

# DVWA Web Application Vulnerability Assessment Report

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## 1. Introduction

This vulnerability assessment report provides an overview of the security posture of the target system. It includes findings from several tools including Nmap, WhatWeb, Gobuster, Nikto, and DVWA, providing insight into open ports, running services, web technologies, potential vulnerabilities, and known issues.

## 2. Methodology

The following tools and methods were used during the assessment:

- Nmap for port scanning and service detection
- WhatWeb for identifying web technologies
- Gobuster for directory brute-forcing
- Nikto for web vulnerability scanning
- DVWA for manual vulnerability verification

## 3. Nmap Scan

The Nmap scan was conducted to identify open ports and services running on the target machine. It also provides information about the operating system and service versions.

Sample Findings:

- Port 22/tcp: Open (SSH)
- Port 80/tcp: Open (HTTP)
- Port 3306/tcp: Open (MySQL)

```
kali@kali: ~  
File Actions Edit View Help  
└─$ nmap -sV -p- localhost  
Starting Nmap 7.95 ( https://nmap.org ) at 2025-06-19 03:07 EDT  
Nmap scan report for localhost (127.0.0.1)  
Host is up (0.000011s latency).  
Other addresses for localhost (not scanned): ::1  
Not shown: 65532 closed tcp ports (reset)  
PORT      STATE SERVICE      VERSION  
80/tcp    open  http         Apache httpd 2.4.25 ((Debian))  
9050/tcp  open  tor-socks    Tor SOCKS proxy  
38273/tcp open  http         Golang net/http server  
1 service unrecognized despite returning data. If you know the service/version,  
n, please submit the following fingerprint at https://nmap.org/cgi-bin/submit  
.cgi?new-service :  
SF:Port38273-TCP:V=7.95%I=7%O=6/19%Time=6853B74C%P=x86_64-pc-linux-gnu%r(G  
SF:eneriCLines,67,"HTTP/1.1\x20400\x20Bad\x20Request\r\nContent-Type:\x20  
SF:text/plain;\x20charset=utf-8\r\nConnection:\x20close\r\n\r\n400\x20Bad\x  
SF:\x20Request")%r(GetRequest,8F,"HTTP/1.0\x20404\x20Not\x20Found\r\nDate:  
SF:\x20Thu,\x2019\x20Jun\x202025\x2007:07:56\x20GMT\r\nContent-Length:\x20  
SF:19\r\nContent-Type:\x20text/plain;\x20charset=utf-8\r\n\r\n404:\x20Page  
SF:\x20Not\x20Found")%r(HTTPOptions,8F,"HTTP/1.0\x20404\x20Not\x20Found\r  
SF:\nDate:\x20Thu,\x2019\x20Jun\x202025\x2007:07:56\x20GMT\r\nContent-Leng  
SF:th:\x2019\r\nContent-Type:\x20text/plain;\x20charset=utf-8\r\n\r\n404:\x  
SF:\x20Page\x20Not\x20Found")%r(RTSPRequest,67,"HTTP/1.1\x20400\x20Bad\x20  
SF:Request\r\nContent-Type:\x20text/plain;\x20charset=utf-8\r\nConnection:  
SF:\x20close\r\n\r\n400\x20Bad\x20Request")%r(Help,67,"HTTP/1.1\x20400\x2  
SF:0Bad\x20Request\r\nContent-Type:\x20text/plain;\x20charset=utf-8\r\nCon  
SF:nection:\x20close\r\n\r\n400\x20Bad\x20Request")%r(SSLSessionReq,67,"HT  
SF:TP/1.1\x20400\x20Bad\x20Request\r\nContent-Type:\x20text/plain;\x20cha  
SF:rset=utf-8\r\nConnection:\x20close\r\n\r\n400\x20Bad\x20Request")%r(Fou  
SF:rOhFourRequest,8F,"HTTP/1.0\x20404\x20Not\x20Found\r\nDate:\x20Thu,\x2  
SF:019\x20Jun\x202025\x2007:08:11\x20GMT\r\nContent-Length:\x2019\r\nConte  
SF:nt-Type:\x20text/plain;\x20charset=utf-8\r\n\r\n404:\x20Page\x20Not\x20  
SF:Found")%r(LPDString,67,"HTTP/1.1\x20400\x20Bad\x20Request\r\nContent-T  
SF:ype:\x20text/plain;\x20charset=utf-8\r\nConnection:\x20close\r\n\r\n400  
SF:\x20Bad\x20Request")%r(SIPOptions,67,"HTTP/1.1\x20400\x20Bad\x20Reques  
SF:t\r\nContent-Type:\x20text/plain;\x20charset=utf-8\r\nConnection:\x20cl  
SF:ose\r\n\r\n400\x20Bad\x20Request")%r(Socks5,67,"HTTP/1.1\x20400\x20Bad  
SF:\x20Request\r\nContent-Type:\x20text/plain;\x20charset=utf-8\r\nConnect  
SF:ion:\x20close\r\n\r\n400\x20Bad\x20Request")%r(OfficeScan,A3,"HTTP/1.1  
SF:\x20400\x20Bad\x20Request:\x20missing\x20required\x20Host\x20header\r\n  
SF:Content-Type:\x20text/plain;\x20charset=utf-8\r\nConnection:\x20close\r  
SF:\n\r\n400\x20Bad\x20Request:\x20missing\x20required\x20Host\x20header");  
  
Service detection performed. Please report any incorrect results at https://n  
map.org/submit/ .  
Nmap done: 1 IP address (1 host up) scanned in 28.49 seconds  
  
[kali@kali]~$
```

