



INSTITUTE FOR ADVANCED COMPUTING
AND
SOFTWARE DEVELOPMENT
AKURDI, PUNE

DOCUMENTATION ON
“Websecbalance using DVWA”

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PROJECT GUIDE

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1. INTRODUCTION

In today's digital landscape, the security of web applications has become a paramount concern. With cyberattacks targeting web applications on the rise, there is an increasing demand for individuals to acquire practical skills in identifying and mitigating vulnerabilities. A load balancing mechanism is implemented to distribute security testing traffic evenly across multiple instances of DVWA. This simulates the challenges of load balancing encountered in actual scenarios. The project encourages ethical hacking by providing a safe environment to practice security testing skills.

Penetration testing involves simulating cyberattacks on a target system to identify potential security vulnerabilities and weaknesses. This proactive approach helps organizations assess the effectiveness of their security measures and discover any potential entry points for attackers. Pen testers attempt to exploit vulnerabilities in a controlled manner, mimicking real-world attacks without causing actual harm.

DVWA is a web application purposely designed to be vulnerable to various security vulnerabilities. It's often used as a training tool for learning and practicing web application security testing. DVWA provides a safe and controlled environment where individuals can explore and understand common web vulnerabilities by exploiting them in a legal and ethical manner.

1.1 What are Vulnerabilities?

A vulnerability is a weakness that can be exploited by cybercriminals to gain unauthorized access to a computer system. After exploiting a vulnerability, a cyberattack can run malicious code, install malware, and even steal sensitive data.

Vulnerabilities can be exploited by a variety of methods, including SQL injection, buffer overflows, cross-site scripting (XSS), and open-source exploit kits that look for known vulnerabilities and security weaknesses in web applications.

Many vulnerabilities impact popular software, placing the many customers using the software at a heightened risk of a data breach, or supply chain attack. Such zero-day

exploits are registered by MITRE as a Common Vulnerability Exposure (CVE).

Types of web vulnerabilities:-(OWASP Top 10)

A01:2021-Broken Access Control moves up from the fifth position; 94% of applications were tested for some form of broken access control. The 34 Common Weakness Enumerations (CWEs) mapped to Broken Access Control had more occurrences in applications than any other category.

A02:2021-Cryptographic Failures shifts up one position to #2, previously known as Sensitive Data Exposure, which was broad symptom rather than a root cause. The renewed focus here is on failures related to cryptography which often leads to sensitive data exposure or system compromise.

A03:2021-Injection slides down to the third position. 94% of the applications were tested for some form of injection, and the 33 CWEs mapped into this category have the second most occurrences in applications. Cross-site Scripting is now part of this category in this edition.

A04:2021-Insecure Design is a new category for 2021, with a focus on risks related to design flaws. If we genuinely want to “move left” as an industry, it calls for more use of threat modeling, secure design patterns and principles and reference architectures.

A05:2021-Security Misconfiguration. 90% of applications were tested for some form of misconfiguration. With more shifts into highly configurable software, it's not surprising to see this category move up. The former category for XML External Entities (XXE) is now part of this category.

A06:2021-Vulnerable and Outdated Components was previously titled Using Components with Known Vulnerabilities and is #2 in the Top 10 community survey, but also had enough data to make the Top 10 via data analysis. Is a known issue that we struggle to test and assess risk. It is the only category not to have any Common Vulnerability and Exposures (CVEs) mapped to the included CWEs, so a default exploit and impact weights of 5.0 are factored into their scores.

A07:2021-Identification and Authentication Failures was previously Broken Authentication and is sliding down from the second position, and now includes CWEs that are more related to identification failures. This category is still an integral part of the Top 10, but the increased availability of standardized frameworks seems to be helping.

A08:2021-Software and Data Integrity Failures is a new category for 2021, focusing on making assumptions related to software updates, critical data, and CI/CD pipelines

without verifying integrity. One of the highest weighted impacts from Common Vulnerability and Exposures/Common Vulnerability Scoring System (CVE/CVSS) data mapped to the 10 CWEs in this category. Insecure Deserialization from 2017 is now a part of this larger category.

A09:2021-Security Logging and Monitoring Failures was previously Insufficient Logging & Monitoring and is added from the industry survey. This category is expanded to include more types of failures, is challenging to test for, and isn't well represented in the CVE/CVSS data. However, failures in this category can directly impact visibility, incident alerting, and forensics.

A10:2021-Server-Side Request. The data shows a relatively low incidence rate with above average testing coverage, along with above-average ratings for Exploit and Impact potential. This category represents the scenario where the security community members are telling us this is important, even though it's not illustrated in the data at this time.

1.2 Apache Web Server

Apache is considered open-source software, which means the original source code is freely available for viewing and collaboration. Being open source has made Apache very popular with developers who have built and configured their own modules to apply specific functionality and improve on its core features. Apache has been around since 1995 and is responsible as a core technology that helped spur the initial growth of the internet in its infancy.

One of the pros of Apache is its ability to handle large amounts of traffic with minimal configuration. It scales with ease and with its modular functionality at its core, you can configure Apache to do what you want, how you want it. You can also remove unwanted modules to make Apache more lightweight and efficient.

Some of the most popular modules that can be added are SSL, Server-Side Programming Support (PHP), and Load Balancing configs to handle large amounts of traffic. Apache can also be deployed on Linux, MacOS, and Windows. If you learn how to configure Apache on Linux, you can administer Apache on Windows and Mac. The only difference would be directory paths and installation processes.

1.3 DVWA

Damn Vulnerable Web Application (DVWA) is a PHP/MySQL web application that is damn vulnerable. Its main goal is 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 and to aid both students & teachers to learn about web application security in a controlled class room environment.

To test WAF, we need a vulnerable web-application on which we can perform and block the attacks.

So, we have used DVWA as a web-application.

A vulnerable web application is a web application that has security weaknesses that can be exploited by attackers to gain unauthorized access to sensitive information, inject malicious code, or disrupt the normal operation of the application.

There are several types of vulnerabilities that can be present in a web application, including

Injection flaws: These vulnerabilities occur when untrusted user input is not properly validated or sanitized before being used by the application. This can lead to SQL injection, code injection, and other types of injection attacks.

