

In partial fulfillment of the requirement for
Cybersecurity
420-950-VA section 05811
Vanier College

osCommerce 2.3.4.1

Vulnerability Assessment

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Date of Submission:

February 05, 2023

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1. EXECUTIVE OVERVIEW

The group performed a vulnerability assessment on osCommerce V 2.3.4.1, the steps taken include reconnaissance, vulnerability detection, and exploitation. During reconnaissance, the target website was scanned for interesting end-points and a directory search tool was used. During vulnerability detection, various techniques were used including default credentials, brute-force attack, and searching for public CVEs. The test found two critical vulnerabilities: website hijacking and remote command execution. The website hijacking vulnerability is caused by the presence of an accessible /install folder that allows an attacker to reinstall the database, wiping out all stored data and potentially gaining administrative access. The remote command execution vulnerability is caused by a lack of proper input validation in the login.php script. Both vulnerabilities can be mitigated by keeping the osCommerce software up-to-date and implementing proper security measures.

Our team was able to apply all the learnings from Cybersecurity class. The group was also able to use some tools like Nmap, kali Linux, and dirsearch. A detailed report will be seen through this document on how to mitigate the vulnerabilities the team found on this web application.

2. OSCOMMERCE

2.1 What is osCommerce?

osCommerce (Open-Source Commerce) is an open-source e-commerce platform that allows users to create and manage an online store. Since its first release in 2000, it has grown to rank among the most widely used open-source e-commerce systems.

This web application became perhaps the most popular Ecommerce platform for a while. Unfortunately, because of the lack of the commercial strategy, osCommerce version 2 never took off as a successful viable commercial product, ready to support bigger businesses and help them with their challenges.

osCommerce is written in PHP and uses a MySQL database to store data. It is designed to be easy to use, customize, and integrate with other systems. It has a large community of users and developers who contribute to the platform by creating add-ons, modules, and themes. Some of the features include:

- Product management
- Order management
- Customer management
- Payment and shipping integration
- Multi-language support
- SEO optimization

2.2 Why the group chose osCommerce version 2.3.4.1?

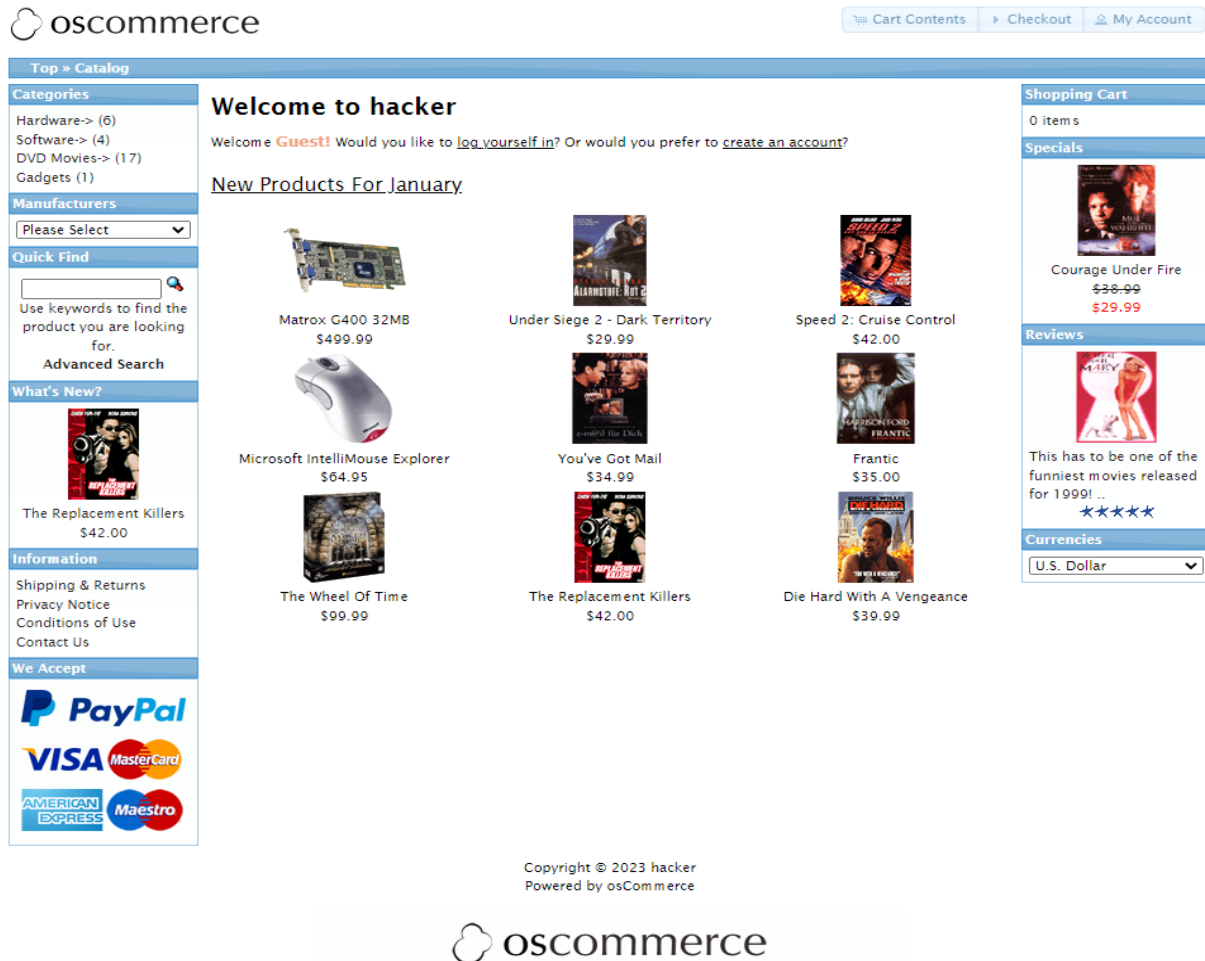
osCommerce ver 2 was released in June 2012 and had gained popularity since its first release. Currently, there are 46,000 shops using osCommerce. The popularity of this web application makes it a valuable target for pentesting because it is widely used by small to medium-sized online stores, and as such, it may contain vulnerabilities that could be exploited by attackers.

