



Lab - Scanning for SMB Vulnerabilities with enum4linux

Introduction

Server Message Block (SMB) is a Microsoft protocol that is available on non-Microsoft networks through the open-source Samba service.

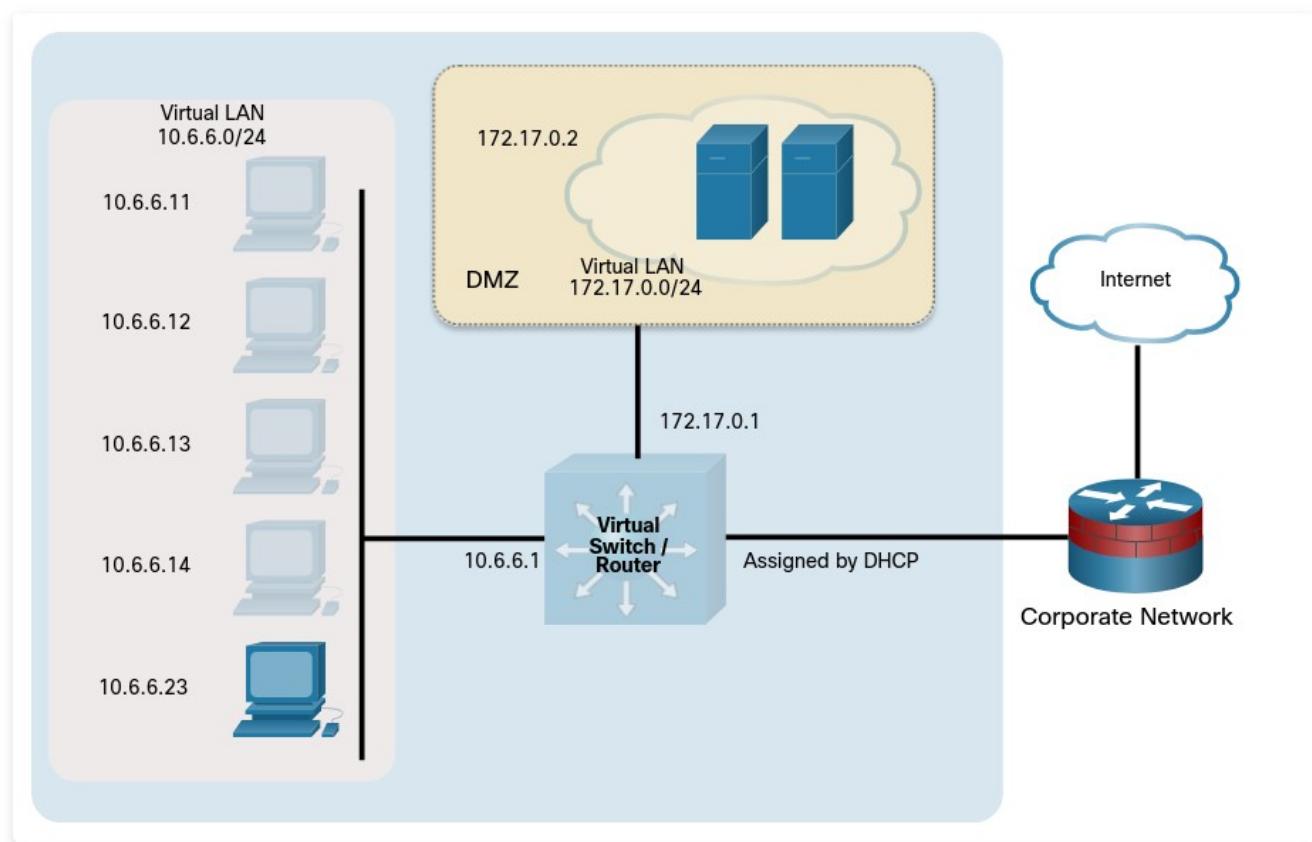
SMB makes it easy to set up and access network shares on LANs.

Many vulnerabilities have been found in it, and a number of high-profile exploits of it have appeared, such as WannaCry, Conficker, and EternalBlue.

In this lab you will get familiar with a popular tool that is used to discover network shares and other sensitive information through the exploitation of SMB.

You will also conduct a simulated exploit in which you transfer an unauthorized and potentially malicious file to an unprotected share.

Topology



Objectives

Enum4linux is a tool for enumerating information from Windows and Samba.

Samba is an application that enables Linux and Apple clients to participate in Windows networks. It enables non-Windows clients to utilize the **Server Message Block (SMB)** protocol to access file and print services. Samba servers can participate in a Windows domain, both as a client and a server.

In this lab, you will complete the following objectives:

- Launch enum4linux and explore its capabilities.