Cross-site scripting (XSS): This occurs when an attacker is able to inject malicious scripts into a web page viewed by other users.

Cross-site request forgery (CSRF): This occurs when an attacker is able to trick a user into performing an action on a web application without their knowledge or consent.

1.4 Burp suite

Burp Suite: is a comprehensive set of web application security testing tools developed by PortSwigger, a UK-based cybersecurity company. It's widely used by security professionals, penetration testers, and ethical hackers to identify and mitigate vulnerabilities in web applications. Burp Suite offers a range of features that assist in various stages of security testing, from identifying vulnerabilities to providing detailed reports for remediation.

Key Features of Burp Suite:

1. **Proxy :** Burp Suite's proxy allows you to intercept and modify web traffic between your browser and the target application. This is useful for manual testing and analyzing requests and responses.
2. **Scanner:** The automated scanner in Burp Suite can identify a variety of vulnerabilities,

such as SQL injection, cross-site scripting (XSS), and more. It scans the target application for potential security issues.

3. **Intruder:** Intruder enables you to automate and customize various types of attacks, such as fuzzing, to identify vulnerabilities that could be exploited.
4. **Repeater:** This tool lets you modify and replay individual HTTP requests to observe how the application responds. It's useful for manual testing and observing the impact of different inputs.
5. **Extender :** Burp Suite's extender allows you to enhance the tool's functionality by adding custom extensions. This could include additional scanning capabilities or integrations with other tools.

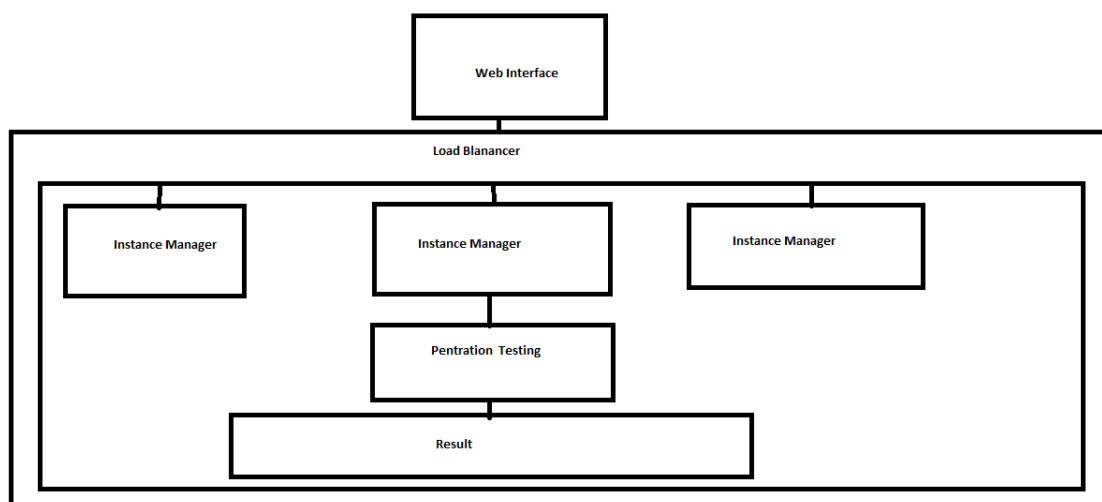
2.SYSTEM REQUIREMENTS

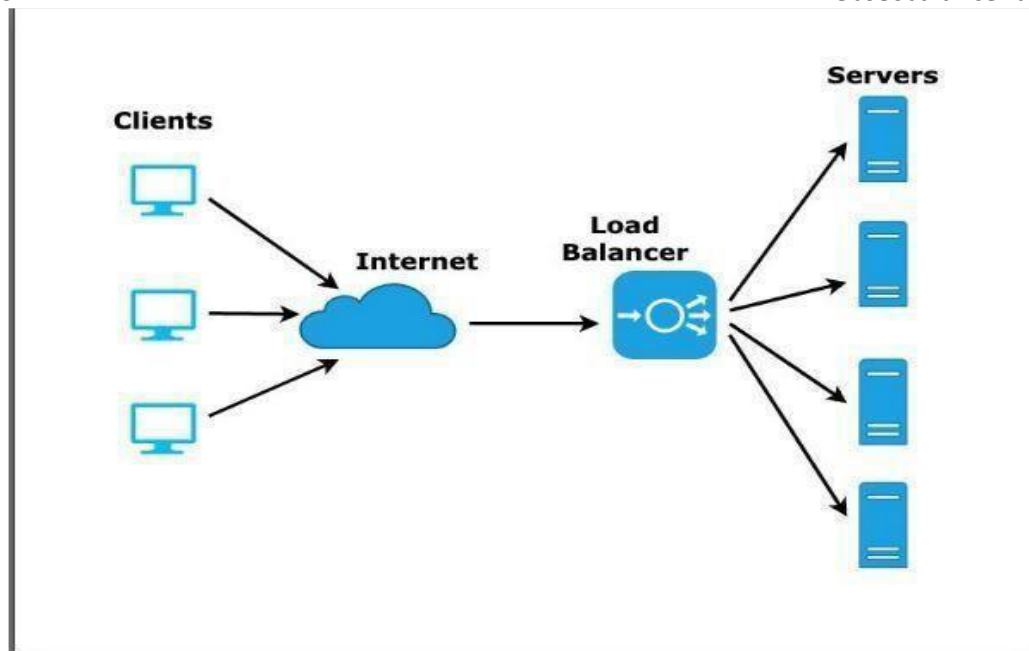
2.1 System Requirements

1. Hardware Consideration:
 - a. Kali Linux
 - b. RAM 16GB
 - c. Hard Disk – 500GB
2. Software Architecture
 - a. Apache Web Server
 - b. HAProxy
 - c. DVWA
3. Burpsuite

2.2Infrastructure Diagram

BASIC ARCHITECTURE:





