رواد مصر الرقمية

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Training Company: Global Knowledge

Network Penetration Test Report

Target Information:

- **Scope**: IP: 192.168.220.135 (Network & Web Applications)
- **Date of Test**: 28/09/2024
- **Tested by**: Mostafa Mohamed Mokhtar

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1. Reconnaissance

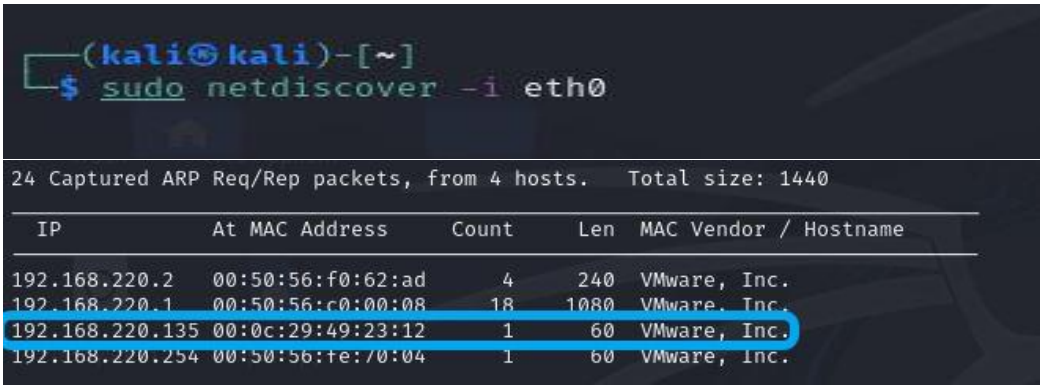
Objective: Identify live hosts and gather information about open services.

Tools & Techniques Used:

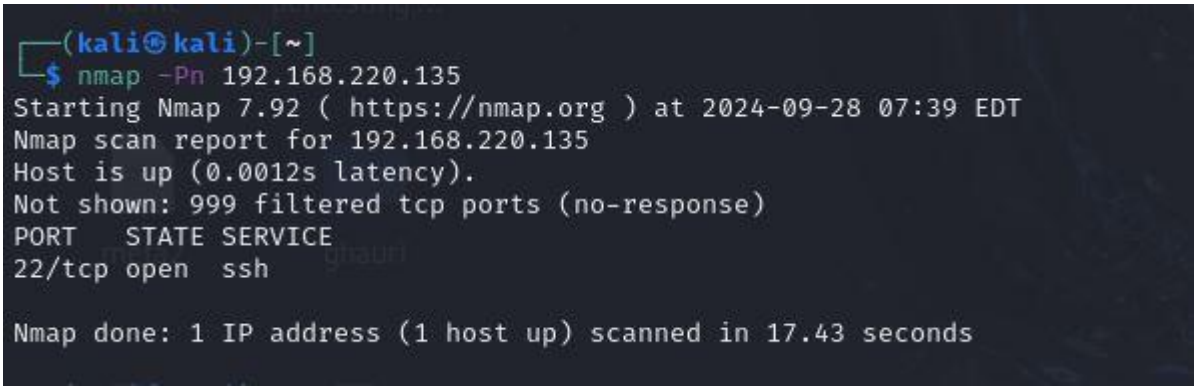
- **Netdiscover**: Discovered IP address (192.168.220.135).
- **Nmap**: Scanned open ports and identified SSH service on port 22

Detailed steps:

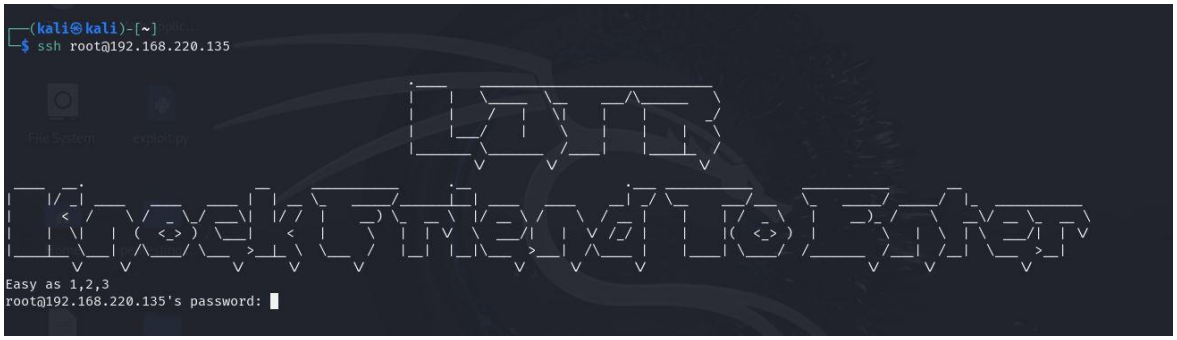
1. **Usig netdiscover to find IP address of the machine**