- Identify computers with SMB services running.
- Use enum4linux to enumerate users and network file shares.
- Use smbclient to transfer files between systems.

Background / Scenario

Poorly secured and managed Windows server networks are a huge security risk. Penetration testers must uncover any vulnerabilities in file and print sharing functions that can leave an organization vulnerable to attack. In this activity, you will explore the capabilities of the enum4linux tool to enumerate user and file sharing information from Samba servers. Finally, you will use the smbclient utility to transfer files between systems.

Required Resources

- Kali VM customized for the Ethical Hacker course

Instructions

Part 1: Launch enum4linux and explore its capabilities.

Step 1: Verify that enum4linux is installed and view the help file.

- a. Load Kali Linux using the username **kali** and the password **kali**. Open a terminal session from the menu bar at the top of the screen.
- b. Most enum4linux commands must be run as root, so use the **sudo su** command to obtain persistent root access.

At the prompt, enter the command to view the enum4linux help file.

```
(kali㉿Kali)-[~]
$ sudo su
[sudo] password for kali:
(root㉿Kali)-[/home/kali]
# enum4linux -help
Unknown option: e
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).
        This option is enabled if you don't provide any other options.
-h      Display this help message and exit
-r      enumerate users via RID cycling
-R range RID ranges to enumerate (default: 500-550,1000-1050, implies -r)
-K n    Keep searching RIDs until n consecutive RIDs don't correspond to
        a username. Impies RID range ends at 999999. Useful
        against DCs.
-l      Get some (limited) info via LDAP 389/TCP (for DCs only)
-s file brute force guessing for share names
-k user User(s) that exists on remote system (default: administrator,guest,krbtgt,domain admins,roo
        Used to get sid with "lookupsid known_username"
        Use commas to try several users: "-k admin,user1,user2"
-o      Get OS information
-i      Get printer information
-w wrkg Specify workgroup manually (usually found automatically)
-n      Do an nmblookup (similar to nbtstat)
-v      Verbose. Shows full commands being run (net, rpcclient, etc.)
-A      Aggressive. Do write checks on shares etc

RID cycling should extract a list of users from Windows (or Samba) hosts
which have RestrictAnonymous set to 1 (Windows NT and 2000), or "Network
access: Allow anonymous SID/Name translation" enabled (XP, 2003).

NB: Samba servers often seem to have RIDs in the range 3000-3050.

Dependancy info: You will need to have the samba package installed as this
script is basically just a wrapper around rpcclient, net, nmblookup and
smbclient. Polenum from http://labs.portcullis.co.uk/application/polenum/
is required to get Password Policy info.

(root㉿Kali)-[/home/kali]
#
```

The help file contains the syntax and options available to enumerate host and server information on networks that use SMB. Enum4linux requires that Samba be installed on the host system, in this case the Kali Linux computer, because it is dependent on the built-in Samba utilities.

Which Samba utilities does the help file indicate are used by the enum4linux tool? **rpcclient**, **net**, **nmblookup** and **smbclient**.

Step 2: Research terms associated with SMB functions.

Many terms used in Windows and SMB functions may not be familiar to you, so the output of the enum4linux commands may be difficult to interpret at first. Use an internet search engine to find the definition of the terms listed.

Relative Identifier (RID): The final numeric component of a SID that uniquely identifies a security principal within its domain or local system.

Security Identifier (SID): The unique alphanumeric string that identifies a security principal in Windows environments.

Domain Controller (DC): a server that responds to security authentication requests within a computer network domain.

Lightweight Directory Access Protocol (LDAP): an open, vendor-neutral, industry standard application protocol for accessing and maintaining distributed directory information services over an Internet Protocol (IP) network.

Workgroup: a peer-to-peer local area network(LAN).

Part 2: Use Nmap to Find SMB Servers.

Step 1: Scan the virtual networks to find potential targets.

One way to identify potential targets for SMB enumeration is to examine the open ports. Common open ports on SMB servers are:

TCP 135	RPC
TCP 139	NetBIOS Session
TCP 389	LDAP Server
TCP 445	SMB File Service
TCP 9389	Active Directory Web Services
TCP/UDP 137	NetBIOS Name Service
UDP 138	NetBIOS Datagram

- a. Two virtual networks are included in the Kali VM with Docker containers. Use the **nmap -sN** command to find the services available on hosts in the 172.17.0.0 virtual network.