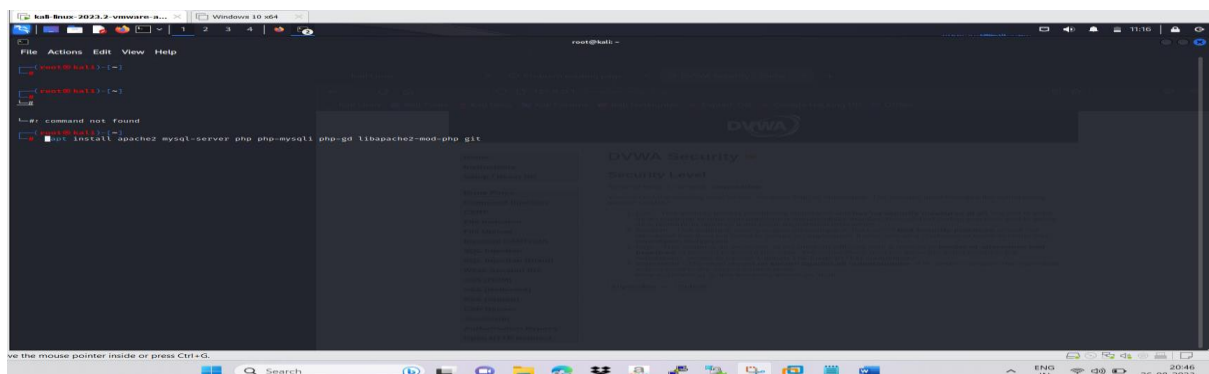
3.INSTALLATION

3.1 Installing Apache Web Server:-

```
(root@kali)-[~]  
# apt-get install apache2  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
apache2 is already the newest version (2.4.55-1).  
0 upgraded, 0 newly installed, 0 to remove and 1789 not upgraded.  
  
(root@kali)-[~]  
#
```

3.2 Installing DVWA :-

```
root@kali:~# cd /var/www/html
root@kali:~# cd /var/www/html
root@kali:~# cd
root@kali:~# apt-get update
Get:1 http://kali.download/kali kali-rolling InRelease [41.2 kB]
Get:2 http://kali.download/kali kali-rolling/main amd64 Packages [56.4 MB]
Get:3 http://kali.download/kali kali-rolling/main amd64 Contents [57.8 MB]
Get:4 http://kali.download/kali kali-rolling/contrib amd64 Packages [514 kB]
Get:5 http://kali.download/kali kali-rolling/contrib amd64 Contents [222 kB]
Get:6 http://kali.download/kali kali-rolling/non-free amd64 Packages [218 kB]
Get:7 http://kali.download/kali kali-rolling/non-free amd64 Contents [907 kB]
Fetched 66.7 MB in 2s (2.220 MB/s)
```



