rid:[0x4b0]
user:[backup] rid:[0x42c]
user:[msfadmin] rid:[0xbb8]
user:[telnetd] rid:[0x4c8]
user:[sys] rid:[0x3ee]
user:[klog] rid:[0x4b6]
user:[postfix] rid:[0x4bc]
user:[service] rid:[0xbbc]
user:[list] rid:[0x434]
user:[irc] rid:[0x436]
user:[ftp] rid:[0x4be]
user:[tomcat55] rid:[0x4c4]
user:[sync] rid:[0x3f0]
user:[uucp] rid:[0x3fc]
rpcclient $>
```



```
File Actions Edit View Help
user:[telnetd] rid:[0x4c8]
user:[sys] rid:[0x3ee]
user:[klog] rid:[0x4b6]
user:[postfix] rid:[0x4bc]
user:[service] rid:[0xbbc]
user:[list] rid:[0x434]
user:[irc] rid:[0x436]
user:[ftp] rid:[0x4be]
user:[tomcat55] rid:[0x4c4]
user:[sync] rid:[0x3f0]
user:[uucp] rid:[0x3fc]
rpcclient $> queryuser msfadmin
User Name      :  msfadmin
Full Name      :  msfadmin,,
Home Drive     :  \\metasploitable\msfadmin
Dir Drive      :
Profile Path    :  \\metasploitable\msfadmin\profile
Logon Script    :
Description     :
Workstations    :
Comment        :  (null)
Remote Dial    :
Logon Time      :      Wed, 31 Dec 1969 19:00:00 EST
Logoff Time     :      Wed, 13 Sep 30828 22:48:05 EDT
Kickoff Time    :      Wed, 13 Sep 30828 22:48:05 EDT
Password last set Time :      Wed, 28 Apr 2010 02:56:18 EDT
Password can change Time :      Wed, 28 Apr 2010 02:56:18 EDT
Password must change Time :      Wed, 13 Sep 30828 22:48:05 EDT
unknown_2[0..31]...
user_rid       :      0xbb8
group_rid      :      0xbb9
acb_info       :      0x00000010
fields_present :      0x00ffffff
logon_divs     :      168
bad_password_count :      0x00000000
logon_count    :      0x00000000
padding1[0..7]...
logon_hrs[0..21]...
rpcclient $>
```

Enumerating with enum4linux



```
Kali V - VMware Workstation
File Edit View VM Jobs Help
Library
  Type here to search
  My Computer
    Android
    V2016
    V2019
    V2010
    Kali V
    UV
    ParrotV
    MetaLinuxV

root@kali ~
File Actions Edit View Help

(root@kali)~# enum4linux --help
./enum4linux.pl version [unknown] calling Getopt::Std::getopts (version 1.13 [paranoid]),
running under Perl version 5.36.0.

Usage: enum4linux.pl [-OPTIONS [-MORE_OPTIONS]] [--] [PROGRAM_ARG1 ...]

The following single-character options are accepted:
  With arguments: -u -p -f -R -s -k -w -K
  Boolean (without arguments): -U -M -N -S -P -G -L -D -d -r -v -A -o -h -n -a -i -P

Options may be merged together. -- stops processing of options.
Space is not required between options and their arguments.
[Now continuing due to backward compatibility and excessive paranoia.
See 'perldoc Getopt::Std' about $Getopt::Std::STANDARD_HELP_VERSION.]
enum4linux v0.9.1 (http://labs.portcullis.co.uk/application/enum4linux/)
Copyright (c) 2011 Mark Lowe (mrl@portcullis-security.com)

Simple wrapper around the tools in the samba package to provide similar
functionality to enum.exe (formerly from www.bindview.com). Some additional
features such as RID cycling have also been added for convenience.

Usage: ./enum4linux.pl [options] ip

Options are (like "enum"):
-U get userlist
-M get machine list*
-S get sharelist
-P get password policy information
-G get group and member list
-d be detailed, applies to -U and -S
-u user specify username to use (default "")
-p pass specify password to use (default "")

The following options from enum.exe aren't implemented: -L, -N, -D, -f

Additional options:
-a Do all simple enumeration (-U -S -G -P -r -o -n -i).
```

```
Kali V - VMware Workstation
File Edit View VM Jobs Help
Library
  Type here to search
  My Computer
    Android
    V2016
    V2019
    V2010
    Kali V
    UV
    ParrotV
    MetaLinuxV

root@kali ~
File Actions Edit View Help

(root@kali)~# enum4linux 10.10.10.12
Starting enum4linux v0.9.1 ( http://labs.portcullis.co.uk/application/enum4linux/ ) on Fri Sep 22 21:53:24 2023