The group chose an older version of osCommerce, version 2.3.4.1, despite the latest version (osCommerce 4) being released on July 25, 2022. This decision was made because, as new pentesters, the group believed that the older version would have more vulnerabilities and therefore would be easier to exploit and apply all the lessons learned from this subject. The web app was downloaded from this website, https://phpsources.net/script/php/ecommerce/2022-1_oscommerce,2.3.4.1.

Additionally, osCommerce being open-source software allowed the group to easily access the source code and perform a deep dive in the platform, this way, it is easier to spot vulnerabilities in relation to OWASP top 10 and test them.

3. RECONAISSANCE

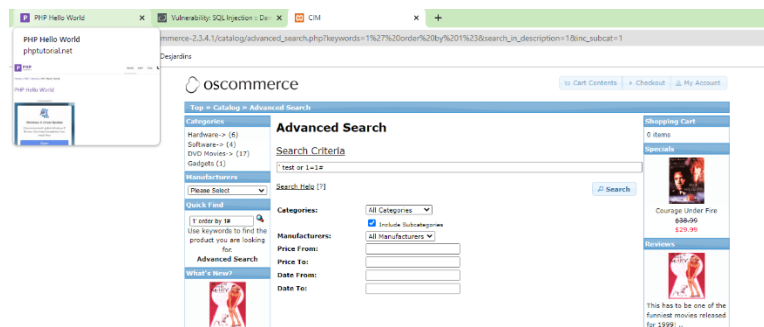
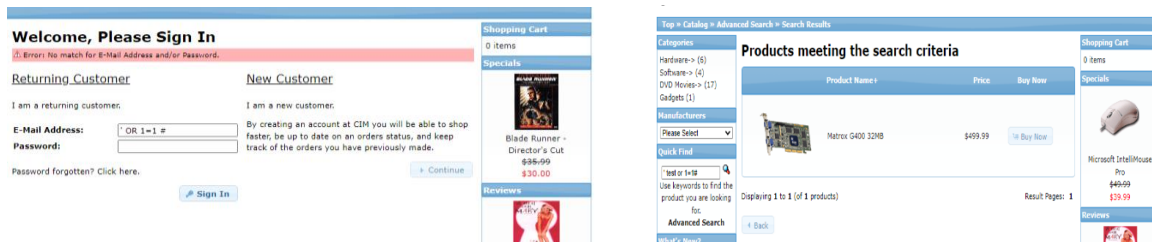
Our target looks like this:



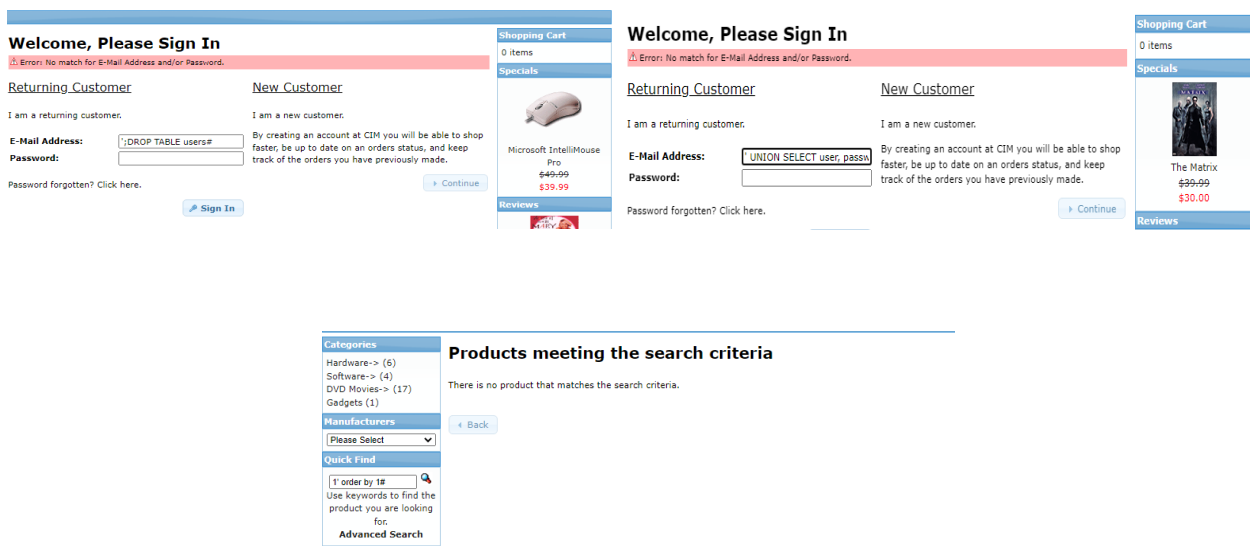
The team searched and gathered as much information about osCommerce before proceeding to the next step. We even checked for existing exploits done in this website through www.cvedetails.com

As part of our reconnaissance, the team also tested some possible attack vectors to check for vulnerabilities.