3.3 Configure DVWA

```
kali-linux-2023.2-vmware-a... x Windows 10 x64
root@kali: /etc/php/8.2/apache2

(root@kali)~# systemctl restart mariadb-server.service
Failed to restart mariadb-server.service: Unit mariadb-server.service not found.

(root@kali)~# sudo apt-get install mariadb-server.service
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package mariadb-server.service
E: Couldn't find any package by glob 'mariadb-server.service'
E: Couldn't find any package by regex 'mariadb-server.service'

(root@kali)~# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 31
Server version: 10.11.4-MariaDB-1 Debian 12

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> Ctrl-C -- exit!
Aborted

(root@kali)~# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 32
Server version: 10.11.4-MariaDB-1 Debian 12

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

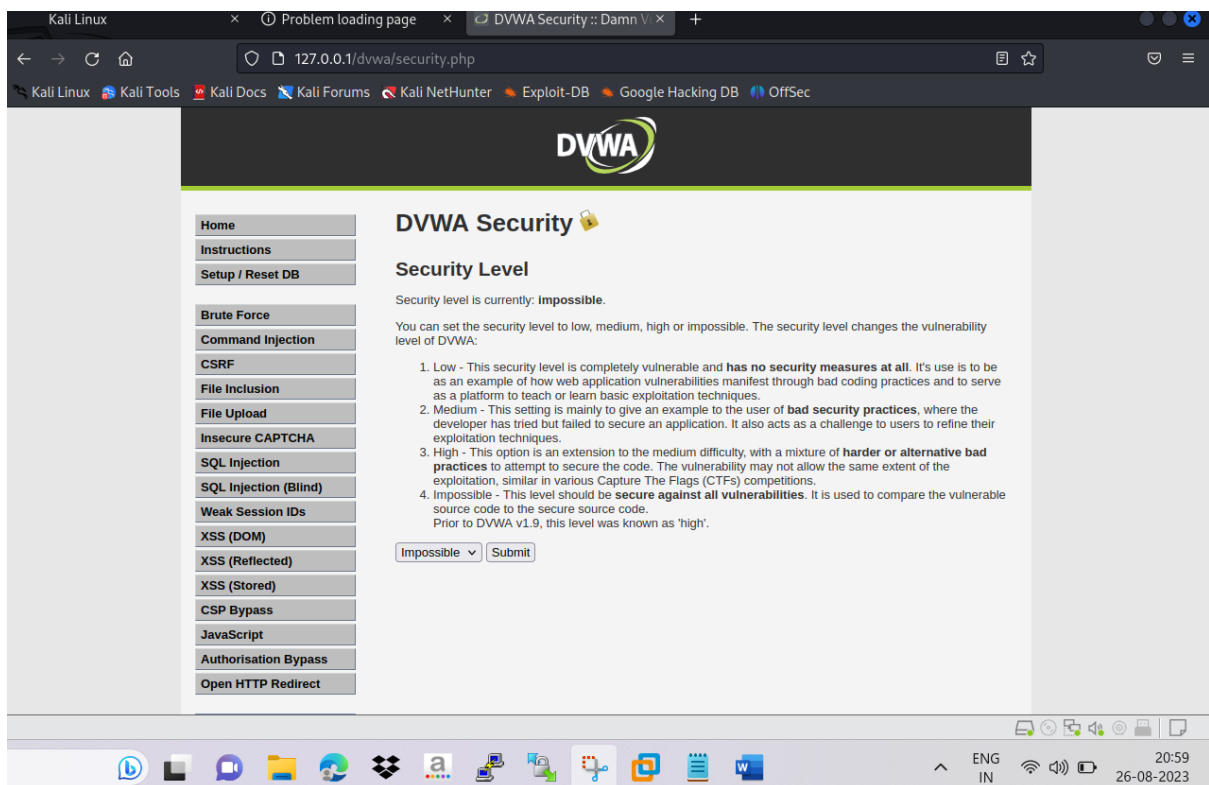
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

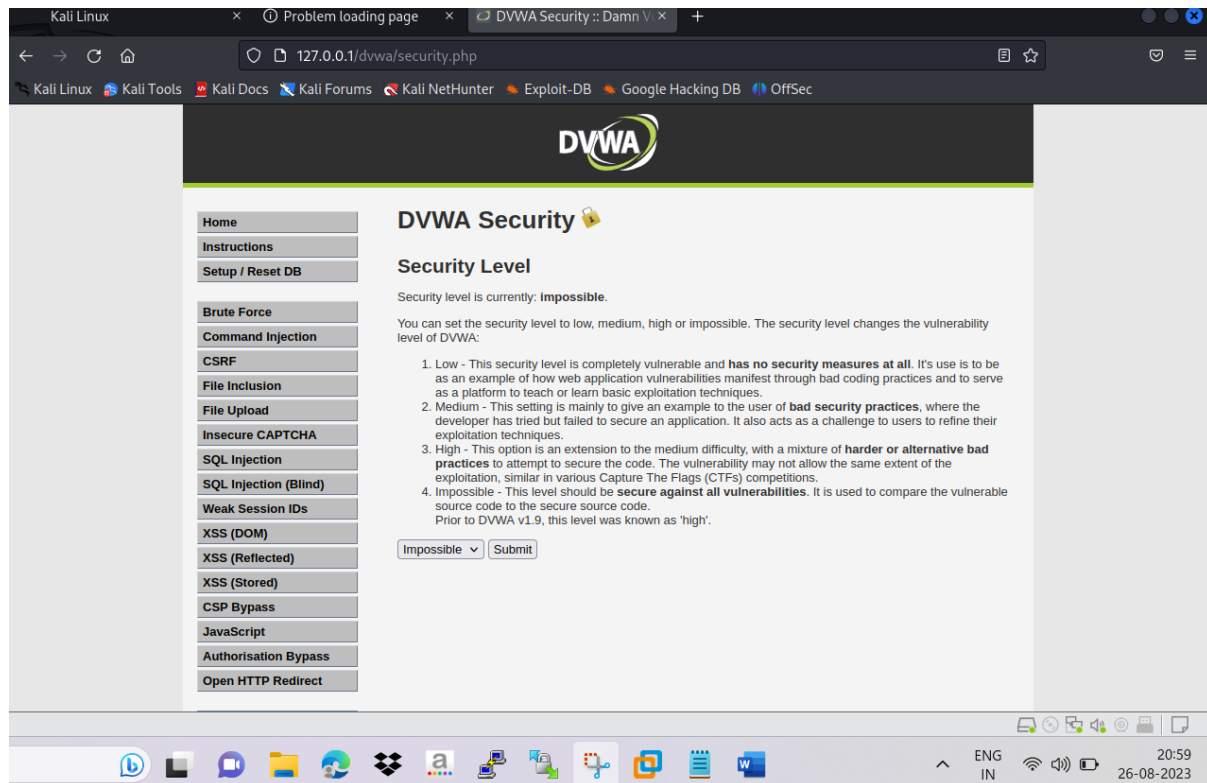
MariaDB [(none)]> create user 'user@'127.0.0.1' identified by 'pass';
ERROR 1396 (HY000): Operation CREATE USER failed for 'user@'127.0.0.1'
MariaDB [(none)]> create user 'aaa@'127.0.0.1' identified by 'aaa123';
Query OK, 0 rows affected (0.022 sec)

MariaDB [(none)]> grant all privileges on dvwa.* to 'aaa@'127.0.0.1' identified by 'aaa123';
Query OK, 0 rows affected (0.004 sec)

MariaDB [(none)]>
```

3.4 DVWA Home page





The screenshot shows a web browser window with the address bar displaying `127.0.0.1/dvwa/security.php`. The page title is "DVWA Security". The left sidebar contains a list of security challenges: Home, Instructions, Setup / Reset DB, Bruteforce, Command Injection, CSRF, File Inclusion, File Upload, Insecure CAPTCHA, SQL Injection, SQL Injection (Blind), Weak Session IDs, XSS (DOM), XSS (Reflected), XSS (Stored), CSP Bypass, JavaScript, Authorisation Bypass, and Open HTTP Redirect. The main content area is titled "DVWA Security" and "Security Level". It states that the security level is currently "Impossible". Below this, it explains that the security level can be set to low, medium, high, or impossible, and that the level changes the vulnerability level of DVWA. A list of four security levels is provided: 1. Low - This security level is completely vulnerable and has no security measures at all. It's use is to be as an example of how web application vulnerabilities manifest through bad coding practices and to serve as a platform to teach or learn basic exploitation techniques. 2. Medium - This setting is mainly to give an example to the user of bad security practices, where the developer has tried but failed to secure an application. It also acts as a challenge to users to refine their exploitation techniques. 3. High - This option is an extension to the medium difficulty, with a mixture of harder or alternative bad practices to attempt to secure the code. The vulnerability may not allow the same extent of the exploitation, similar in various Capture The Flags (CTFs) competitions. 4. Impossible - This level should be secure against all vulnerabilities. It is used to compare the vulnerable source code to the secure source code. Prior to DVWA v1.9, this level was known as 'high'. At the bottom of the page, there is a dropdown menu set to "Impossible" and a "Submit" button. The browser window shows several tabs: "Kali Linux", "Problem loading page", and "DVWA Security :: Damn V". The browser's address bar also shows "127.0.0.1/dvwa/security.php". The browser's toolbar includes "Kali Linux", "Kali Tools", "Kali Docs", "Kali Forums", "Kali NetHunter", "Exploit-DB", "Google Hacking DB", and "OffSec". The browser's status bar shows "ENG IN", "20:59", and "26-08-2023".