2. **Nmap scan results showing open ports.**

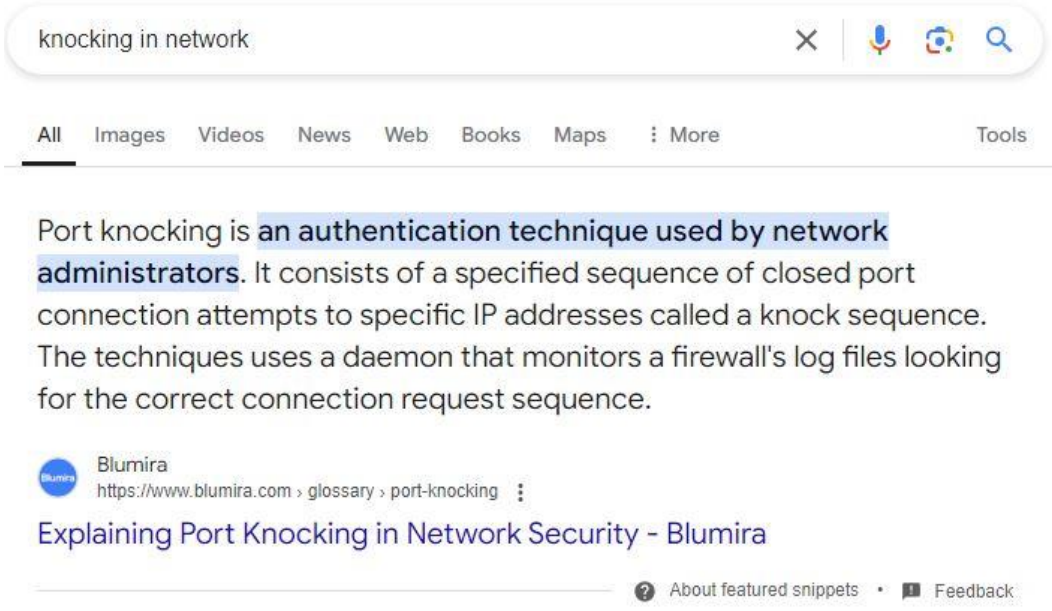


3. Trying to do **SSH** on the target machine as root



It returns a banner: "LOTR, Knock Friend To Enter Easy as 1,2,3”

4. **Searching for Knocking**



So let’s find how to do Port knocking on ports 1,2,3 as seen in the banner.

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2. Weaponization

Objective: Develop a strategy to reveal additional services.

Tools & Techniques Used:

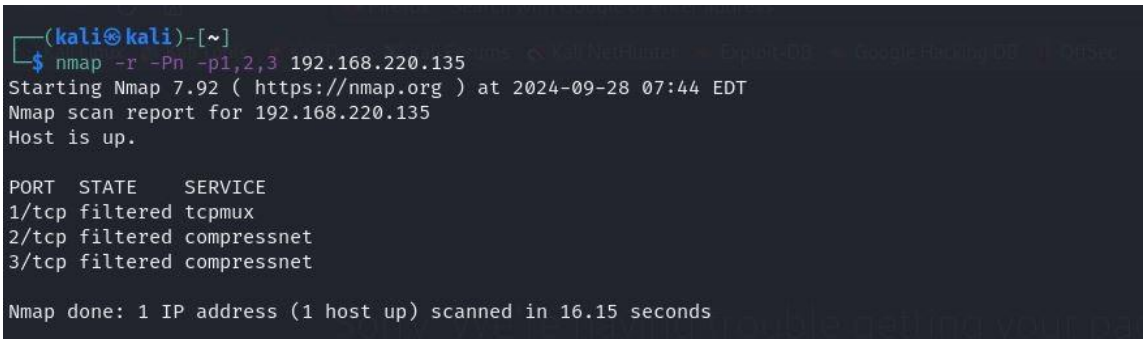
- **Nmap (Port Knocking)**: Performed port knocking sequence.

