A Project Submitted for
Digital Egypt Pioneers Initiative" DEPI"

Role:
SOC Analyst and Incident Response Specialist

Project4:
Vulnerability Assessment and Remediation Plan

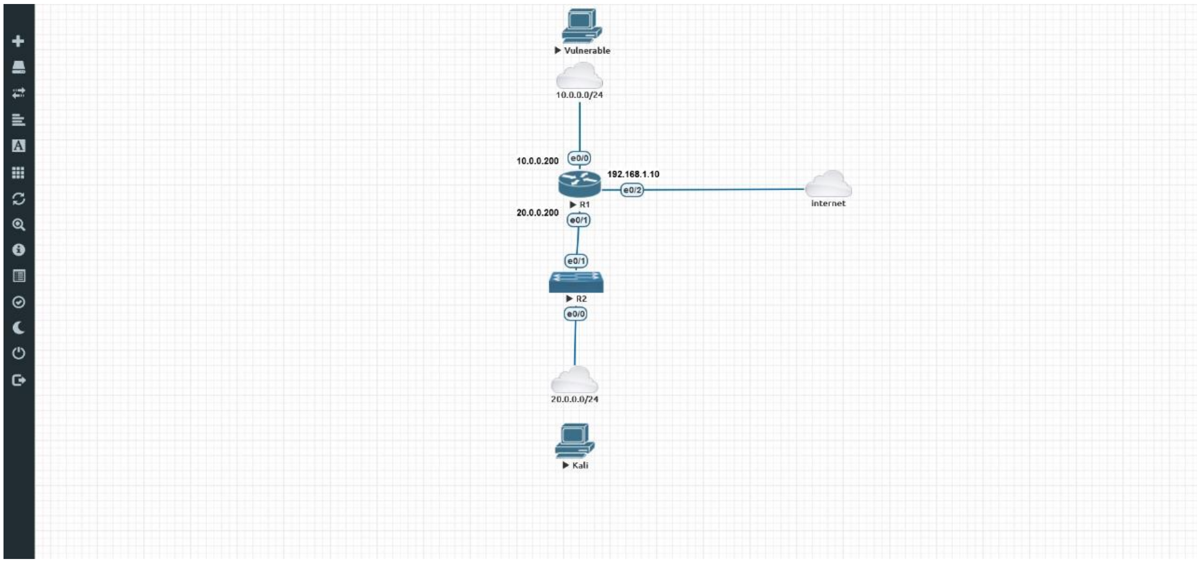
By

- **Mostafa Fayez Saad**
- **Ahmed Abobaker Mohamed**
- **Ebrahim Ahmed Azoz**
- **Mina Maximous Maseha**

Supervised by

Eng. Nour eldin Essam
Incident Monitoring Analyst
Global Knowledge

Oct 2024



Network Environment Setup:

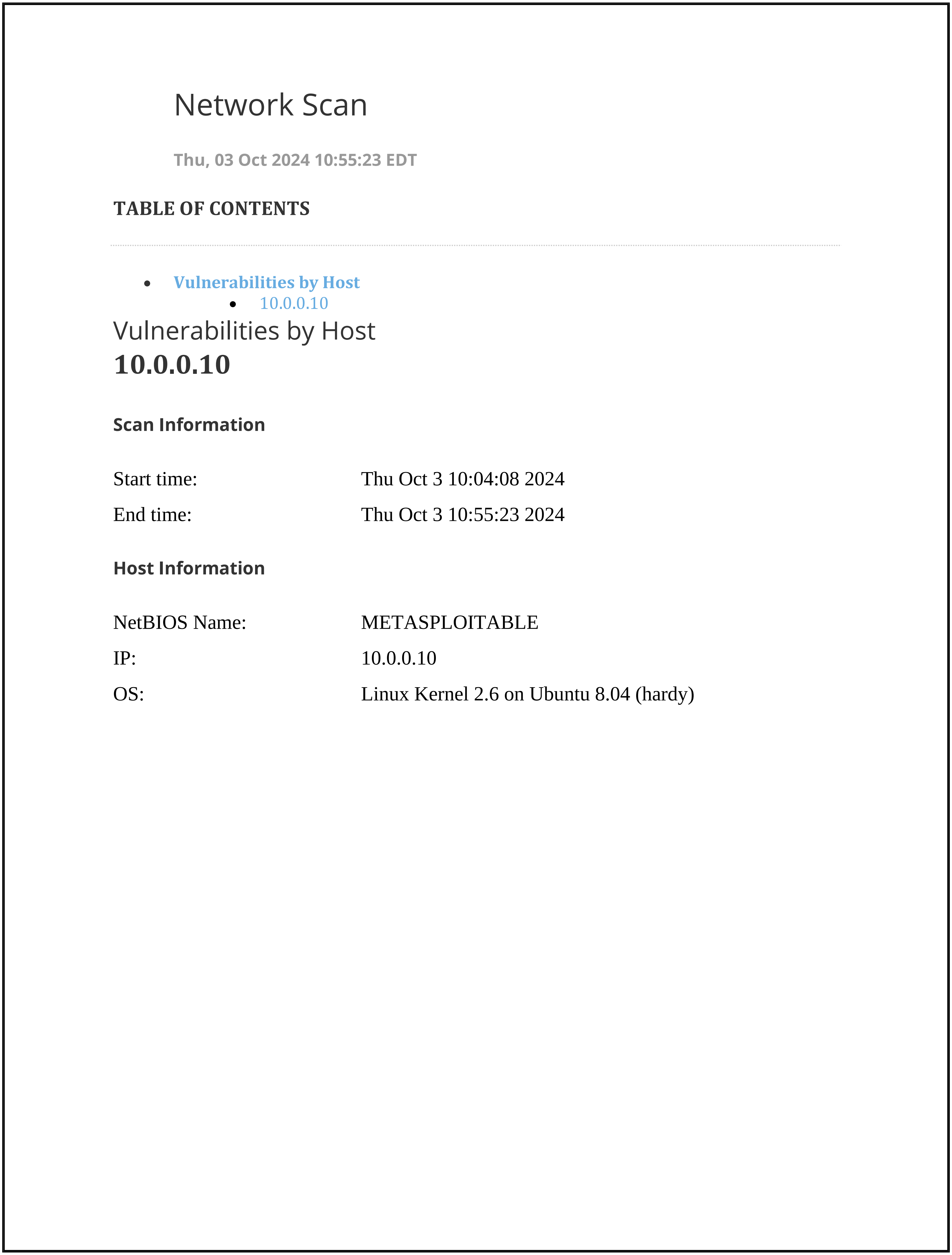
The network environment consists of two main components: a Vulnerable Machine and a Kali Linux Machine for penetration testing. Below is a detailed breakdown of the environment used for vulnerability assessment:

- Vulnerable Machine:
  - IP Address: 10.0.0.0/24
  - Connected to router R1 via interface e0/0.
  - This machine was the target of the vulnerability scan.

- Router R1:
  - Interfaces:
    - e0/0 connected to the vulnerable machine (10.0.0.200).
    - e0/2 connected to the internet (192.168.1.10).
    - e0/1 connected to another router R2 (20.0.0.200).
  - Acts as the intermediary between the vulnerable machine, the internet, and the internal network.

- Switch:
  - Ports:
    - e0/1 connected to R1 (20.0.0.0/24).
    - e0/0 connected to the Kali Machine for scanning.

- Kali Linux Machine:
  - IP Address: 20.0.0.0/24
  - Connected to R2 through interface e0/0.
  - This machine was used to scan the vulnerable machine and assess potential security flaws.