4 .INSTALLTION OF HAPROXY

4.1 sudo apt-get update

sudo apt-get install haproxy -y

4.2 Status of HAProxy

```
[sudo] password for kali:
root@kali: ~/home/kali
# apt-get update
Get:1 http://kali.download/kali kali-rolling InRelease [41.2 kB]
Get:2 http://kali.download/kali kali-rolling/main amd64 Packages [19.4 MB]
Get:3 http://kali.download/kali kali-rolling/main amd64 Contents (deb) [43.7 MB]
Get:4 http://kali.download/kali kali-rolling/contrib amd64 Packages [115 kB]
Get:5 http://kali.download/kali kali-rolling/contrib amd64 Contents (deb) [220 kB]
Get:6 http://kali.download/kali kali-rolling/non-free amd64 Packages [218 kB]
Fetched 65.9 MB in 2min 38s (436 kB/s)
Reading package lists... Done

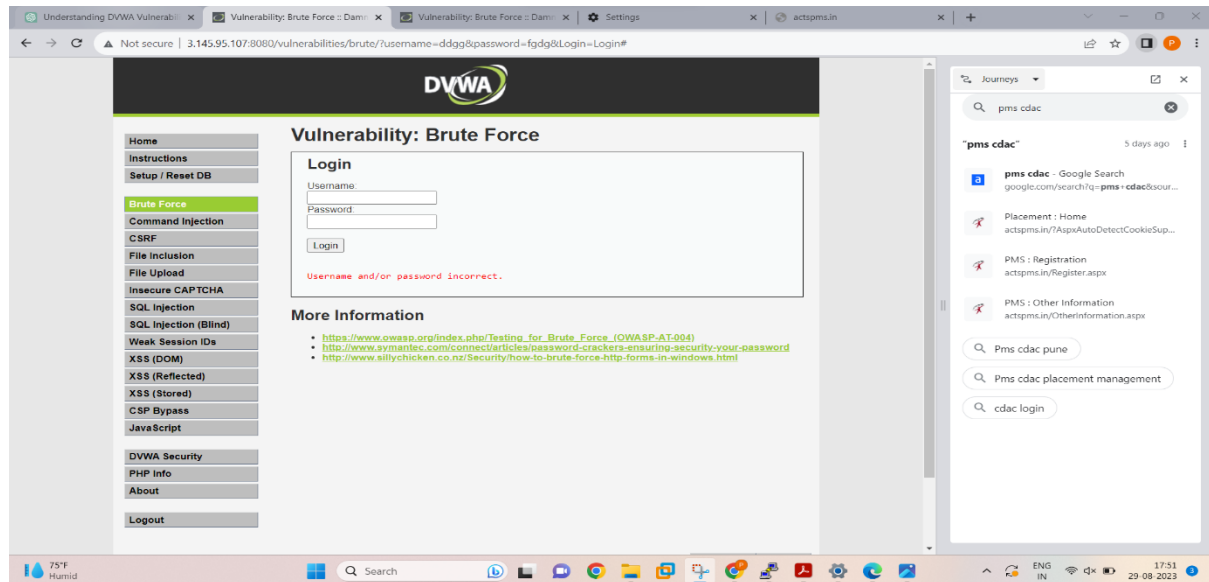
root@kali: ~/home/kali
# systemctl restart haproxy

root@kali: ~/home/kali
# systemctl status haproxy
● haproxy.service - HAProxy Load Balancer
   Loaded: loaded (/lib/systemd/system/haproxy.service; enabled; preset: disabled)
   Active: active (running) since Wed 2023-08-30 00:37:06 EDT; 13s ago
     Docs: man:haproxy(1)
           file:/usr/share/doc/haproxy/configuration.txt.gz
   Main PID: 4896 (haproxy)
     Tasks: 5 (limit: 2295)
    Memory: 48.6M
       CPU: 219ms
   CGroup: /system.slice/haproxy.service
           └─4896 /usr/sbin/haproxy -Ws -f /etc/haproxy/haproxy.cfg -p /run/haproxy.pid -S /run/haproxy-master.sock
             4899 /usr/sbin/haproxy -Ws -f /etc/haproxy/haproxy.cfg -p /run/haproxy.pid -S /run/haproxy-master.sock

Aug 30 00:37:06 kali systemd[1]: Starting haproxy.service - HAProxy Load Balancer...
Aug 30 00:37:06 kali haproxy[4896]: [NOTICE] (4896) : New worker (4899) forked
Aug 30 00:37:06 kali haproxy[4896]: [NOTICE] (4896) : Loading success.
Aug 30 00:37:06 kali systemd[1]: Started haproxy.service - HAProxy Load Balancer.
Aug 30 00:37:08 kali haproxy[4899]: [WARNING] (4899) : Server http_back/dvwa_instance2 is DOWN, reason: Layer4 connection problem, info: "No route to host", check duration: 969ms. 1 active and 0 backup server>
Aug 30 00:37:08 kali haproxy[4899]: Server http_back/dvwa_instance2 is DOWN, reason: Layer4 connection problem, info: "No route to host", check duration: 969ms. 1 active and 0 backup servers left. 0 sessions >
Aug 30 00:37:08 kali haproxy[4899]: Server http_back/dvwa_instance2 is DOWN, reason: Layer4 connection problem, info: "No route to host", check duration: 969ms. 1 active and 0 backup servers left. 0 sessions >
lines 1-20/20 (END)
```