What does Nmap reveal about hosts on the 172.17.0.0/24 network? **Only 2 host are present 172.17.0.1 and 172.17.0.2**

```
[root@Kali]-[~/home/kali]
# nmap -sN 172.17.0.0/24
Starting Nmap 7.94 ( https://nmap.org ) at 2026-01-16 09:59 UTC
Nmap scan report for metasploitable.vm (172.17.0.2)
Host is up (0.0000080s latency).
Not shown: 983 closed tcp ports (reset)
PORT      STATE      SERVICE
21/tcp    open|filtered  ftp
22/tcp    open|filtered  ssh
23/tcp    open|filtered  telnet
25/tcp    open|filtered  smtp
80/tcp    open|filtered  http
111/tcp   open|filtered  rpcbind
139/tcp   open|filtered  netbios-ssn
445/tcp   open|filtered  microsoft-ds
512/tcp   open|filtered  exec
513/tcp   open|filtered  login
514/tcp   open|filtered  shell
1099/tcp  open|filtered  rmiregistry
1524/tcp  open|filtered  ingreslock
2121/tcp  open|filtered  ccproxy-ftp
3306/tcp  open|filtered  mysql
5432/tcp  open|filtered  postgresql
6667/tcp  open|filtered  irc
MAC Address: 02:42:AC:11:00:02 (Unknown)

Nmap scan report for 172.17.0.1
Host is up (0.0000060s latency).
Not shown: 999 closed tcp ports (reset)
PORT      STATE      SERVICE
22/tcp    open|filtered  ssh

Nmap done: 256 IP addresses (2 hosts up) scanned in 8.48 seconds
[root@Kali]-[~/home/kali]
#
```

What ports are open on the host that identify running SMB services? What does Nmap call these services? **TCP 139 netbios-ssn and TCP 445 microsoft-ds.**

Conduct a **nmap -sN** scan on the **10.6.6.0/24** subnet.

```
[root@Kali]-[/home/kali]
# nmap -sN 10.6.6.0/24
Starting Nmap 7.94 ( https://nmap.org ) at 2026-01-16 10:10 UTC
Nmap scan report for webgoat.vm (10.6.6.11)
Host is up (0.0000060s latency).
Not shown: 997 closed tcp ports (reset)
PORT      STATE      SERVICE
8080/tcp  open|filtered http-proxy
8888/tcp  open|filtered sun-answerbook
9001/tcp  open|filtered tor-orport
MAC Address: 02:42:0A:06:06:0B (Unknown)

Nmap scan report for juice-shop.vm (10.6.6.12)
Host is up (0.0000060s latency).
Not shown: 999 closed tcp ports (reset)
PORT      STATE      SERVICE
3000/tcp  open|filtered ppp
MAC Address: 02:42:0A:06:06:0C (Unknown)

Nmap scan report for dvwa.vm (10.6.6.13)
Host is up (0.0000070s latency).
Not shown: 999 closed tcp ports (reset)
PORT      STATE      SERVICE
80/tcp    open|filtered http
MAC Address: 02:42:0A:06:06:0D (Unknown)

Nmap scan report for mutillidae.vm (10.6.6.14)
Host is up (0.0000060s latency).
Not shown: 998 closed tcp ports (reset)
PORT      STATE      SERVICE
80/tcp    open|filtered http
3306/tcp  open|filtered mysql
MAC Address: 02:42:0A:06:06:0E (Unknown)

Nmap scan report for gravemind.vm (10.6.6.23)
Host is up (0.0000070s latency).
Not shown: 994 closed tcp ports (reset)
PORT      STATE      SERVICE
21/tcp    open|filtered ftp
22/tcp    open|filtered ssh
53/tcp    open|filtered domain
80/tcp    open|filtered http
139/tcp   open|filtered netbios-ssn
445/tcp   open|filtered microsoft-ds
MAC Address: 02:42:0A:06:06:17 (Unknown)

Nmap scan report for 10.6.6.100
Host is up (0.0000070s latency).
Not shown: 999 closed tcp ports (reset)
PORT      STATE      SERVICE
80/tcp    open|filtered http
MAC Address: 02:42:0A:06:06:64 (Unknown)

Nmap scan report for 10.6.6.1
Host is up (0.0000060s latency).
Not shown: 999 closed tcp ports (reset)
PORT      STATE      SERVICE
22/tcp    open|filtered ssh

Nmap done: 256 IP addresses (7 hosts up) scanned in 30.63 seconds
```

```
[root@Kali]-[/home/kali]
#
```

Are there any potential target computers on this subnet running SMB services? Which computer or computers? How do you know?

Yes, 10.6.6.23, it has open port 139, netbios-ssn and 445, microsoft-ds.

Part 3: Use enum4linux to enumerate users and network file shares.

In this part, you will use enum4linux to discover more information about the two potential targets.

Step 1: Perform an enum4linux scan on target 172.17.0.2.