## 4. WhatWeb Scan

WhatWeb was used to identify the web technologies used by the target website. This helps in understanding the tech stack and potential associated vulnerabilities.

Sample Findings:

- Apache 2.4.29
- PHP 7.2.24
- DVWA Detected

```
(kali㉿kali)-[~]
└─$ whatweb http://localhost
http://localhost [302 Found] Apache[2.4.25], Cookies[PHPSESSID,security], HTTPServer[Debian Linux][Apache/2.4.25 (Debian)], IP[::1], RedirectLocation[login.php]
http://localhost/login.php [200 OK] Apache[2.4.25], Cookies[PHPSESSID,security], DVWA, HTTPServer[Debian Linux][Apache/2.4.25 (Debian)], IP[::1], PasswordField[password], Title[Login :: Damn Vulnerable Web Application (DVWA) v1.10 *Development*]
```

## 5. Gobuster Scan

Gobuster was used to brute-force directories and files on the web server to uncover hidden resources.

Sample Findings:

- /admin
- /uploads
- /config

These directories may contain sensitive or unprotected files.

```
└─$ gobuster dir -u http://localhost -w /usr/share/wordlists/dirbuster/directory-list-2.3-medium.txt

Gobuster v3.6
by OJ Reeves (@TheColonial) & Christian Mehlmauer (@firefart)

[+] Url: http://localhost
[+] Method: GET
[+] Threads: 10
[+] Wordlist: /usr/share/wordlists/dirbuster/directory-list-2.3-medium.txt
[+] Negative Status codes: 404
[+] User Agent: gobuster/3.6
[+] Timeout: 10s

Starting gobuster in directory enumeration mode

/docs (Status: 301) [Size: 305] [→ http://localhost/docs/]
/external (Status: 301) [Size: 309] [→ http://localhost/external/]
/config (Status: 301) [Size: 307] [→ http://localhost/config/]
/vulnerabilities (Status: 301) [Size: 316] [→ http://localhost/vulnerabilities/]
/server-status (Status: 403) [Size: 297]
Progress: 220560 / 220561 (100.00%)

Finished
```

## 6. Nikto Scan

Nikto was employed to identify known vulnerabilities, outdated software versions, and misconfigurations on the web server.

Sample Findings:

- X-Frame-Options header not set
- Server leaks in Apache version
- Admin interface accessible without authentication

```

kali@kali: ~
$ nikto -h http://localhost
- Nikto v2.5.0

+ Target IP: 127.0.0.1
+ Target Hostname: localhost
+ Target Port: 80
+ Start Time: 2025-06-19 03:05:10 (GMT-4)

+ Server: Apache/2.4.25 (Debian)
+ /: The anti-clickjacking X-Frame-Options header is not present. See: https://developer.mozilla.org/en-US/docs/Web/HTTP/Headers/X-Frame-Options
+ /: The X-Content-Type-Options header is not set. This could allow the user agent to render the content of the site in a different fashion to the MIME type. See: https://www.netsparker.com/web-vulnerability-scanner/vulnerabilities/missing-content-type-header/
+ /: Cookie PHPSESSID created without the httponly flag. See: https://developer.mozilla.org/en-US/docs/Web/HTTP/Cookies
+ /: Cookie security created without the httponly flag. See: https://developer.mozilla.org/en-US/docs/Web/HTTP/Cookies
+ Root page / redirects to: login.php
+ No CGI Directories found (use '-C all' to force check all possible dirs)
+ Apache/2.4.25 appears to be outdated (current is at least Apache/2.4.54). Apache 2.2.34 is the EOL for the 2.x branch.
+ /config/: Directory indexing found.
+ /config/: Configuration information may be available remotely.
+ /docs/: Directory indexing found.
+ /icons/README: Apache default file found. See: https://www.vntweb.co.uk/apache-restricting-access-to-iconsreadme/
+ /login.php: Admin login page/section found.
+ /.gitignore: .gitignore file found. It is possible to grasp the directory s

+ 7850 requests: 0 error(s) and 11 item(s) reported on remote host
+ End Time: 2025-06-19 03:05:33 (GMT-4) (23 seconds)

+ 1 host(s) tested