5.WORKING

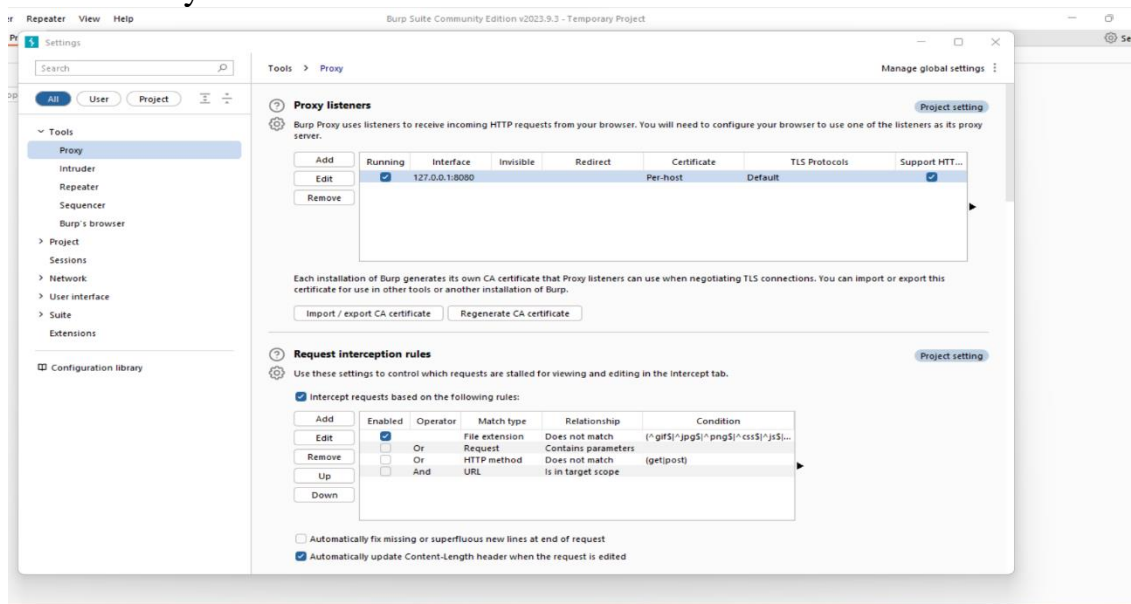
1.Bruteforce attack



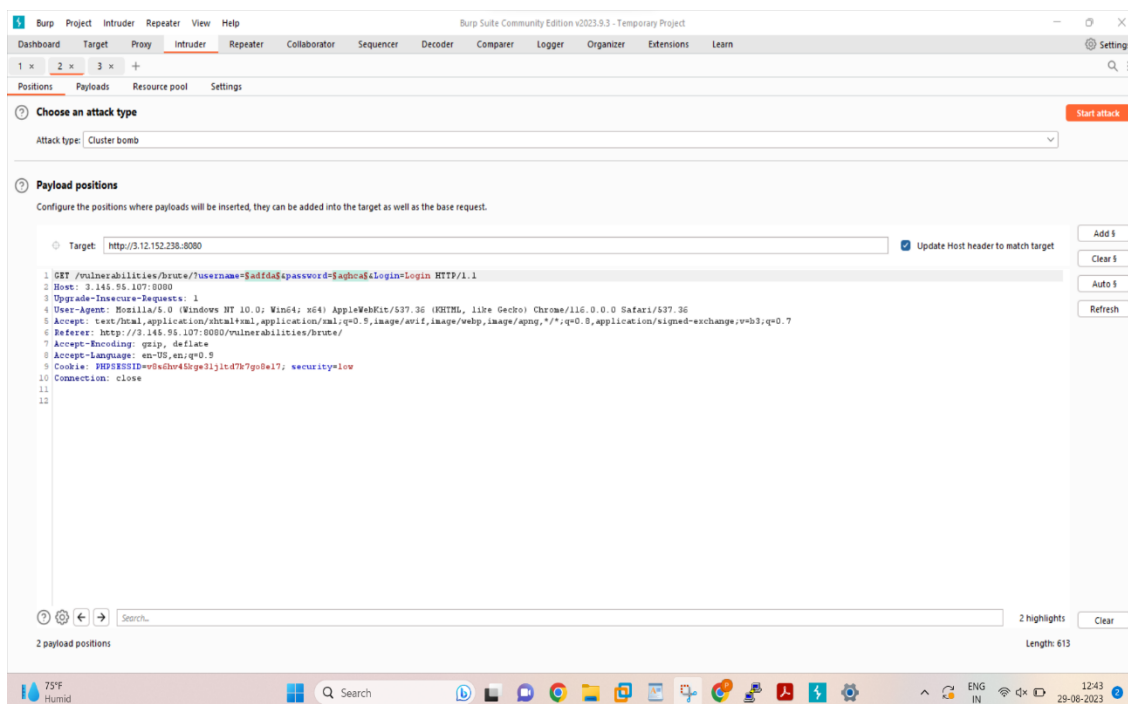
6.LOGS

Use of Burpsuit

1. Set Proxy



2.Set positions



3.Add payloads

The first screenshot shows the 'Choose an attack type' step in Burp Suite. The 'Attack type' is set to 'Cluster bomb'. The 'Payload positions' step is also visible, showing a target URL: `http://3.12.152.238:8080`. The 'Update Host header to match target' checkbox is checked. The 'Payload settings (Simple list)' step is also visible, showing a list of payloads: `hghghf`, `kjhghf`, and `kjhghf`. The 'Payload processing' step is also visible, showing a rule for processing payloads.

The second screenshot shows the 'Payload settings (Simple list)' step in Burp Suite. The 'Payload type' is set to 'Simple list'. The 'Payload count' is set to 4. The 'Request count' is set to 16. The 'Payload settings (Simple list)' step is also visible, showing a list of payloads: `hghghf`, `kjhghf`, and `kjhghf`. The 'Payload processing' step is also visible, showing a rule for processing payloads.

It will start and detect bruteforce attack.

The screenshot shows the DVWA interface. The 'Vulnerability: Brute Force' section is active. The 'Login' form is visible, with the 'Username' field set to 'admin' and the 'Password' field set to 'password'. The 'Login' button is visible. The 'More Information' section is also visible, listing links to resources for testing brute force attacks.

Command injections attack

Home

Instructions

Setup / Reset DB

Brute Force

Command Injection

CSRF

File Inclusion

File Upload

Insecure CAPTCHA

SQL Injection

SQL Injection (Blind)

Weak Session IDs

XSS (DOM)

XSS (Reflected)

XSS (Stored)

DVWA Security

PHP Info

About

DVWA Security

Security Level

Security level is currently: **impossible**.