In Part 1, Step 1c, you used the enum4linux help page to learn about the options available to enumerate potential targets. The most common options are:

-U find configured users

-S get a list of file shares

-G get a list of the groups and their members

-P list the password policies

-i get a list of printers

- a. Use the **enum4linux -U** option to list the users configured on the target 172.17.0.2. Remember that enum4linux commands require root permissions to execute.

```
root@Kali: /home/kali
File Actions Edit View Help
[ (root@Kali)-[/home/kali]
# enum4linux -U 172.17.0.2
Starting enum4linux v0.9.1 ( http://labs.portcullis.co.uk/application/enum4linux/ ) on
Fri Jan 16 10:19:01 2026
===== ( Target Information ) =====

Target ..... 172.17.0.2
RID Range ..... 500-550,1000-1050
Username ..... ''
Password ..... ''
Known Usernames .. administrator, guest, krbtgt, domain admins, root, bin, none

===== ( Enumerating Workgroup/Domain on 172.17.0.2 ) =====

[+] Got domain/workgroup name: WORKGROUP

===== ( Session Check on 172.17.0.2 ) =====

[+] Server 172.17.0.2 allows sessions using username '', password ''

===== ( Getting domain SID for 172.17.0.2 ) =====

Domain Name: WORKGROUP
Domain Sid: (NULL SID)

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

===== ( Users on 172.17.0.2 ) =====

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)
index: 0xd RID: 0x4c6 acb: 0x00000011 Account: distccd   Name: (null)     Desc: (null)
index: 0xe RID: 0x4ca acb: 0x00000011 Account: proftpd   Name: (null)     Desc: (null)
index: 0xf RID: 0x4b2 acb: 0x00000011 Account: dhcp      Name: (null)     Desc: (null)
index: 0x10 RID: 0x3ea acb: 0x00000011 Account: daemon   Name: daemon     Desc: (null)
index: 0x11 RID: 0x4b8 acb: 0x00000011 Account: sshd     Name: (null)     Desc: (null)
index: 0x12 RID: 0x3f4 acb: 0x00000011 Account: man      Name: man       Desc: (null)
index: 0x13 RID: 0x3f6 acb: 0x00000011 Account: lp       Name: lp        Desc: (null)
index: 0x14 RID: 0x4c2 acb: 0x00000011 Account: mysql    Name: MySQL Server,,, Desc: (null)
index: 0x15 RID: 0x43a acb: 0x00000011 Account: gnats    Name: Gnats Bug-Reporting System (admin) Desc: (null)
index: 0x16 RID: 0x4b0 acb: 0x00000011 Account: libuuid   Name: (null)     Desc: (null)
index: 0x17 RID: 0x42c acb: 0x00000011 Account: backup    Name: backup     Desc: (null)
index: 0x18 RID: 0xbb8 acb: 0x00000010 Account: msfadmin  Name: msfadmin,,, Desc: (null)
index: 0x19 RID: 0x4c8 acb: 0x00000011 Account: telnetd   Name: (null)     Desc: (null)
index: 0x1a RID: 0x3ee acb: 0x00000011 Account: sys      Name: sys       Desc: (null)
index: 0x1b RID: 0x4b6 acb: 0x00000011 Account: klog     Name: (null)     Desc: (null)
index: 0x1c RID: 0x4bc acb: 0x00000011 Account: postfix   Name: (null)     Desc: (null)
```

The output of this command can generate multiple screens of information if many users are discovered. Enum4linux aggregates output from multiple Samba tools to produce a concise result. If you want to see how each feature is used, use the verbose option (-v) with the command.

```
(root㉿Kali)-[~/home/kali]
# enum4linux -UV 172.17.0.2

[V] Dependent program "nmblookup" found in /usr/bin/nmblookup
[V] Dependent program "net" found in /usr/bin/net
[V] Dependent program "rpcclient" found in /usr/bin/rpcclient
[V] Dependent program "smbclient" found in /usr/bin/smbclient
[V] Dependent program "polenum" found in /usr/bin/polenum
[V] Dependent program "ldapsearch" found in /usr/bin/ldapsearch
Starting enum4linux v0.9.1 ( http://labs.portcullis.co.uk/application/enum4linux/ ) on
Fri Jan 16 10:22:29 2026
===== ( Target Information ) =====

Target ..... 172.17.0.2
RID Range ..... 500-550,1000-1050
Username .....
Password .....
Known Usernames .. administrator, guest, krbtgt, domain admins, root, bin, none
===== ( Enumerating Workgroup/Domain on 172.17.0.2 ) =====

[V] Attempting to get domain name with command: nmblookup -A '172.17.0.2'
[+] Got domain/workgroup name: WORKGROUP
=====
Session Check on 172.17.0.2

[V] Attempting to make null session using command: smbclient -W 'WORKGROUP' //172.17.0
.2'/ipc$ -U''%'' -c 'help' 2>&1
[+] Server 172.17.0.2 allows sessions using username '', password ''
=====
Getting domain SID for 172.17.0.2

[V] Attempting to get domain SID with command: rpcclient -W 'WORKGROUP' -U''%'' 172.17.
0.2 -c 'lsaqquery' 2>&1
Domain Name: WORKGROUP
Domain Sid: (NULL SID)
[+] Can't determine if host is part of domain or part of a workgroup
=====
Users on 172.17.0.2

[V] Attempting to get userlist with command: rpcclient -W 'WORKGROUP' -c querydispinfo
-U''%'' '172.17.0.2' 2>&1
```