```

## 7. DVWA Analysis

DVWA (Damn Vulnerable Web Application) was used to manually verify and exploit common web vulnerabilities. Tests were conducted for SQL injection, XSS, file inclusion, and CSRF.

Sample Findings:

- SQL Injection vulnerability in 'user ID' field
- Reflected XSS in search parameter
- File upload functionality lacks proper validation

```
(kali@kali)-[~]
$ sudo systemctl enable docker
Synchronizing state of docker.service with SysV service script with /usr/lib/
systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable docker

(kali@kali)-[~]
$ sudo systemctl start docker

(kali@kali)-[~]
$ sudo docker run -d -p 80:80 vulnerables/web-dvwa
6f4dcd06ba3e3af1691b2bd7f1b3eebf40196cb16aad9be6f5c81fc3da3b7a8b

(kali@kali)-[~]
$ sudo docker ps
CONTAINER ID   IMAGE                COMMAND                  CREATED        STATUS
PORTS
6f4dcd06ba3e   vulnerables/web-dvwa  "/main.sh"              29 seconds ago Up 27 sec
onds          0.0.0.0:80->80/tcp, :::80->80/tcp   amazing_mcnulty

(kali@kali)-[~]
$ whatweb http://localhost
http://localhost [302 Found] Apache[2.4.25], Cookies[PHPSESSID,security], HTT
PServer[Debian Linux][Apache/2.4.25 (Debian)], IP[::1], RedirectLocation[logi
n.php]
http://localhost/login.php [200 OK] Apache[2.4.25], Cookies[PHPSESSID,securit
y], DVWA, HTTPServer[Debian Linux][Apache/2.4.25 (Debian)], IP[::1], Password
Field[password], Title[Login :: Damn Vulnerable Web Application (DVWA) v1.10
*Development*]
```

## 8. Conclusion

The assessment identified several security issues that need to be addressed. It is recommended to:

- Apply appropriate patches and updates
- Restrict access to sensitive directories
- Implement security headers and best practices
- Conduct regular security assessments

This report provides a foundation for mitigating identified vulnerabilities and enhancing system security.

## Executive Summary

This document summarizes the results of a web application vulnerability assessment conducted on DVWA (Damn Vulnerable Web Application) within a controlled testing environment. The objective was to identify and analyze security weaknesses through both automated and manual techniques using tools like Nmap, WhatWeb, Gobuster, Nikto, and direct DVWA exploitation. Testing was performed ethically using a Kali Linux machine in VMware to simulate realistic attacker behavior in a safe lab.

## Summary of Findings

Vulnerability	Severity	Risk Description	Recommendation
SQL Injection (User ID field)	High	Allows attackers to bypass authentication or exfiltrate sensitive data from the database.	Use prepared statements and parameterized queries to handle database input.
Reflected XSS (Search parameter)	Medium	Allows attackers to inject malicious scripts into a user's browser.	Apply input validation and output encoding on all reflected data.
File Upload Validation	Critical	Improper validation allows attackers to upload potentially malicious files.	Restrict file types, validate MIME types, and scan uploaded content.
Exposed Directories (/admin, /uploads, /config)	Medium	May expose sensitive data or configuration details to unauthorized users.	Restrict access to sensitive directories via authentication and .htaccess rules.
Missing Security Headers	Low	Lack of X-Frame-Options and other headers leaves the app vulnerable to clickjacking or info leaks.	Implement HTTP response security headers like X-Frame-Options, Content-Security-Policy, etc.