You can set the security level to low, medium, high or impossible. The security level changes the vulnerability level of DVWA:

1. Low - This security level is completely vulnerable and **has no security measures at all**. It's use is to be as an example of how web application vulnerabilities manifest through bad coding practices and to serve as a platform to teach or learn basic exploitation techniques.
2. Medium - This setting is mainly to give an example to the user of **bad security practices**, where the developer has tried but failed to secure an application. It also acts as a challenge to users to refine their exploitation techniques.
3. High - This option is an extension to the medium difficulty, with a mixture of **harder or alternative bad practices** to attempt to secure the code. The vulnerability may not allow the same extent of the exploitation, similar in various Capture The Flags (CTFs) competitions.
4. Impossible - This level should be **secure against all vulnerabilities**. It is used to compare the vulnerable source code to the secure source code.
Prior to DVWA v1.9, this level was known as 'high'.

Low

Submit

PHPIDS

PHPIDS v0.6 (PHP-Intrusion Detection System) is a security layer for PHP based web applications.

PHPIDS works by filtering any user supplied input against a blacklist of potentially malicious code. It is used in DVWA to serve as a live example of how Web Application Firewalls (WAFs) can help improve security and in some cases how WAFs can be circumvented.

Home

Instructions

Setup / Reset DB

Brute Force

Command Injection

CSRF

File Inclusion

File Upload

Insecure CAPTCHA

SQL Injection

SQL Injection (Blind)

Weak Session IDs

XSS (DOM)

XSS (Reflected)

XSS (Stored)

Vulnerability: Command Injection

Ping a device

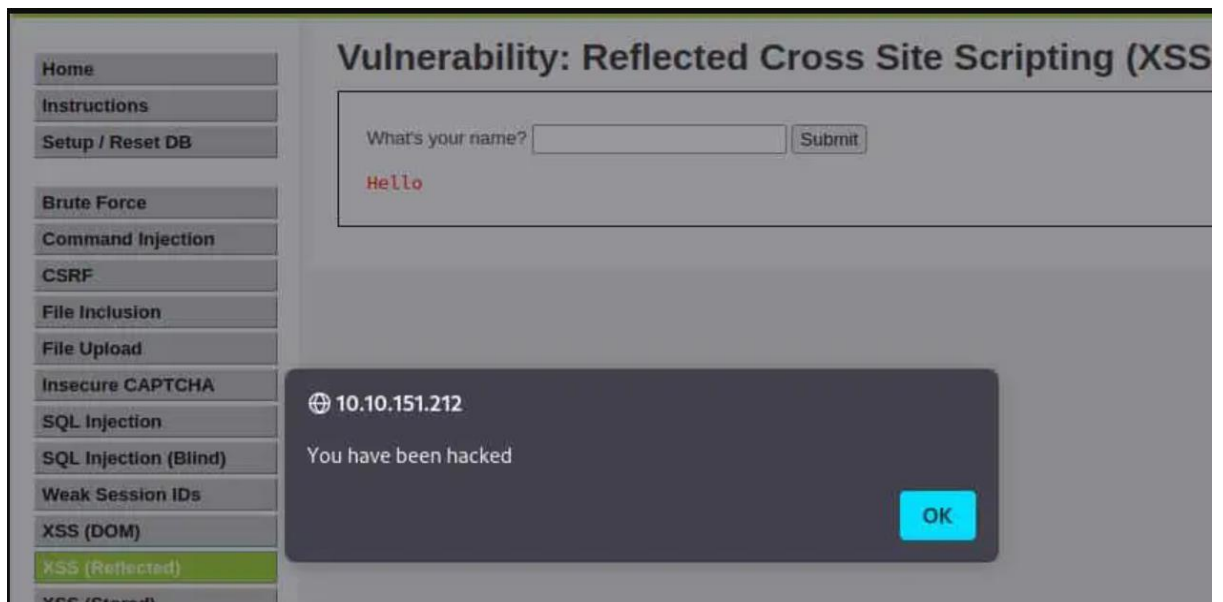
Enter an IP address:

```
PING 192.168.136.129 (192.168.136.129) 56(84) bytes of data.  
64 bytes from 192.168.136.129: icmp_seq=1 ttl=64 time=0.094 ms  
64 bytes from 192.168.136.129: icmp_seq=2 ttl=64 time=0.086 ms  
64 bytes from 192.168.136.129: icmp_seq=3 ttl=64 time=0.052 ms  
64 bytes from 192.168.136.129: icmp_seq=4 ttl=64 time=0.053 ms  
  
--- 192.168.136.129 ping statistics ---  
4 packets transmitted, 4 received, 0% packet loss, time 3080ms  
rtt min/avg/max/mdev = 0.052/0.071/0.094/0.019 ms
```

More Information

- <http://www.scribd.com/doc/2530476/Php-Endangers-Remote-Code-Execution>
- <http://www.ss64.com/bash/>
- <http://www.ss64.com/nl/>
- https://www.owasp.org/index.php/Command_injection

DOM based cross site scripting (xss)



7.REPORT

7.1 Procedure for report

1. Research information about the target system Computers that can be accessed over the internet must have an official IP address. Freely accessible databases provide information about the IP address blocks assigned to an organization.
2. Scan target systems for services on offer An attempt is made to conduct a port scan of the computer(s) being tested, open ports being indicative of the applications assigned to them.
3. Identify systems and applications The names and version of operating systems and applications in the target systems can be identified by "fingerprinting".
4. Researching Vulnerabilities Information about vulnerabilities of specific operating systems and applications can be researched efficiently using the information gathered.
5. Exploiting vulnerabilities Detected vulnerabilities can be used to obtain unauthorized access to the system or to prepare further attacks.