Tautology attacks on login, search criteria and advanced search page



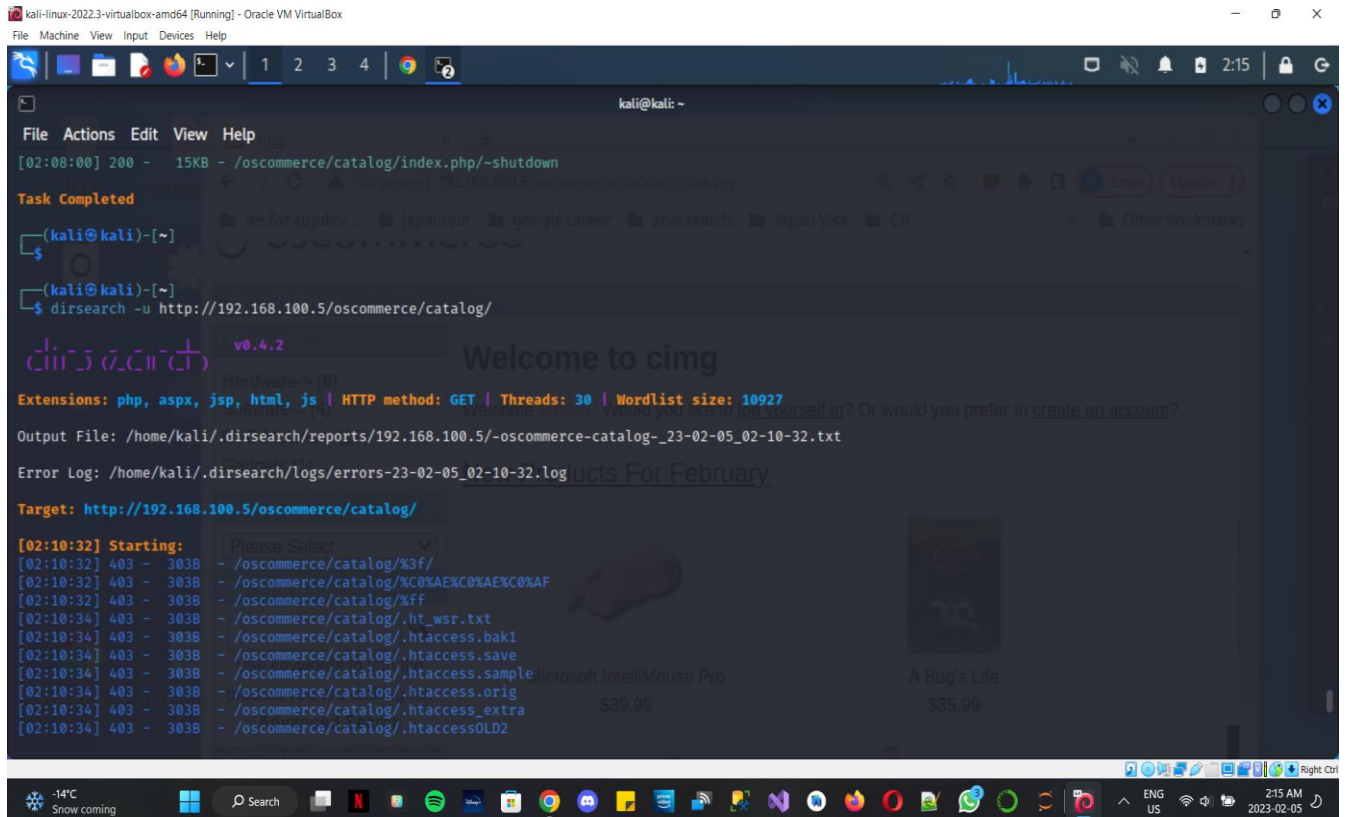
The team also performed union, piggy backed attack and etc. on certain attack vectors.



4. SCANNING

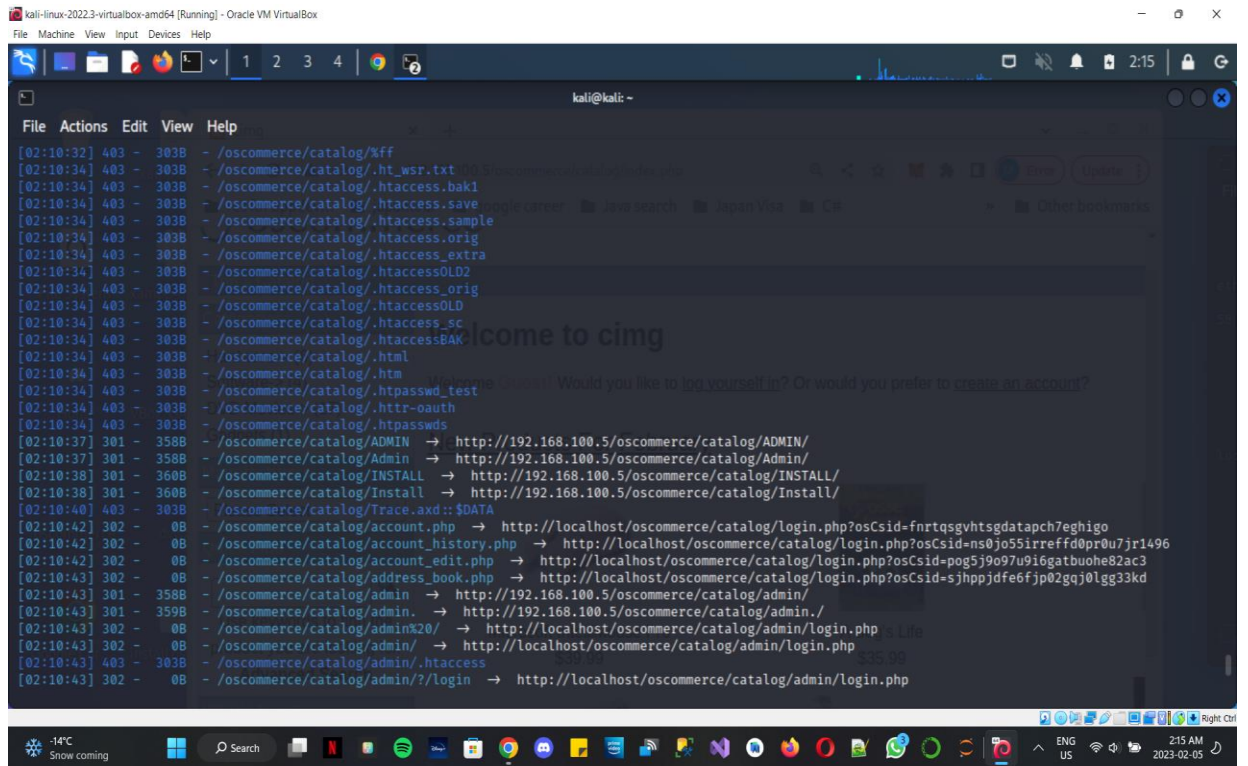
Our team used a dirseach. A tool that will show us the different endpoints that we can access in this website.