----- ( Target Information ) -----

Target ..... 10.10.10.12
RID Range ..... 500-550,1000-1050
Username ..... ''
Password ..... ''
Known Usernames .. administrator, guest, krbtgt, domain admins, root, bin, none

----- ( Enumerating Workgroup/Domain on 10.10.10.12 ) -----

[+] Got domain/workgroup name: WORKGROUP

----- ( Nbtstat Information for 10.10.10.12 ) -----

Looking up status of 10.10.10.12
METASPLOITABLE <00> - B <ACTIVE> Workstation Service
METASPLOITABLE <03> - B <ACTIVE> Messenger Service
METASPLOITABLE <20> - B <ACTIVE> File Server Service
.. _MSBROWSE_ <01> - <GROUP> B <ACTIVE> Master Browser
WORKGROUP <00> - <GROUP> B <ACTIVE> Domain/Workgroup Name
WORKGROUP <1d> - B <ACTIVE> Master Browser
WORKGROUP <1e> - <GROUP> B <ACTIVE> Browser Service Elections

MAC Address = 00-00-00-00-00-00

----- ( Session Check on 10.10.10.12 ) -----

[+] Server 10.10.10.12 allows sessions using username '', password ''
```



```
Kali V - VMware Workstation
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Type here to search
My Computer
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ParrotV
MetaLinuxV

root@kali ~
File Actions Edit View Help

[+] Server 10.10.10.12 allows sessions using username '', password ''

( Getting domain SID for 10.10.10.12 )

Domain Name: WORKGROUP
Domain Sid: (NULL SID)

[+] Can't determine if host is part of domain or part of a workgroup

( OS information on 10.10.10.12 )

[E] Can't get OS info with smbclient

[+] Got OS info for 10.10.10.12 from srvinfo:
METASPLOITABLE Wk Sv Prq Unx NT SNT metasploitable server (Samba 3.0.20-Debian)
platform_id : 500
os version : 4.9
server type : 0x9a03

( Users on 10.10.10.12 )
index: 0x1 RID: 0x3f2 acb: 0x00000011 Account: games Name: games Desc: (null)
index: 0x2 RID: 0x1f5 acb: 0x00000011 Account: nobody Name: nobody Desc: (null)
index: 0x3 RID: 0x4ba acb: 0x00000011 Account: bind Name: (null) Desc: (null)
index: 0x4 RID: 0x402 acb: 0x00000011 Account: proxy Name: proxy Desc: (null)
index: 0x5 RID: 0x4b4 acb: 0x00000011 Account: syslog Name: (null) Desc: (null)
index: 0x6 RID: 0xbba acb: 0x00000010 Account: user Name: just a user,111, Desc: (null)
index: 0x7 RID: 0x42a acb: 0x00000011 Account: www-data Name: www-data Desc: (null)
index: 0x8 RID: 0x3e8 acb: 0x00000011 Account: root Name: root Desc: (null)
index: 0x9 RID: 0x3fa acb: 0x00000011 Account: news Name: news Desc: (null)
index: 0xa RID: 0x4c0 acb: 0x00000011 Account: postgres Name: PostgreSQL administrator,,, Desc: (null)
index: 0xb RID: 0x3ec acb: 0x00000011 Account: bin Name: bin Desc: (null)
index: 0xc RID: 0x3f8 acb: 0x00000011 Account: mail Name: mail Desc: (null)

To direct input to this VM, move the mouse pointer inside or press Ctrl-G.
```

```
Kali V - VMware Workstation
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V2010
Kali V
UV
ParrotV
MetaLinuxV

root@kali ~
File Actions Edit View Help

( Share Enumeration on 10.10.10.12 )

Sharename Type Comment
print$ Disk Printer Drivers
tmp Disk oh noes!
opt Disk
IPC$ IPC IPC Service (metasploitable server (Samba 3.0.20-Debian))
ADMIN$ IPC IPC Service (metasploitable server (Samba 3.0.20-Debian))
Reconnecting with SMB1 for workgroup listing.

Server Comment
Workgroup Master
WORKGROUP METASPLOITABLE

[+] Attempting to map shares on 10.10.10.12
//10.10.10.12/print$ Mapping: DENIED Listing: N/A Writing: N/A
//10.10.10.12/tmp Mapping: OK Listing: OK Writing: N/A
//10.10.10.12/opt Mapping: DENIED Listing: N/A Writing: N/A

[E] Can't understand response:

NT_STATUS_NETWORK_ACCESS_DENIED listing \*
//10.10.10.12/IPC$ Mapping: N/A Listing: N/A Writing: N/A
//10.10.10.12/ADMIN$ Mapping: DENIED Listing: N/A Writing: N/A

( Password Policy Information for 10.10.10.12 )

[+] Attaching to 10.10.10.12 using a NULL share
[+] Trying protocol 139/SMB...
```

