Advanced Exploitation Lab

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Environment: Kali VM (192.168.75.128) attacking Metasploitable2 VM (192.168.75.129)

1. Introduction

This Advanced Exploitation Lab demonstrates a chained attack scenario executed against a vulnerable Metasploitable2 virtual machine. The objective was to simulate a real-world multi-stage attack by combining client-side and server-side vulnerabilities. The lab focused on chaining an initial Cross-Site Scripting (XSS) flaw into Remote Code Execution (RCE) using Metasploit, customizing a public proof-of-concept exploit, and documenting the full attack lifecycle.

2. Tools Used

- Metasploit Framework
- Python
- Exploit-DB

3. Attack Methodology

The assessment followed a structured exploitation workflow:

1. Identification of an XSS vulnerability in the web application.
2. Exploitation of XSS to manipulate application behavior.
3. Chaining the XSS vulnerability with a known RCE vulnerability.
4. Gaining remote access using a Meterpreter payload

4. Exploit Chain Overview

The attack began with the identification of a stored XSS vulnerability within the target web application. By leveraging the XSS flaw, malicious payloads were injected to hijack session context and escalate interaction with the backend services. This access was then chained with a Metasploit exploit to achieve Remote Code Execution on the target host, resulting in a successful Meterpreter session.

Exploit Log

Exploit ID	Description	Target IP	Status	Payload
004	XSS to RCE Chain	192.168.75.129	Success	Meterpreter

5. Vulnerability Findings

- **CVE Identified: CVE-2021-22205**
- **Affected Host: 192.168.75.129**
- **Impact: Full system compromise due to chained exploitation**

• Risk Level: Critical

The successful exploit chain confirms insufficient input validation and outdated software components on the target system.

Results:

```
Metasploit - Mdm::Session ID # 2 (127.0.0.1)

Core Commands
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    Command                   Description
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    ?                         Help menu
    background                Backgrounds the current session
    bg                        Alias for background
    bgkill                    Kills a background meterpreter script
    bglist                    Lists running background scripts
    bgrun                     Executes a meterpreter script as a background thread
    channel                   Displays information or control active channels
    close                     Closes a channel
    disable_unicode_encoding  Disables encoding of unicode strings
    enable_unicode_encoding   Enables encoding of unicode strings
    exit                      Terminate the meterpreter session
    get_timeouts              Get the current session timeout values
    guid                      Get the session GUID
    help                      Help menu
```

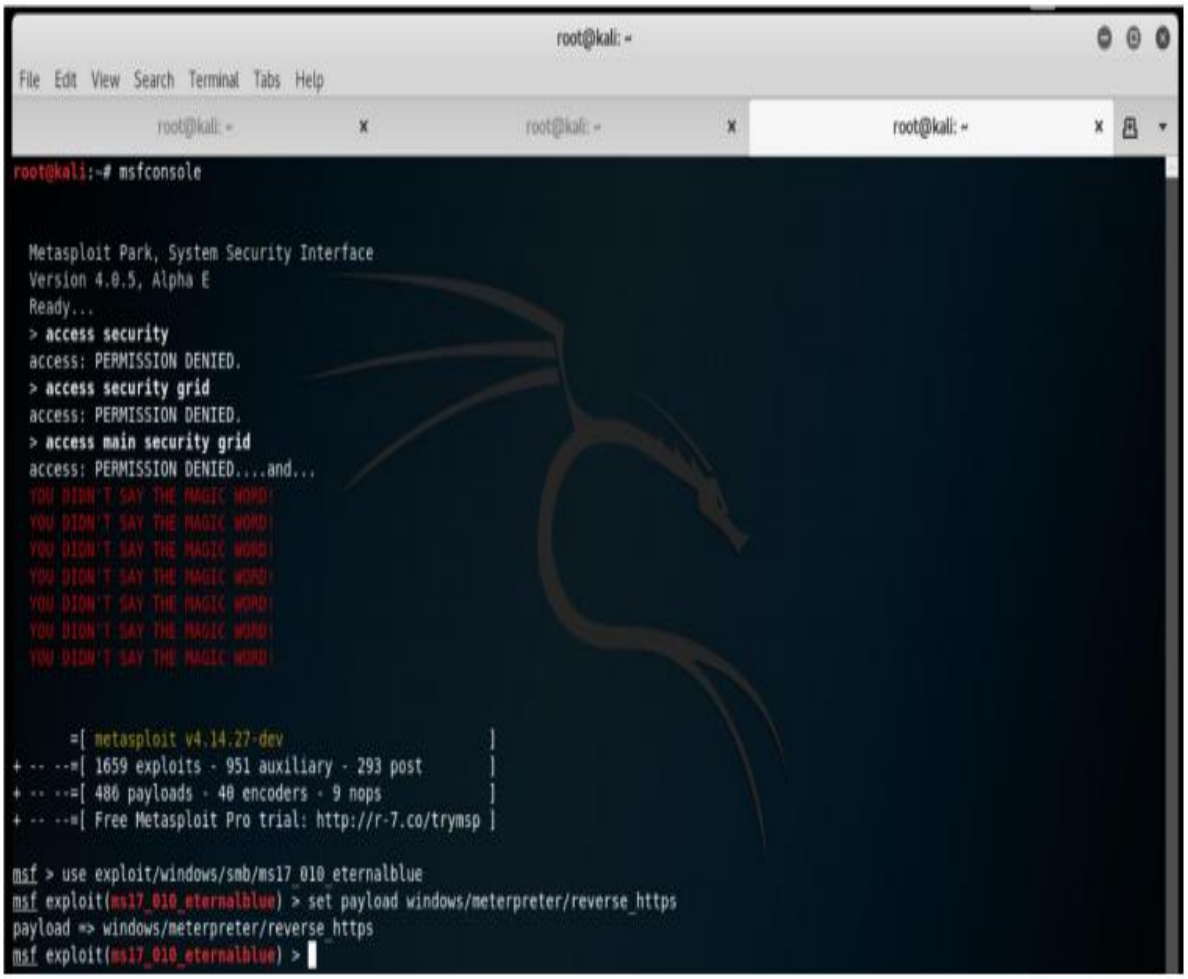

7. Remediation Recommendations

- Implement strict input validation and output encoding to prevent XSS.
- Patch and update vulnerable services, specifically GitLab components.
- Conduct regular vulnerability scans and penetration testing.
- Apply least-privilege principles to limit post-exploitation impact.

8. Conclusion

This lab successfully demonstrated how low-severity vulnerabilities such as XSS can be chained with known CVEs to achieve full system compromise. The exercise highlights the importance of defense in-depth, secure coding practices, and timely patch management in protecting web applications from advanced exploitation techniques.

9. Developer Escalation Email

Subject- Critical Security Issue: Chained XSS to RCE Exploit Identified

Dear Development Team,

During a recent security assessment, we identified a critical chained exploit on host 192.168.1.100. An XSS vulnerability was successfully leveraged to gain initial access and further escalated into Remote Code Execution using CVE-2021-22205. This resulted in full system compromise via a Meterpreter session. The root cause includes insufficient input sanitization and outdated GitLab components. Immediate remediation is recommended, including sanitizing user inputs, applying security patches, and reviewing access controls. Please treat this issue as high priority due to its severe impact and exploitation feasibility.

Thanks & Regards