Network Scan

Thu, 03 Oct 2024 10:55:23 EDT

TABLE OF CONTENTS

- **Vulnerabilities by Host**
    - 10.0.0.10

Vulnerabilities by Host

10.0.0.10

Scan Information

Start time:	Thu Oct 3 10:04:08 2024
End time:	Thu Oct 3 10:55:23 2024

Host Information

NetBIOS Name:	METASPLOITABLE
IP:	10.0.0.10
OS:	Linux Kernel 2.6 on Ubuntu 8.04 (hardy)

Vulnerabilities

70728 - Apache PHP-CGI Remote Code Execution

Synopsis

The remote web server contains a version of PHP that allows arbitrary code execution.

Description

The PHP installation on the remote web server contains a flaw that could allow a remote attacker to pass command-line arguments as part of a query string to the PHP-CGI program. This could be abused to execute arbitrary code, reveal PHP source code, cause a system crash, etc.

Solution

Upgrade to PHP 5.3.13 / 5.4.3 or later.

Risk Factor

High

CVSS v3.0 Base Score

9.8 (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H)

References

BID	53388
CVE	CVE-2012-1823
CVE	CVE-2012-2311
CVE	CVE-2012-2335
CVE	CVE-2012-2336

134862 - Apache Tomcat AJP Connector Request Injection (Ghostcat)

Synopsis

There is a vulnerable AJP connector listening on the remote host.

Description

A file read/inclusion vulnerability was found in AJP connector. A remote, unauthenticated attacker could exploit this vulnerability to read web application files from a vulnerable server. In instances where the vulnerable server allows file uploads, an attacker could upload malicious JavaServer Pages (JSP) code within a variety of file types and gain remote code execution (RCE).

Solution

Update the AJP configuration to require authorization and/or upgrade the Tomcat server to 7.0.100, 8.5.51, 9.0.31 or later.

Risk Factor

High

CVSS v3.0 Base Score

9.8 (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H)

References

CVE	CVE-2020-1745
CVE	CVE-2020-1938

51988 - Bind Shell Backdoor Detection

Synopsis

The remote host may have been compromised.

Description

A shell is listening on the remote port without any authentication being required. An attacker may use it by connecting to the remote port and sending commands directly.

Solution

Verify if the remote host has been compromised, and reinstall the system if necessary.

Risk Factor

Critical

CVSS v3.0 Base Score

9.8 (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H)

32314 - Debian OpenSSH/OpenSSL Package Random Number Generator Weakness

Synopsis

The remote SSH host keys are weak.

Description

The remote SSH host key has been generated on a Debian or Ubuntu system which contains a bug in the random number generator of its OpenSSL library.

The problem is due to a Debian packager removing nearly all sources of entropy in the remote version of OpenSSL.

An attacker can easily obtain the private part of the remote key and use this to set up decipher the remote session or set up a man in the middle attack.

Solution

Consider all cryptographic material generated on the remote host to be guessable. In particuliar, all SSH, SSL and OpenVPN key material should be re-generated.

Risk Factor

Critical

References

BID	29179
CVE	CVE-2008-0166
XREF	CWE:310

32321 - Debian OpenSSH/OpenSSL Package Random Number Generator Weakness (SSL check)

Synopsis

The remote SSL certificate uses a weak key.

Description

The remote x509 certificate on the remote SSL server has been generated on a Debian or Ubuntu system which contains a bug in the random number generator of its OpenSSL library.

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Risk Factor

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Risk Factor

Critical

References

BID	29179
CVE	CVE-2008-0166
XREF	CWE:310

20007 - SSL Version 2 and 3 Protocol Detection

Synopsis

The remote service encrypts traffic using a protocol with known weaknesses.

Description

The remote service accepts connections encrypted using SSL 2.0 and/or SSL 3.0. These versions of SSL are affected by several cryptographic flaws, including:

- An insecure padding scheme with CBC ciphers.
- Insecure session renegotiation and resumption schemes.

An attacker can exploit these flaws to conduct man-in-the-middle attacks or to decrypt communications between the affected service and clients.