Command used: **dirsearch -u http://192.168.100.5/oscommerce/catalog**



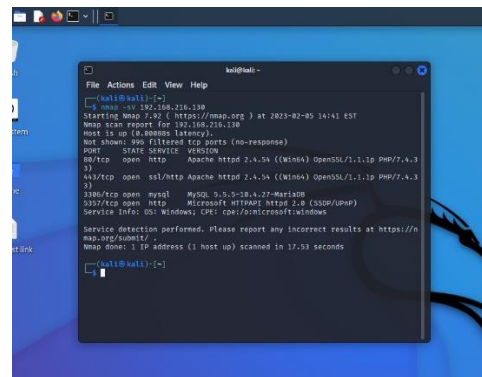
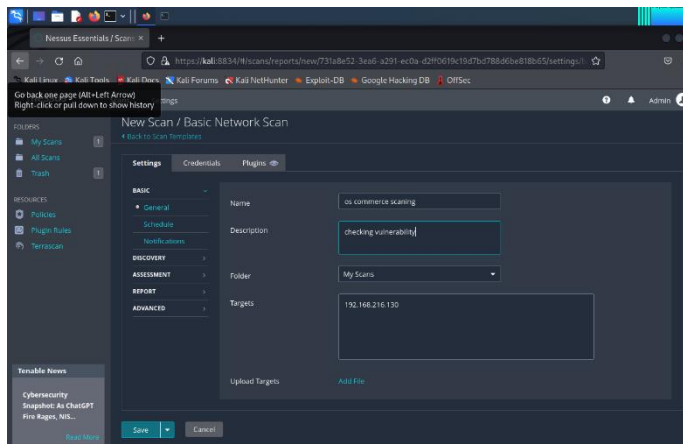
```
kali@kali: ~  
[02:08:00] 200 - 15KB - /oscommerce/catalog/index.php/~shutdown  
Task Completed  
(kali@kali)-[~]  
$ dirsearch -u http://192.168.100.5/oscommerce/catalog/  
v0.4.2  
Extensions: php, aspx, jsp, html, js | HTTP method: GET | Threads: 30 | Wordlist size: 10927  
Output File: /home/kali/.dirsearch/reports/192.168.100.5/-oscommerce-catalog-_23-02-05_02-10-32.txt  
Error Log: /home/kali/.dirsearch/logs/errors-23-02-05_02-10-32.log  
Target: http://192.168.100.5/oscommerce/catalog/  
[02:10:32] Starting:  
[02:10:32] 403 - 303B - /oscommerce/catalog/%3f/  
[02:10:32] 403 - 303B - /oscommerce/catalog/%C0%AEXC0%AEXC0%AF  
[02:10:32] 403 - 303B - /oscommerce/catalog/%ff  
[02:10:34] 403 - 303B - /oscommerce/catalog/.ht_wsr.txt  
[02:10:34] 403 - 303B - /oscommerce/catalog/.htaccess.bak1  
[02:10:34] 403 - 303B - /oscommerce/catalog/.htaccess.save  
[02:10:34] 403 - 303B - /oscommerce/catalog/.htaccess.sample  
[02:10:34] 403 - 303B - /oscommerce/catalog/.htaccess.orig  
[02:10:34] 403 - 303B - /oscommerce/catalog/.htaccess_extra  
[02:10:34] 403 - 303B - /oscommerce/catalog/.htaccessOLD2
```


osCommerce v. 2.3.4.1 Vulnerability Assessment



The command showed us all directories and end-points we can access and the team tried exploiting install page and login page.


A Nessus and Nmap Scan was also done:



5. VULNERABILITY DETECTION

The team used various techniques for vulnerability detection including default credentials, brute-force attack, and searching for public Common Vulnerabilities and Exposures (CVEs). The team examined the website and try to perform SQLI in all possible attack vectors in the application.

Install Page



Welcome to osCommerce Online Merchant v2.3.4.1!

osCommerce Online Merchant helps you sell products worldwide with your own online store. Its Administration Tool manages products, customers, orders, newsletters, specials, and more to successfully build the success of your online business. osCommerce has attracted a large community of store owners and developers who support each other and have provided over 7,000 free add-ons that can extend the features and potential of your online store.

Server Capabilities		New Installation
PHP Version	7.2.34 ✓	The webserver environment has been verified to proceed with a successful installation and configuration of your online store. Please continue to start the installation procedure. → Start
PHP Settings		
register_globals	Off ✓	
magic_quotes	Off ✓	
file_uploads	On ✓	
session.auto_start	Off ✓	
session.use_trans_sid	Off ✓	
Required PHP Extensions		
MySQL	✓	
Recommended PHP Extensions		
GD	✓	
cURL	✓	
OpenSSL	✓	

Copyright © 2023 [osCommerce](#). All rights reserved. osCommerce is a registered trademark of Harald Ponce de Leon.