Note the [V] at the beginning of some of the lines of output. The verbose mode provides a narrative of how the results were obtained. For example, in the **Enumerating Workgroup/Domain** section of the output, enum4linux attempted to get the domain name using the command: **nmblookup -A '172.17.0.2'**.

Which Samba tool was used to map the file shares? **smbclient**

How many file shares are listed for target 172.17.0.2? What does the \$ indicate at the end of the share name? 5, \$ indicates hidden shares

```
[+] Attempting to map shares on 172.17.0.2

[V] Attempting map to share //172.17.0.2/print$ with command: smbclient -W 'WORKGROUP'
//'172.17.0.2'/'print$' -U'%'' -c dir 2>&1

//172.17.0.2/print$      Mapping: DENIED Listing: N/A Writing: N/A

[V] Attempting map to share //172.17.0.2/tmp with command: smbclient -W 'WORKGROUP' //'
172.17.0.2'/'tmp' -U'%'' -c dir 2>&1

//172.17.0.2/tmp          Mapping: OK Listing: OK Writing: N/A

[V] Attempting map to share //172.17.0.2/opt with command: smbclient -W 'WORKGROUP' //'
172.17.0.2'/'opt' -U'%'' -c dir 2>&1

//172.17.0.2/opt          Mapping: DENIED Listing: N/A Writing: N/A

[V] Attempting map to share //172.17.0.2/IPC$ with command: smbclient -W 'WORKGROUP' //'
172.17.0.2'/'IPC$' -U'%'' -c dir 2>&1

[E] Can't understand response:

NT_STATUS_NETWORK_ACCESS_DENIED listing \
//172.17.0.2/IPC$      Mapping: N/A Listing: N/A Writing: N/A

[V] Attempting map to share //172.17.0.2/ADMIN$ with command: smbclient -W 'WORKGROUP'
//'172.17.0.2'/'ADMIN$' -U'%'' -c dir 2>&1

//172.17.0.2/ADMIN$      Mapping: DENIED Listing: N/A Writing: N/A
enum4linux complete on Fri Jan 16 10:26:39 2026

[root@Kali]-[/home/kali]
#
```

c. Penetration testers may not have uncovered a known username/password combination to further their exploit. In this case, they need to do a brute-force password attack to obtain the necessary credentials. It is a benefit to know the password policies in place on the target system to structure the brute-force effort. Use the **enum4linux -P** command to list the password policies.

```
root@Kali: /home/kali
File Actions Edit View Help
└─# enum4linux -P 172.17.0.2
Starting enum4linux v0.9.1 ( http://labs.portcullis.co.uk/application/enum4linux/ ) on
Fri Jan 16 10:38:55 2026
=====
( Target Information )

Target ..... 172.17.0.2
RID Range ..... 500-550,1000-1050
Username .... ''
Password ..... ''
Known Usernames .. administrator, guest, krbtgt, domain admins, root, bin, none

=====
( Enumerating Workgroup/Domain on 172.17.0.2 )

[+] Got domain/workgroup name: WORKGROUP

=====
( Session Check on 172.17.0.2 )

[+] Server 172.17.0.2 allows sessions using username '', password ''

=====
( Getting domain SID for 172.17.0.2 )

Domain Name: WORKGROUP
Domain Sid: (NULL SID)

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

=====
( Password Policy Information for 172.17.0.2 )

[+] Attaching to 172.17.0.2 using a NULL share
[+] Trying protocol 139/SMB ...
[+] Found domain(s):
    [+] METASPOITABLE
    [+] Builtin
[+] Password Info for Domain: METASPOITABLE
    [+] Minimum password length: 5
    [+] Password history length: None
    [+] Maximum password age: Not Set
    [+] Password Complexity Flags: 000000
        [+] Domain Refuse Password Change: 0
        [+] Domain Password Store Cleartext: 0
        [+] Domain Password Lockout Admins: 0
        [+] Domain Password No Clear Change: 0
        [+] Domain Password No Anon Change: 0
        [+] Domain Password Complex: 0
    [+] Minimum password age: None
    [+] Reset Account Lockout Counter: 30 minutes
    [+] Locked Account Duration: 30 minutes
    [+] Account Lockout Threshold: None
    [+] Forced Log off Time: Not Set

[+] Retrieved partial password policy with rpcclient:
```

```
[+] Retrieved partial password policy with rpcclient:  
  
Password Complexity: Disabled  
Minimum Password Length: 0  
  
enum4linux complete on Fri Jan 16 10:38:56 2026  
  
└─#
```