Findings:

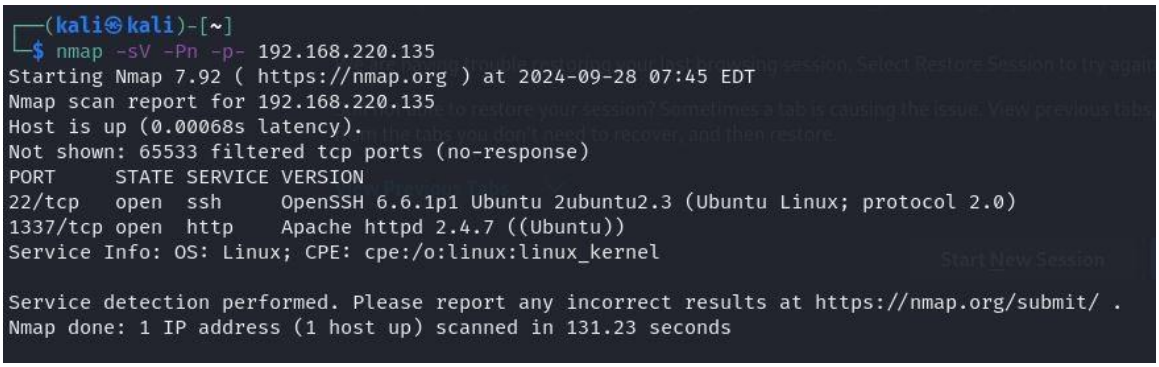
- HTTP service on port 1337 was revealed.

Detailed Steps:

1. **Port knocking using nmap**



2. **Finding open ports after Knocking**



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3. Delivery

Objective: Access the HTTP service and enumerate hidden directories.

Tools & Techniques Used:

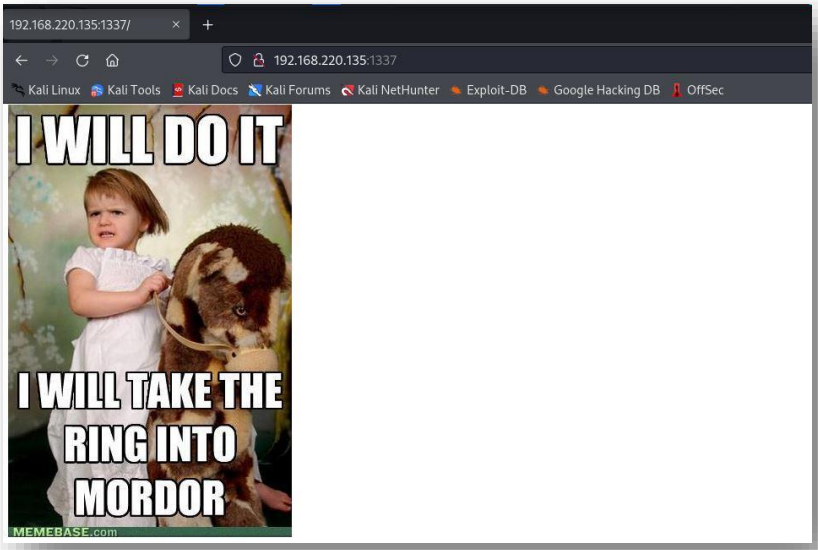
- **Dirb**: Found the hidden directories.
- **CyberChef**: Decoded the secret found in the source code, revealing the login page.

Findings:

- Discovered `/978345210/index.php`, leading to the login page.