Login page



Administration | Online Catalog | Support Site


Administrator Login

Administrator Login
Username:

Password:

[Login](#)

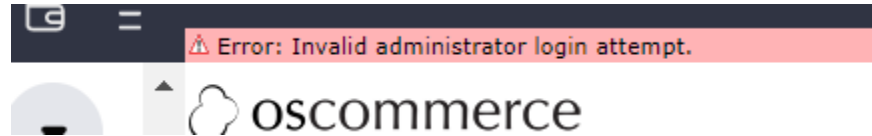
osCommerce Online Merchant Copyright © 2000-2023 osCommerce (Copyright and Trademark Policy)

 **Error: The maximum number of login attempts has been reached. Please try again in 5 minutes.**



Administration | Online Catalog | Support Site

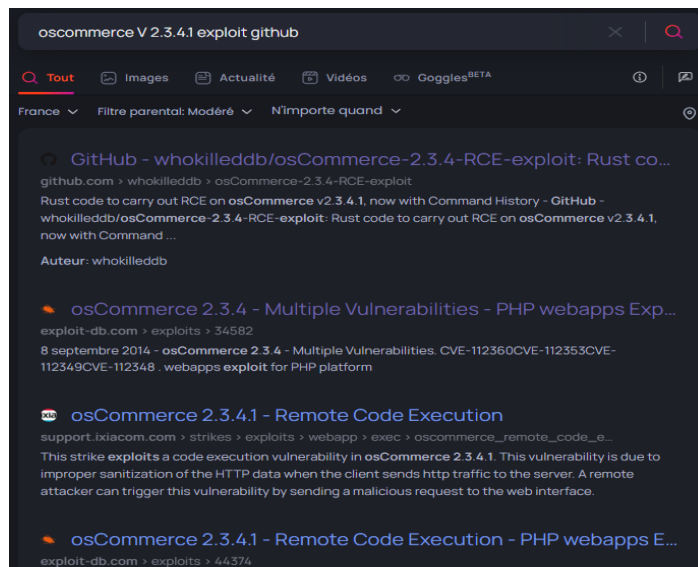
One of the tricks we can check is default credentials like



Login was tried to be exploited also but this web app implemented a delay every time you reach a maximum attempt on a particular username. We even tried to check default credentials by entering **admin/admin** or **admin/123456** or **admin/password** in the username and password but we were not able to detect any vulnerabilities in this page.

In our opinion, Brute force attack wont work in this web app. Perhaps a spray attack will work if you are able to access this website.

Since basic checks did not lead us to any interesting result, we searched for public CVE affecting this **osCommerce V 2.3.4.1**



The following critical vulnerabilities were identified:

- Vulnerability: Accessible /install folder allowing reinstallation of the database, wiping all stored data, and potential administrative access.
- Vulnerability: Remote Control Execution no need authentication
- Vulnerability: Using http connection instead of https(unsecured network)

osCommerce v. 2.3.4.1 Vulnerability Assessment

Other vulnerabilities detected after doing a Nessus Scan:

PHP Version vulnerability

The screenshot shows the Nessus Essentials interface with a vulnerability report for 'PHP Unsupported Version Detection'. The report is categorized as 'CRITICAL' and describes a lack of support for the installed PHP version (7.4.33), which implies no new security patches will be released. The solution is to upgrade to a supported version. The output shows the source as 'Server: Apache/2.4.56 (Ubuntu)' and the installed version as '7.4.33'. The risk factor is 'Critical' with a CVSS v3.0 Base Score of 10.0. The vulnerability information includes the CPE 'cpe:/a:php:php' and the IAWA '0001-A-0581'.

Port	Hosts
843/tcp/www	192.168.216.130
80/tcp/www	192.168.216.130

Apache version vulnerability

The screenshot shows the Nessus Essentials interface with a vulnerability report for 'os commerce scanning / Plugin #170113'. The report is categorized as 'CRITICAL' and describes multiple vulnerabilities in Apache 2.4.x < 2.4.55. The description mentions a memory read/write vulnerability (CVE-2006-20001) and a request smuggling vulnerability (CVE-2022-36760). The solution is to upgrade to Apache version 2.4.55 or later. The output shows the URL 'https://192.168.216.130/' and the installed version as '2.4.34'. The risk factor is 'High' with a CVSS v3.0 Base Score of 9.0. The vulnerability information includes the CPE 'cpe:/a:apache:apache' and the IAWA '0001-A-0581'.

URL	Installed version	Fixed version
https://192.168.216.130/	2.4.34	2.4.55

Weak hashing algorithm vulnerability

Nessus Essentials / Folder: x

https://kali8834/#/scans/reports/26/hosts/2/vulnerabilities/35291

Kali Linux Kali Tools Kali Docs Kali Forums Kali NetHunter Exploit-DB Google Hacking DB OffSec

nessus Essentials Scans Settings Admin

FOLDERS

- My Scans 1
- All Scans
- Trash 1

RESOURCES

- Policies
- Plugin Rules
- Terrascan

Tenable News

Trend Micro Apex One
fcgiOfcDDA.exe File
Upload Vu...
[Read More](#)

os commerce scanning / Plugin #35291

[Back to Vulnerabilities](#)

Configure Audit Trail Launch Report Export

Vulnerabilities 28

HIGH SSL Certificate Signed Using Weak Hashing Algorithm

< > Plugin Details

Description

The remote service uses an SSL certificate chain that has been signed using a cryptographically weak hashing algorithm (e.g. MD2, MD4, MD5, or SHA1). These signature algorithms are known to be vulnerable to collision attacks. An attacker can exploit this to generate another certificate with the same digital signature, allowing an attacker to masquerade as the affected service.