What is the minimum password length set for accounts on this server? What is the account lockout threshold setting? **5, none**

How would rate the security of the password policy set for this domain? Low, medium, or high? Explain.

Low. The minimum password length is too short. The password complexity flag is 000000. Microsoft documents this value as meaning no password complexity policy is set. Also, no minimum password age is configured.

Step 2: Perform a simple enumeration scan on target 10.6.6.23.

Enum4linux has an option that combines the -U, -S, -G, -P, -r, -o, -n, -i options into one command. This requires using the **-a** argument. This option quickly performs multiple SMB enumeration operations in one scan.

Use the **enum4linux -a** command to perform a scan on the potential Samba server target that you identified in Part 2.

Command: **enum4linux -a 10.6.6.23**

```
[root@Kali]-[~/home/kali]
# enum4linux -a 10.6.6.23
Starting enum4linux v0.9.1 ( http://labs.portcullis.co.uk/application/enum4linux/ ) on
Fri Jan 16 10:45:21 2026
=====
( Target Information )
=====

Target ..... 10.6.6.23
RID Range ..... 500-550,1000-1050
Username ..... ''
Password ..... ''
Known Usernames .. administrator, guest, krbtgt, domain admins, root, bin, none

=====
( Enumerating Workgroup/Domain on 10.6.6.23 )
=====

[E] Can't find workgroup/domain

=====
( Nbtstat Information for 10.6.6.23 )
=====

Looking up status of 10.6.6.23
No reply from 10.6.6.23
=====
( Session Check on 10.6.6.23 )
=====

[+] Server 10.6.6.23 allows sessions using username '', password ''
=====
( Getting domain SID for 10.6.6.23 )
=====

Domain Name: WORKGROUP
Domain Sid: (NULL SID)
[+] Can't determine if host is part of domain or part of a workgroup
=====
( OS information on 10.6.6.23 )
=====

[E] Can't get OS info with smbclient
[+] Got OS info for 10.6.6.23 from srvinfo:
    GRAVEMIND      Wk Sv PrQ Unix NT SNT Samba 4.9.5-Debian
    platform_id    :      500
    os version     :      6.1
    server type   : 0x809a03
=====
( Users on 10.6.6.23 )
=====
```

```
index: 0x1 RID: 0x3e8 acb: 0x00000015 Account: masterchief      Name:   Desc:  
index: 0x2 RID: 0x3e9 acb: 0x00000015 Account: arbiter     Name:   Desc:  
  
user:[masterchief] rid:[0x3e8]  
user:[arbiter] rid:[0x3e9]
```

```
===== ( Share Enumeration on 10.6.6.23 ) =====
```

Sharename	Type	Comment
homes	Disk	All home directories
workfiles	Disk	Confidential Workfiles
print\$	Disk	Printer Drivers
IPC\$	IPC	IPC Service (Samba 4.9.5-Debian)

Reconnecting with SMB1 for workgroup listing.

Server	Comment
Workgroup	Master

[+] Attempting to map shares on 10.6.6.23

[E] Can't understand response:

```
tree connect failed: NT_STATUS_BAD_NETWORK_NAME  
//10.6.6.23/homes      Mapping: N/A Listing: N/A Writing: N/A  
//10.6.6.23/workfiles  Mapping: OK Listing: OK Writing: N/A  
//10.6.6.23/print$    Mapping: OK Listing: OK Writing: N/A
```

[E] Can't understand response:

```
NT_STATUS_OBJECT_NAME_NOT_FOUND listing *\n//10.6.6.23/IPC$      Mapping: N/A Listing: N/A Writing: N/A
```

```
===== ( Password Policy Information for 10.6.6.23 ) =====
```

[+] Attaching to 10.6.6.23 using a NULL share

[+] Trying protocol 139/SMB ...