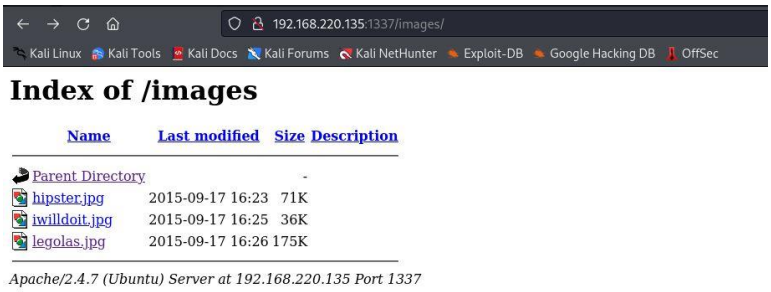
Detailed Steps:

1. Access the HTTP service

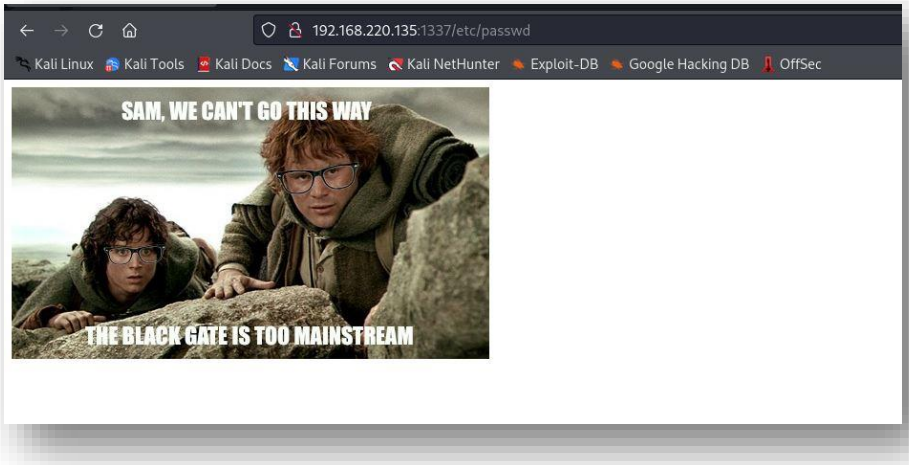


2. Dirb output showing hidden directories.

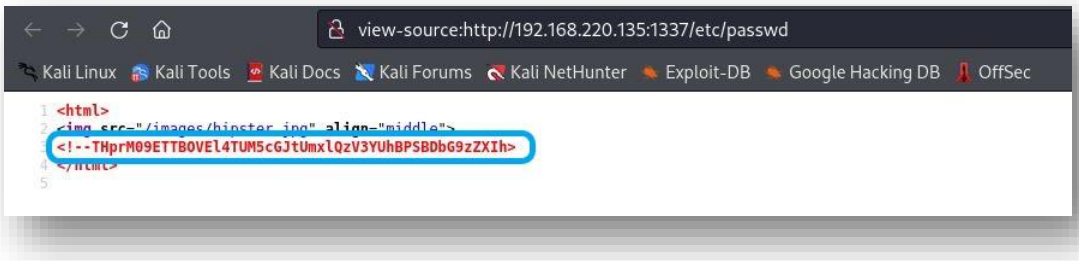
3. Opening the finding path /images



4. Opening /etc/passwd path

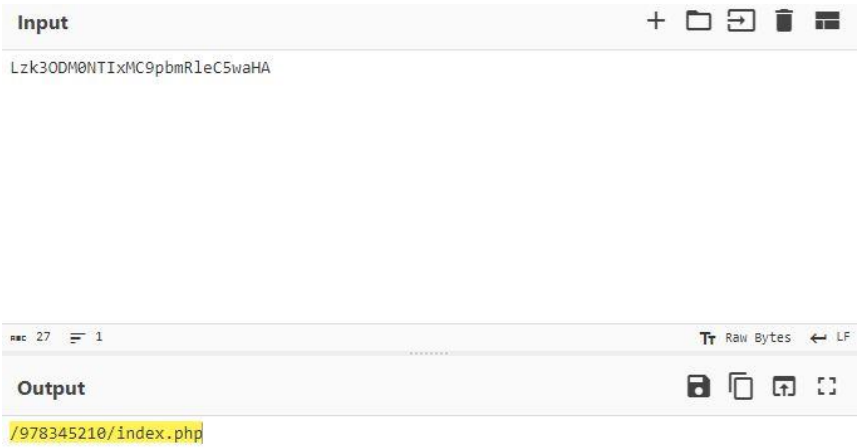


Let's see the page source



5. **Using CyberChef to decode this secret " base 64 decoding"**

Decode it again:



Let’s open this directory:

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4. Exploitation

Objective: Exploit vulnerabilities to gain unauthorized access.