Note that this plugin reports all SSL certificate chains signed with SHA-1 that expire after January 1, 2017 as vulnerable. This is in accordance with Google's gradual sunset of the SHA-1 cryptographic hash algorithm.

Note that certificates in the chain that are contained in the Nessus CA database (known_CA.inc) have been ignored.

Solution

Contact the Certificate Authority to have the SSL certificate reissued.

See Also

- <https://tools.ietf.org/html/rfc3279>
- <http://www.nessus.org/u79bb87bf2>
- <http://www.nessus.org/u7e120eea1>
- <http://www.nessus.org/u75d894816>
- <http://www.nessus.org/u751db68aa>
- <http://www.nessus.org/u79dc7bfa>

Output

The following certificates were part of the certificate chain sent by the remote host, but contain hashes that are considered to be weak.

Plugin Details

Severity: High
ID: 35291
Version: 1.32
Type: remote
Family: General
Published: January 5, 2009
Modified: January 14, 2022

Risk Information

Risk Factor: Medium
CVSS v3.0 Base Score 7.5
CVSS v3.0 Vector: CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:N/I:H/A:N
CVSS v3.0 Temporal Vector: CVSS:3.0/E:P/RL/O/RC:C
CVSS v3.0 Temporal Score: 6.7
CVSS v2.0 Base Score: 5.0
CVSS v2.0 Temporal Score: 3.9
CVSS v2.0 Vector: CVSS2#AV:N/AC:L/Au:N/C:N/I:P/A:N
CVSS v2.0 Temporal Vector: CVSS2#E:POC/RL:OF/RC:C

6. EXPLOITATION AND REPORTS

6.1 Website hijacking

Vulnerability [1] : Website hijacking

Severity : Critical

Instance : <http://target/oscommerce/catalog/install/>

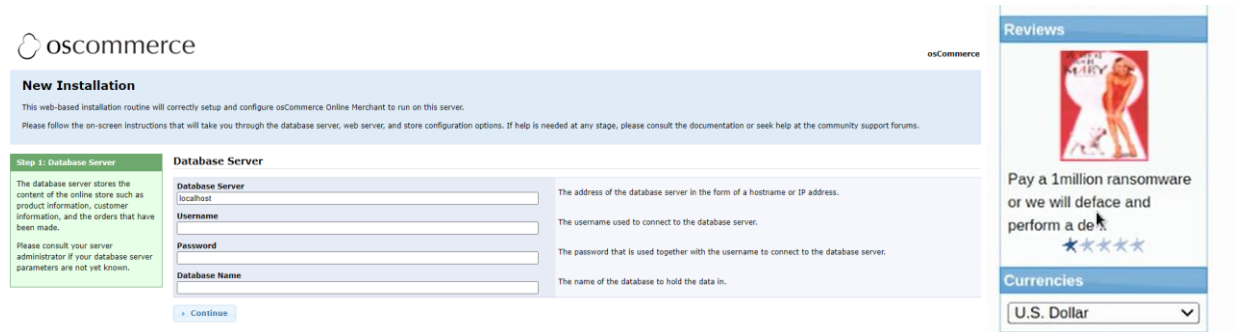
Description : One of the vulnerabilities found in OSCommerce version 2.3.4.1 is the ability for an attacker to hijack the website by finding the /install folder and reinstalling the database. This vulnerability is caused by the presence of the /install folder, which is used during the initial installation of the OSCommerce software. Once the software has been installed, the /install folder is typically removed, but in some cases, it is not, leaving the folder and its contents accessible to an attacker.

If an attacker can access the /install folder, they can use the scripts contained within it to reinstall the database, effectively wiping out all the data that is currently stored in the database and replacing it with a new, blank database. This can be used to delete all the data on the website, including customer information, product information, and order data, effectively rendering the website inoperable.

In addition to wiping out data, an attacker could potentially use this vulnerability to gain access to the website's administrative functions, allowing them to add, delete, or modify products, customer information, and other data on the website. This could be used to steal sensitive data, deface the website, or disrupt the business operations of the website.

Poc :

As you can see here after the attacker access the /install folder, he can simply start a new installation and he will be able to use new credentials and hijack the database and setup his own admin access to the website



The screenshot shows the osCommerce 'New Installation' page. It includes a 'Database Server' section with fields for 'Database Server' (localhost), 'Username', 'Password', and 'Database Name'. To the right, there's a 'Reviews' section with a red alert icon and a message: 'Pay a 1million ransomware or we will deface and perform a de...'. Below that is a 'Currencies' section with a dropdown menu set to 'U.S. Dollar'.

The team was able to access and create a new database and changed the review into “ Pay a 1million ransomware or we will deface and perform a denial of service”

Mitigation :

This vulnerability can be mitigated by ensuring that the /install folder is removed after the initial installation of the OSCommerce software, and by protecting the folder with proper permissions and access controls. Additionally, it is important to keep the OSCommerce software up-to-date with the latest security patches, as updates may include fixes for known vulnerabilities.