[+] Found domain(s):

```
[+] GRAVEMIND  
[+] Builtin
```

[+] Password Info for Domain: GRAVEMIND

```
[+] Minimum password length: 5  
[+] Password history length: None  
[+] Maximum password age: 37 days 6 hours 21 minutes  
[+] Password Complexity Flags: 000000
```

```
[+] Domain Refuse Password Change: 0  
[+] Domain Password Store Cleartext: 0  
[+] Domain Password Lockout Admins: 0  
[+] Domain Password No Clear Change: 0  
[+] Domain Password No Anon Change: 0  
[+] Domain Password Complex: 0
```

```
[+] Minimum password age: None  
[+] Reset Account Lockout Counter: 30 minutes  
[+] Locked Account Duration: 30 minutes  
[+] Account Lockout Threshold: None  
[+] Forced Log off Time: 37 days 6 hours 21 minutes
```

```
[+] Retrieved partial password policy with rpcclient:  
[+] Password Complexity: Disabled  
[+] Minimum Password Length: 5  
  
===== ( Groups on 10.6.6.23 ) =====  
  
[+] Getting builtin groups:  
[+] Getting builtin group memberships:  
[+] Getting local groups:  
[+] Getting local group memberships:  
[+] Getting domain groups:  
[+] Getting domain group memberships:  
  
===== ( Users on 10.6.6.23 via RID cycling (RIDS: 500-550,1000-1050) ) =====  
  
[I] Found new SID:  
S-1-22-1  
[I] Found new SID:  
S-1-5-32  
[I] Found new SID:  
S-1-5-32  
[I] Found new SID:  
S-1-5-32  
[I] Found new SID:  
S-1-5-32
```

```

[+] Enumerating users using SID S-1-22-1 and logon username '', password ''

S-1-22-1-1000 Unix User\masterchief (Local User)
S-1-22-1-1001 Unix User\arbiter (Local User)
S-1-22-1-1002 Unix User\labuser (Local User)

[+] Enumerating users using SID S-1-5-32 and logon username '', password ''

S-1-5-32-544 BUILTIN\Administrators (Local Group)
S-1-5-32-545 BUILTIN\Users (Local Group)
S-1-5-32-546 BUILTIN\Guests (Local Group)
S-1-5-32-547 BUILTIN\Power Users (Local Group)
S-1-5-32-548 BUILTIN\Account Operators (Local Group)
S-1-5-32-549 BUILTIN\Server Operators (Local Group)
S-1-5-32-550 BUILTIN\Print Operators (Local Group)

[+] Enumerating users using SID S-1-5-21-3080196717-3701805971-2094628062 and logon use
rname '', password ''

S-1-5-21-3080196717-3701805971-2094628062-501 GRAVEMIND\nobody (Local User)
S-1-5-21-3080196717-3701805971-2094628062-513 GRAVEMIND\None (Domain Group)
S-1-5-21-3080196717-3701805971-2094628062-1000 GRAVEMIND\masterchief (Local User)
S-1-5-21-3080196717-3701805971-2094628062-1001 GRAVEMIND\arbiter (Local User)

===== ( Getting printer info for 10.6.6.23 ) =====

No printers returned.

enum4linux complete on Fri Jan 16 10:46:04 2026

└─# 

```

How many local users and groups are there on target 10.6.6.23? **3 local user and 7 local groups**

What are the shares that are located on this target? **homes, workfiles, and print\$**. The **IPC\$ share is for the server process itself. It is created by default.**

Sharename	Type	Comment
homes	Disk	All home directories
workfiles	Disk	Confidential Workfiles
print\$	Disk	Printer Drivers
IPC\$	IPC	IPC Service (Samba 4.9.5-Debian)
Getting SMB1 for workgroup listing		

Part 4: Use smbclient to transfer files between systems.

Smbclient is a component of Samba that can store and retrieve files, similar to an FTP client. You will use smbclient to transfer a file to the target system at 172.17.0.2. This simulates exploiting a network host with malware through an SMB vulnerability.

- a. Create a text file using the **cat** command. Name the file **badfile.txt**. Enter the desired text. In this example, **This is a dangerous file.** was used. Be sure that you know the path to the file. Press **CTRL-C** to when finished.

```
(root㉿Kali)-[~/home/kali]
# cat >> badfile.txt
This is a dangerous file
```

- b. Take a look at the options available with smbclient using the command **smbclient -help** command.
- c. Use the **smbclient -L** command to list the shares on the target host. This command produces a similar output to what the enum4linx command did in Part 3. When asked for a password, press enter. The double / character before the IP address and the / following it are necessary if the target is a Windows computer.

```
(root㉿Kali)-[~/home/kali]
# smbclient -L //172.17.0.2/
Password for [WORKGROUP\root]:
Anonymous login successful

      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))
an))      Reconnecting with SMB1 for workgroup listing.
an))      Anonymous login successful

      Server
      Workgroup          Comment
      WORKGROUP          Master
                           METASPLOITABLE

[root@Kali ~]
```

- d. Connect to the **tmp** share using the **smbclient** command by specifying the share name and IP address.

```
[root@Kali]-[~/home/kali]
# smbclient //172.17.0.2/tmp
Password for [WORKGROUP\root]:
Anonymous login successful
Try "help" to get a list of possible commands.
smb: \> 
```

Note that the prompt changed to the **smb:>** prompt. Type **help** to see what commands are available.