Tools & Techniques Used:

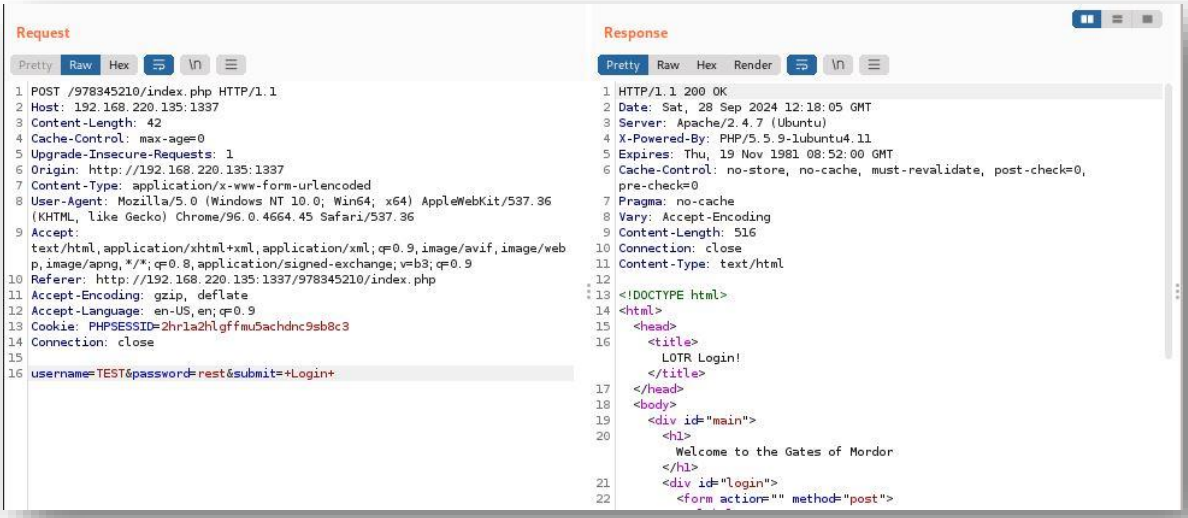
- **Burp Suite**: Intercepted and analyzed login requests.
- **SQLMap**: Exploited SQL injection to dump database contents.

Findings:

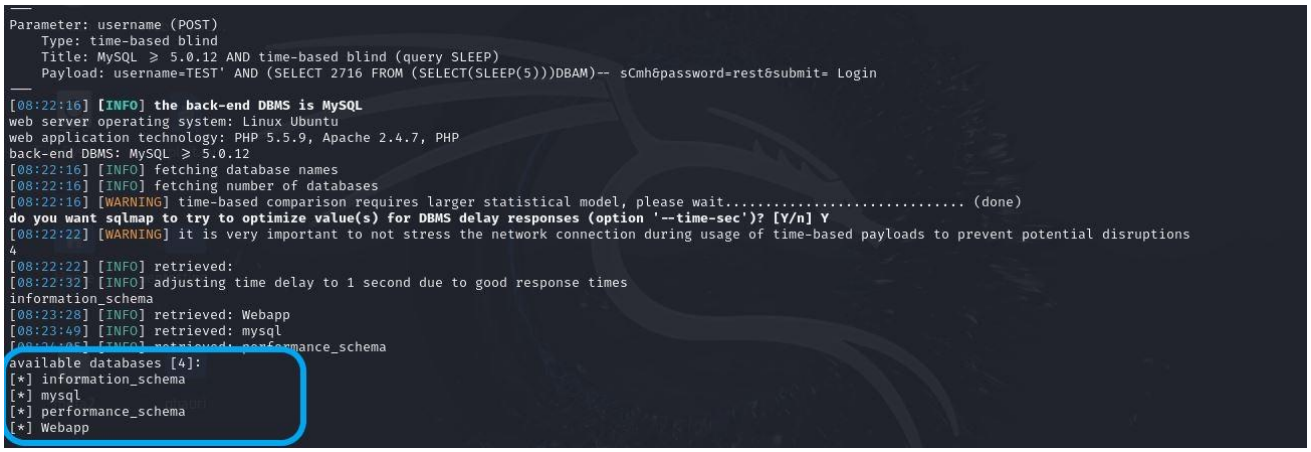
- SQL Injection allowed database extraction of usernames and passwords.