6.1 Remote Command Execution

Vulnerability [2] : Remote Command Execution

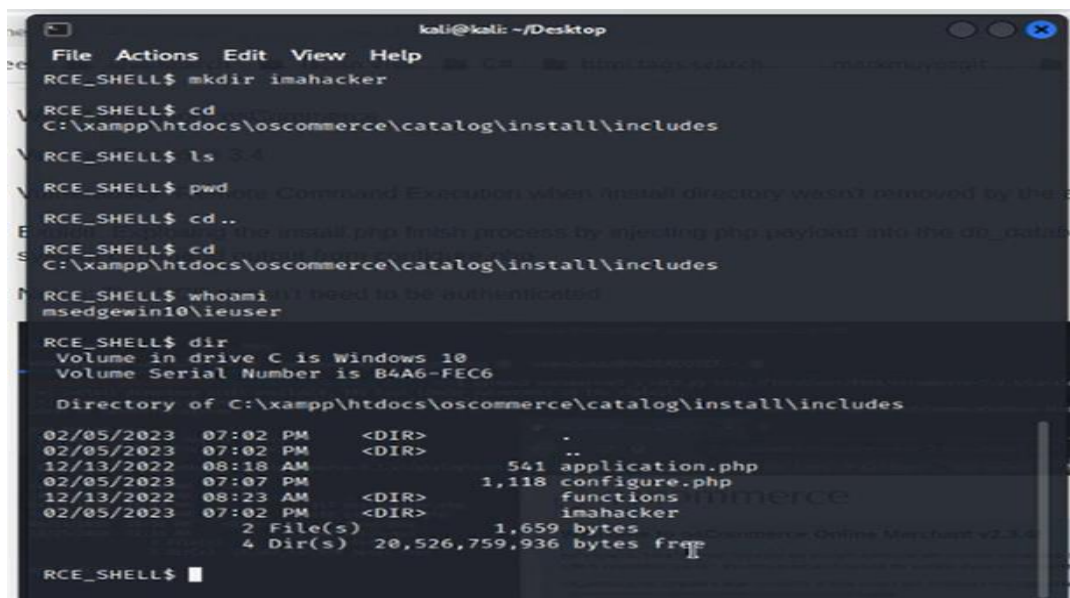
Severity : Critical

Instance : <http://target/oscommerce/catalog/>

Description : this vulnerability can allow an attacker to execute arbitrary code on the server by injecting malicious code into the "osCAdminID" parameter in the "login.php" script. The vulnerability is caused by a lack of proper input validation in the "login.php" script, which allows an attacker to inject malicious code into the "osCAdminID" parameter. This code is then executed by the server as part of the login process.

An attacker could use this vulnerability to gain unauthorized access to the server, steal sensitive information, or execute other malicious actions. They could also use it to upload and execute a webshell, allowing them to take control of the server.

Poc :



```
kali@kali: ~/Desktop
File Actions Edit View Help
RCE_SHELL$ mkdir imahacker
RCE_SHELL$ cd
C:\xampp\htdocs\oscommerce\catalog\install\includes
RCE_SHELL$ ls
RCE_SHELL$ pwd
C:\xampp\htdocs\oscommerce\catalog\install\includes
RCE_SHELL$ cd ..
RCE_SHELL$ cd
C:\xampp\htdocs\oscommerce\catalog\install\includes
RCE_SHELL$ whoami
msedgewin10\ieuser
RCE_SHELL$ dir
Volume in drive C is Windows 10
Volume Serial Number is B4A6-FEC6

Directory of C:\xampp\htdocs\oscommerce\catalog\install\includes

02/05/2023  07:02 PM    <DIR>          .
02/05/2023  07:02 PM    <DIR>          ..
12/13/2022  08:18 AM             541 application.php
02/05/2023  07:07 PM             1,118 configure.php
12/13/2022  08:23 AM             functions
02/05/2023  07:02 PM    <DIR>          imahacker
                2 File(s)          1,659 bytes
                4 Dir(s) 20,526,759,936 bytes free

RCE_SHELL$
```


The team was able to run a python script: `python3 osCommerce2_3_4RCE.py`

<http://192.168.100.5/oscommerce/catalog>

This enable the team to perform a remote code execution from kali to web host which is windows 10 and performed this codes:

Whoami

To show what os and the user

Mkdir imahacker

This created a folder named imahacker

Mitigation :

This vulnerability can be mitigated by upgrading to the latest version of OSCommerce that has fixed this issue. Additionally, it is important to ensure that your software is always up-to-date and that you monitor your website for any suspicious activity. **Access rights:** Grant minimal access rights to individuals and team members — such as read only, read and write. Avoid allowing members, except the administrator leader, to have full access rights.

Run network intrusion detection system IDSs to monitor network traffic for malicious activity that may occur after an attacker exploits the Visual Studio Code vulnerabilities. Ensure IDSs are free of vulnerabilities as well.

7. RECOMMENDATION

In conclusion, this paper analyzed the vulnerability assessment of osCommerce version 2.3.4.1, a widely used e-commerce platform. The assessment revealed two critical vulnerabilities that pose a significant threat to the security and privacy of the platform. The first vulnerability relates to the potential for cross-site scripting attacks, which can be used to inject malicious code into web pages viewed by other users. The second vulnerability is related to the lack of proper input validation, which can result in the injection of malicious SQL code and the theft of sensitive information from the database.