- e. Enter **dir** to view the contents of the share.

```
[root@Kali]-[~/home/kali]
# smbclient //172.17.0.2/tmp
Password for [WORKGROUP\root]:
Anonymous login successful
Try "help" to get a list of possible commands.
smb: \> dir
.
..
.X11-unix
.ICE-unix
.X0-lock
gconfd-msfadmin
orbit-msfadmin
682.jsvc_up
826.jsvc_up
810.jsvc_up
1582.jsvc_up
1823.jsvc_up

          D      0  Fri Jan 16 11:07:55 2026
          DR     0  Mon Aug 14 10:39:59 2023
          DH     0  Mon Aug 14 10:35:14 2023
          DH     0  Sun Jan 28 03:08:08 2018
          HR    11  Mon Aug 14 10:35:14 2023
          DR     0  Tue Jan 13 11:25:33 2026
          DR     0  Tue Jan 13 11:25:33 2026
          R      0  Mon Aug 14 10:35:26 2023
          R      0  Sun Jan 28 07:08:40 2018
          R      0  Sun Jan 28 03:54:31 2018
          R      0  Sun Jan 28 04:01:49 2018
          R      0  Sun Jan 28 02:57:44 2018

38497656 blocks of size 1024. 9212904 blocks available
smb: \> 
```

- f. Upload the **badfile.txt** to the target server using the **put** command. The syntax for the command is: **put local-file-name remote-file-name**
- g. Verify that the file successfully uploaded using the **dir** command.

```
      38497656 blocks of size 1024. 9212560 blocks available
smb: \> put badfile.txt badfile.txt
putting file badfile.txt as '\badfile.txt' (0.0 kb/s) (average -nan kb/s)
smb: \> dir
.
..
.X11-unix
.ICE-unix
.X0-lock
gconfd-msfadmin
orbit-msfadmin
682.jsvc_up
badfile.txt
826.jsvc_up
810.jsvc_up
1582.jsvc_up
1823.jsvc_up

          D      0  Fri Jan 16 11:09:22 2026
          DR     0  Mon Aug 14 10:39:59 2023
          DH     0  Mon Aug 14 10:35:14 2023
          DH     0  Sun Jan 28 03:08:08 2018
          HR    11  Mon Aug 14 10:35:14 2023
          DR     0  Tue Jan 13 11:25:33 2026
          DR     0  Tue Jan 13 11:25:33 2026
          R      0  Mon Aug 14 10:35:26 2023
          A      0  Fri Jan 16 11:09:22 2026
          R      0  Sun Jan 28 07:08:40 2018
          R      0  Sun Jan 28 03:54:31 2018
          R      0  Sun Jan 28 04:01:49 2018
          R      0  Sun Jan 28 02:57:44 2018

      38497656 blocks of size 1024. 9212560 blocks available
smb: \> █
```

h. Type **quit** to exit the **smbclient** and return to the CLI prompt.

Reflect:

You are conducting a penetration test of a client network. You have gained access to an internal network by social engineering the username and password of an ad hoc webserver that is not behind the firewall. You can remotely access the network from a Kali VM configured with the enum4linux tool. What steps would you follow to send a dummy malware file to hosts on the network as part of the penetration test?

- Use a network scanning tool like **Nmap** to identify hosts on the internal network that have SMB services running.
- Once potential targets with open SMB ports are identified, use the **enum4linux** tool to enumerate detailed information, specifically the available network shares.
- Review the **enum4linux** output to find shares that allow write access (e.g., shares without a \$ indicating a hidden share, or those explicitly marked as writable). The goal is to find a location where files can be successfully uploaded for testing.
- Create a harmless file (e.g., a simple text file named **testfile.txt**) on your Kali VM that acts as a safe, testable file for confirming file transfer capabilities.
- Use the **smbclient** utility to connect to the identified writable share
- Use the **dir** or **ls** command at the **smb: \>** prompt to confirm that the **testfile.txt** was successfully copied to the target system's share.
- Type **quit** to exit the **smbclient** session.