7.2Reference report

Website Vulnerability Scanner Report

✓ <http://testing1.pentest-tools.com/dvwa/>

Summary

Overall risk level: High

Risk ratings:

High:	5
Medium:	3
Low:	3
Info:	0

Scan information:

Start time: 2019-05-24 09:07:56
 Finish time: 2019-05-24 09:11:22
 Scan duration: 3 min, 26 sec
 Tests performed: 19/20
 Scan status: Finished

Findings

Vulnerabilities found for server-side software

Risk Level	CVSS	CVE	Summary	Exploit	Affected software
High	7.5	CVE-2017-7679	In Apache httpd 2.2.x before 2.2.33 and 2.4.x before 2.4.26, mod_mime can read one byte past the end of a buffer when sending a malicious Content-Type response header.	N/A	http_server 2.4.25
High	7.5	CVE-2017-7668	The HTTP strict parsing changes added in Apache httpd 2.2.32 and 2.4.24 introduced a bug in token list parsing, which allows ap_find_token() to search past the end of its input string. By maliciously crafting a sequence of request headers, an attacker may be able to cause a segmentation fault, or to force ap_find_token() to return an incorrect value.	N/A	http_server 2.4.25
High	7.5	CVE-2017-3169	In Apache httpd 2.2.x before 2.2.33 and 2.4.x before 2.4.26, mod_ssl may dereference a NULL pointer when third-party modules call ap_hook_process_connection() during an HTTP request to an HTTPS port.	N/A	http_server 2.4.25
High	7.5	CVE-2017-3167	In Apache httpd 2.2.x before 2.2.33 and 2.4.x before 2.4.26, use of the ap_get_basic_auth_pw() by third-party modules outside of the authentication phase may lead to authentication requirements being bypassed.	N/A	http_server 2.4.25
High	7.2	CVE-2019-0211	In Apache HTTP Server 2.4 releases 2.4.17 to 2.4.38, with MPM event, worker or prefork, code executing in less-privileged child processes or threads (including scripts executed by an in-process scripting interpreter) could execute arbitrary code with the privileges of the parent process (usually root) by manipulating the scoreboard. Non-Unix systems are not affected.	N/A	http_server 2.4.25

▼ Details

Risk description:
 These vulnerabilities expose the affected applications to the risk of unauthorized access to confidential data and possibly to denial of service attacks. An attacker could search for an appropriate exploit (or create one himself) for any of these vulnerabilities and use it to attack the system.

Recommendation:
 We recommend you to upgrade the affected software to the latest version in order to eliminate the risk of these vulnerabilities.

Cross-Site Scripting

Vulnerable Page	Vulnerable Parameter	Method	Attack Vector	
/dwa/login.php	username	POST	http://testing1.pentest-tools.com/dwa/login.php POST Data: username=<div><script>alert(1)</script></div>	

1 / 8

/dwa/vulnerabilities/brute/	username	GET	http://testing1.pentest-tools.com/dwa/vulnerabilities/brute/?Login=Login&password=ZAP&username=%27%22%3Cscript%3Ealert%281%29%3B%3C%2Fscript%3E	
/dwa/vulnerabilities/qql/	id	GET	http://testing1.pentest-tools.com/dwa/vulnerabilities/qql/?Submit=Submit&id=%27%22%3Cscript%3Ealert%281%29%3B%3C%2Fscript%3E	
/dwa/vulnerabilities/xss_r/	name	GET	http://testing1.pentest-tools.com/dwa/vulnerabilities/xss_r/?name=%3C%2Fpre%3E%3Cscript%3Ealert%281%29%3B%3C%2Fscript%3E%3Cpre%3E	
/dwa/vulnerabilities/xss_s/	txtName	POST	http://testing1.pentest-tools.com/dwa/vulnerabilities/xss_s/ POST Data: txtName=<div><script>alert(1)</script></div>	
/dwa/vulnerabilities/xss_s/	mbMessage	POST	http://testing1.pentest-tools.com/dwa/vulnerabilities/xss_s/ POST Data: mbMessage=<div><script>alert(1)</script></div>	

Details

Risk description:

The risk exists that a malicious actor injects JavaScript code and runs it in the context of a user's session in the application. This could potentially lead to various effects such as stealing session cookies, calling application features on behalf of another user, exploiting browser vulnerabilities.

Successful exploitation of Cross-Site Scripting attacks requires human interaction (ex. determine the user access a special link by social engineering).

Recommendation:

There are several ways to mitigate XSS attacks. We recommend to:

- never trust user input
- always encode and escape user input (using a Security Encoding Library)
- use the HTTPOnly cookie flag to protect from cookie theft
- implement Content Security Policy
- use the X-XSS-Protection Response Header

References:

[https://www.owasp.org/index.php/Cross-site_Scripting_\(XSS\)](https://www.owasp.org/index.php/Cross-site_Scripting_(XSS))
[https://www.owasp.org/index.php/XSS_\(Cross_Site_Scripting\)_Prevention_Cheat_Sheet](https://www.owasp.org/index.php/XSS_(Cross_Site_Scripting)_Prevention_Cheat_Sheet)

SQL Injection

Vulnerable Page	Vulnerable Parameter	Method	Attack Vector	
/dwa/vulnerabilities/brute/	username	GET	http://testing1.pentest-tools.com/dwa/vulnerabilities/brute/?Login=Login&password=ZAP&username=ZAP	
/dwa/vulnerabilities/sqli/	id	GET	http://testing1.pentest-tools.com/dwa/vulnerabilities/sqli/?Submit=Submit&id=ZAP%27+AND+%271%27%3D%271%27+--+	
/dwa/vulnerabilities/sqli_blind/	id	GET	http://testing1.pentest-tools.com/dwa/vulnerabilities/sqli_blind/?Submit=Submit&id=ZAP%27+AND+%271%27%3D%271%27+--+	
/dwa/vulnerabilities/xss_s/	btnSign	POST	http://testing1.pentest-tools.com/dwa/vulnerabilities/xss_s/ POST Data: btnSign=Sign Guestbook* AND "1"="1" --	

Details

Risk description:

The risk exists that an attacker gains unauthorized access to the information from the database of the application. He could extract information such as: application usernames, passwords, client information and other application specific data.

8.REFERENCE

- <https://www.golinuxcloud.com/dvwa-sql-injection/>
- <https://dtwh.medium.com/damn-vulnerable-web-application-dvwa-brute-force-walkthrough-722f33a3c725>
- <https://www.golinuxcloud.com/install-dvwa-kali-linux/>
- <https://linuxhint.com/install-damn-vulnerable-web-application-dvwa-kali-linux/>
- https://cybereason.com/wp-content/uploads/2021/05/sample_report_web.pdf
- <https://augment1security.com/authentication/dvwa-authentication/>
- <https://www.eccouncil.org/cybersecurity-exchange/application-security/threat-mitigation-strategies-for-securing-web-applications/>