The assessment highlights the importance of keeping software up-to-date and implementing robust security measures such as limiting access rights to users, zero trust access, running a network intrusion detection system IDSs to protect against these types of attacks. Updating to a newer version of osCommerce can help to eliminate these vulnerabilities, and other security measures such as input validation and access controls can help to mitigate the risk of exploitation and enabling SSL/https.

```
Options All
AllowOverride All
Require all granted
</Directory>
</VirtualHost>

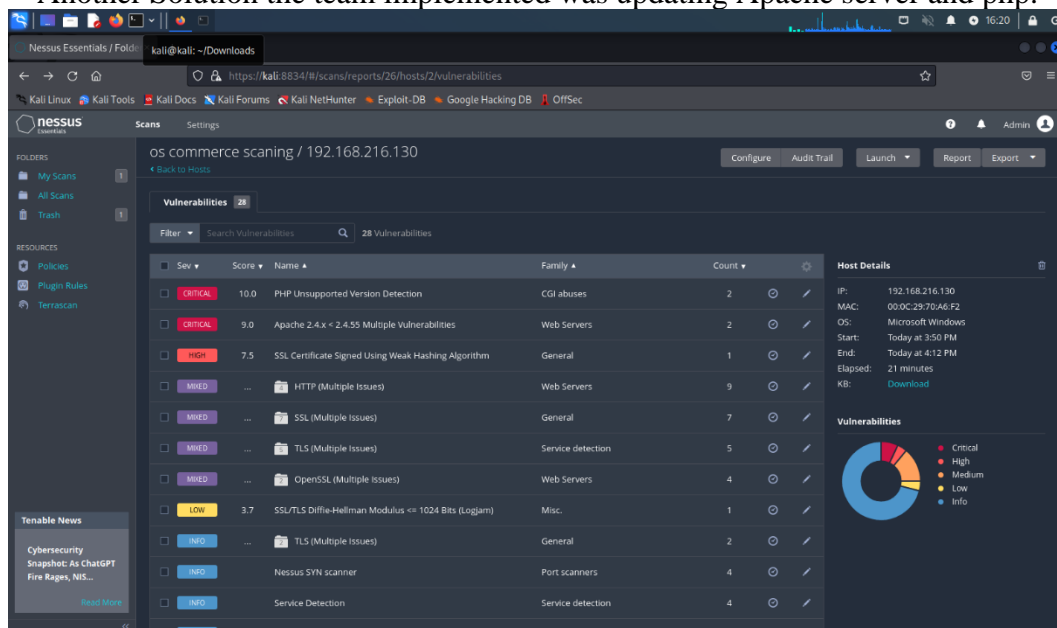
<VirtualHost 127.0.0.5:80>
DocumentRoot "C:/xampp/htdocs/projects/sandbox/web"
DirectoryIndex index.php

<Directory "C:/xampp/htdocs/projects/sandbox/web">
Options All
AllowOverride All
Require all granted
</Directory>
</VirtualHost>

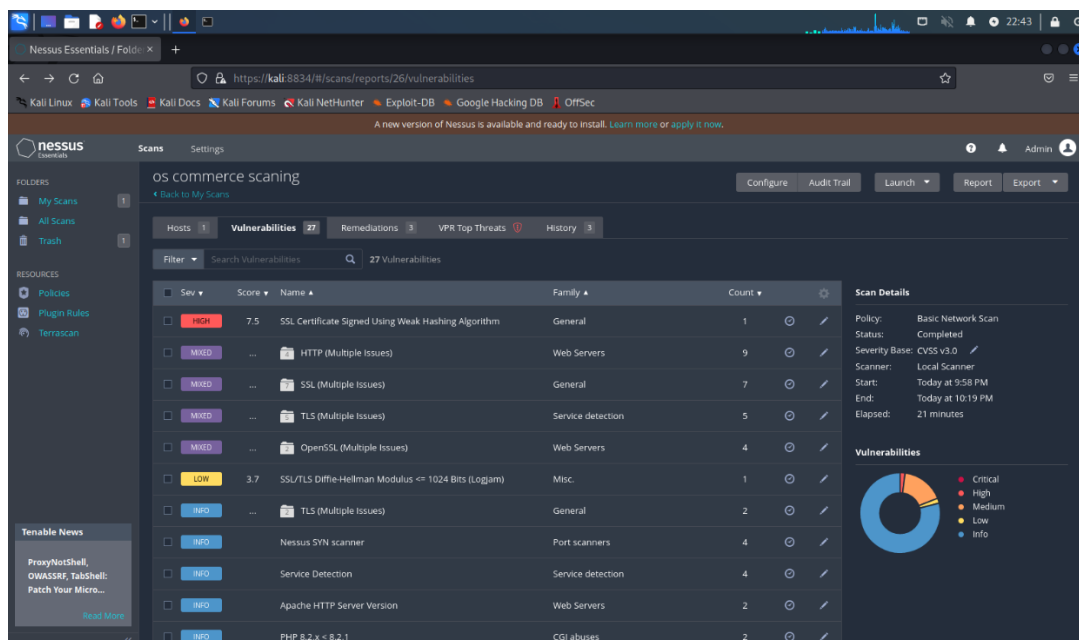
<VirtualHost 127.0.0.5:443>
DocumentRoot "C:/xampp/htdocs/projects/sandbox/web"
DirectoryIndex index.php
SSLEngine on
SSLCertificateFile "conf/ssl.crt/server.crt"
SSLCertificateKeyFile "conf/ssl.key/server.key"
```

Sample on how to enable https on virtual host

Another Solution the team implemented was updating Apache server and php.



The first time we ran Nessus to scan for vulnerabilities we had this result



Nessus scan after updating Apache and php versions

8. CHALLENGES

In this project, our team encountered several challenges in conducting a penetration testing assessment. Despite having a foundation of knowledge from our class, we initially struggled with where to start and felt overwhelmed by the task at hand. However, we persevered and utilized the skills and techniques learned in class to the best of our ability.

One of the major challenges we faced was the time constraint, as we had other projects that demanded our attention. This made it difficult to allocate sufficient time and resources to our pen testing efforts, and we had to balance our priorities accordingly. The team also had a hard time figuring out how to set up an https connection.

Despite these challenges, we found this project to be an enriching and enjoyable experience. We learned a great deal about pen testing and web application security, and it was fulfilling to feel like professional hackers, even if it was only for a moment.

Overall, this project was a valuable learning experience for our team, and we will cherish the memories of staying up late and tackling the challenges of pen testing together.

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Enabling https. Youtube <https://ourcodeworld.com/articles/read/198/enabling-ssl-https-protocol-with-xampp-in-a-local-php-project>