Although SSL/TLS has a secure means for choosing the highest supported version of the protocol (so that these versions will be used only if the client or server support nothing better), many web browsers implement this in an unsafe way that allows an attacker to downgrade a connection (such as in POODLE). Therefore, it is recommended that these protocols be disabled entirely.

NIST has determined that SSL 3.0 is no longer acceptable for secure communications. As of the date of enforcement found in PCI DSS v3.1, any version of SSL will not meet the PCI SSC's definition of 'strong cryptography'.

Solution

Consult the application's documentation to disable SSL 2.0 and 3.0.
Use TLS 1.2 (with approved cipher suites) or higher instead.

Risk Factor

Critical

CVSS v3.0 Base Score

9.8 (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H)

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Risk Factor

Critical

CVSS v3.0 Base Score

9.8 (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H)

61708 - VNC Server 'password' Password

Synopsis

A VNC server running on the remote host is secured with a weak password.

Description

The VNC server running on the remote host is secured with a weak password. Nessus was able to login using VNC authentication and a password of 'password'. A remote, unauthenticated attacker could exploit this to take control of the system.

Solution

Secure the VNC service with a strong password.

Risk Factor

Critical

CVSS v2.0 Base Score

10.0 (CVSS2#AV:N/AC:L/Au:N/C:C/I:C/A:C)

125855 - phpMyAdmin prior to 4.8.6 SQLi vulnerablity (PMASA-2019-3)

Synopsis

The remote web server hosts a PHP application that is affected by SQLi vulnerability.

Description

According to its self-reported version number, the phpMyAdmin application hosted on the remote web server is prior to 4.8.6. It is, therefore, affected by a SQL injection (SQLi) vulnerability that exists in designer feature of phpMyAdmin. An unauthenticated, remote attacker can exploit this to inject or manipulate SQL queries in the back-end database, resulting in the disclosure or manipulation of arbitrary data.

Solution

Upgrade to phpMyAdmin version 4.8.6 or later.
Alternatively, apply the patches referenced in the vendor advisories.

Risk Factor

High

CVSS v3.0 Base Score

9.8 (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H)

References

BID	108617
CVE	CVE-2019-11768

39469 - CGI Generic Remote File Inclusion

Synopsis

Arbitrary code may be run on the remote server.

Description

The remote web server hosts CGI scripts that fail to adequately sanitize request strings. By leveraging this issue, an attacker may be able to include a remote file from a remote server and execute arbitrary commands on the target host.

Solution

Restrict access to the vulnerable application. Contact the vendor for a patch or upgrade.

Risk Factor

High

CVSS v2.0 Base Score

7.5 (CVSS2#AV:N/AC:L/Au:N/C:P/I:P/A:P)

References

XREF	CWE:73

XREF	CWE:78
XREF	CWE:98
XREF	CWE:434
XREF	CWE:473
XREF	CWE:632
XREF	CWE:714
XREF	CWE:727
XREF	CWE:801
XREF	CWE:928
XREF	CWE:929

136769 - ISC BIND Service Downgrade / Reflected DoS

Synopsis

The remote name server is affected by Service Downgrade / Reflected DoS vulnerabilities.

Description

According to its self-reported version, the instance of ISC BIND 9 running on the remote name server is affected by performance downgrade and Reflected DoS vulnerabilities. This is due to BIND DNS not sufficiently limiting the number fetches which may be performed while processing a referral response.

An unauthenticated, remote attacker can exploit this to cause degrade the service of the recursive server or to use the affected server as a reflector in a reflection attack.

Solution

Upgrade to the ISC BIND version referenced in the vendor advisory.

Risk Factor

Medium

CVSS v3.0 Base Score

8.6 (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:C/C:N/I:N/A:H)

References

CVE	CVE-2020-8616

42256 - NFS Shares World Readable

Synopsis

The remote NFS server exports world-readable shares.

Description

The remote NFS server is exporting one or more shares without restricting access (based on hostname, IP, or IP range).