Detailed Steps:

1. Burp Suite intercepting login request.



2. SQLMap dumping database credentials.



5. Installation

Objective: Use the dumped credentials to gain system access.

Tools & Techniques Used:

- **SSH**: Used credentials to successfully access the target machine.

Findings:

- Gained SSH access with dumped credentials.

Detailed Steps:

- SSH login using one of the dumped credentials.

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6. Command and Control

Objective: Gather system information after gaining access.

Tools & Techniques Used:

- **Commands**: "`cat /proc/version`, `uname -a`" to identify the operating system (Ubuntu 14.04).

Findings:

- The target was running Ubuntu 14.04.

Detailed steps:

- Command output showing OS information.

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7. Actions on Objectives (Privilege Escalation)

Objective: Escalate privileges and retrieve the flag.

Tools & Techniques Used:

- **Searchsploit**: Found and executed an exploit for Ubuntu 14.04.
- Successfully gained root privileges and retrieved the flag.

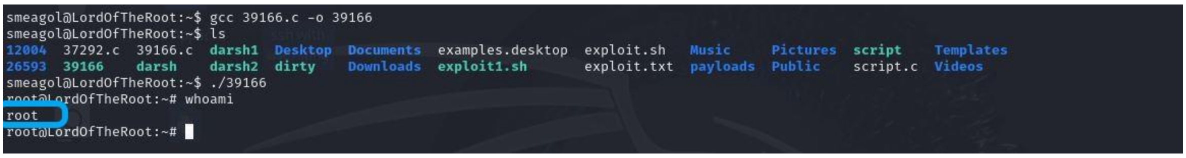
Findings:

- Privilege escalation successful using a known exploit.

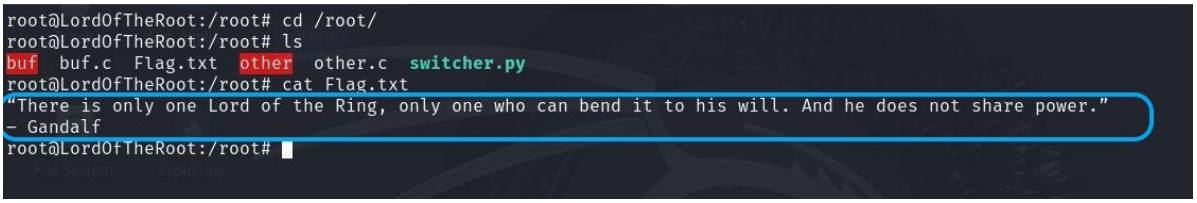
Detailed Steps:

- **Using searchsploit to get suitable script to do privilege escalation**

- Execution of exploit and proof of root privileges.



- Flag retrieval.



Summary of Critical Findings:

1. **Port Knocking Misconfiguration**: The port knocking mechanism was misconfigured, revealing an additional HTTP service on port 1337.

2. **SQL Injection on Login Page**: The login form on the web server was vulnerable to SQL injection, which allowed database exfiltration of usernames and passwords.

3. **Outdated Operating System**: The target system was running an outdated version of Ubuntu (14.04), which was susceptible to a known local privilege escalation exploit.

Mitigation Recommendations:

1. **Secure Port Knocking Mechanism**:

    - Ensure port knocking mechanisms are correctly configured.
    - Implement logging and monitoring of port knocking attempts to detect suspicious activity.

2. **Fix SQL Injection Vulnerabilities**:

    - Sanitize all user inputs and use prepared statements or parameterized queries to prevent SQL injection.
    - Conduct regular security assessments of web applications to identify and patch injection vulnerabilities.

3. **Patch Management**:

    - Upgrade outdated operating systems and apply security patches regularly to prevent exploitation of known vulnerabilities.
    - Implement automated patch management to ensure critical systems are always up to date.

4. **Implement Strong Access Controls**:

    - Use strong, unique passwords for each account and enforce regular password changes.
    - Consider implementing multi-factor authentication (MFA) for SSH and other remote access services.