Solution

Place the appropriate restrictions on all NFS shares.

Risk Factor

Medium

CVSS v3.0 Base Score

7.5 (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:N/A:N)

59088 - PHP PHP-CGI Query String Parameter Injection Arbitrary Code Execution

Synopsis

The remote web server contains a version of PHP that allows arbitrary code execution.

Description

The PHP installation on the remote web server contains a flaw that could allow a remote attacker to pass command-line arguments as part of a query string to the PHP-CGI program. This could be abused to execute arbitrary code, reveal PHP source code, cause a system crash, etc.

Solution

If using Lotus Foundations, upgrade the Lotus Foundations operating system to version 1.2.2b or later.
Otherwise, upgrade to PHP 5.3.13 / 5.4.3 or later.

Risk Factor

High

References

BID	53388
CVE	CVE-2012-1823
CVE	CVE-2012-2311

42873 - SSL Medium Strength Cipher Suites Supported (SWEET32)

Synopsis

The remote service supports the use of medium strength SSL ciphers.

Description

The remote host supports the use of SSL ciphers that offer medium strength encryption. Nessus regards medium strength as any encryption that uses key lengths at least 64 bits and less than 112 bits, or else that uses the 3DES encryption suite.

Solution

Reconfigure the affected application if possible to avoid use of medium strength ciphers.

Risk Factor

Medium

CVSS v3.0 Base Score

7.5 (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:N/A:N)

References

CVE	CVE-2016-2183

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Description

The remote host supports the use of SSL ciphers that offer medium strength encryption. Nessus regards medium strength as any encryption that uses key lengths at least 64 bits and less than 112 bits, or else that uses the 3DES encryption suite.

Solution

Reconfigure the affected application if possible to avoid use of medium strength ciphers.

Risk Factor

Medium

CVSS v3.0 Base Score

7.5 (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:N/A:N)

References

CVE	CVE-2016-2183

90509 - Samba Badlock Vulnerability

Synopsis

An SMB server running on the remote host is affected by the Badlock vulnerability.

Description

The version of Samba, a CIFS/SMB server for Linux and Unix, running on the remote host is affected by a flaw, known as Badlock, that exists in the Security Account Manager (SAM) and Local Security Authority (Domain Policy) (LSAD) protocols due to improper authentication level negotiation over Remote Procedure Call (RPC) channels. A man-in-the-middle attacker who is able to able to intercept the traffic between a client and a server hosting a SAM database can exploit this flaw to force a downgrade of the authentication level, which allows the execution of arbitrary Samba network calls in the context of the intercepted user, such as viewing or modifying sensitive security data in the Active Directory (AD) database or disabling critical services.

Solution

Upgrade to Samba version 4.2.11 / 4.3.8 / 4.4.2 or later.

Risk Factor

Medium

CVSS v3.0 Base Score

7.5 (CVSS:3.0/AV:N/AC:H/PR:N/UI:R/S:U/C:H/I:H/A:H)

CVSS v3.0 Temporal Score

6.5 (CVSS:3.0/E:U/RL:O/RC:C)

References

BID	86002
CVE	CVE-2016-2118

19704 - TWiki 'rev' Parameter Arbitrary Command Execution

Synopsis

The remote web server hosts a CGI application that is affected by an arbitrary command execution vulnerability.

Description

The version of TWiki running on the remote host allows an attacker to manipulate input to the 'rev' parameter in order to execute arbitrary shell commands on the remote host subject to the privileges of the web server user id.

Solution

Apply the appropriate hotfix referenced in the vendor advisory.

Risk Factor

High

CVSS v3.0 Base Score

8.8 (CVSS:3.0/AV:N/AC:L/PR:N/UI:R/S:U/C:H/I:H/A:H)

References

BID	14834
CVE	CVE-2005-2877

36171 - phpMyAdmin Setup Script Configuration Parameters Arbitrary PHP Code Injection (PMASA-2009-4)

Synopsis

The remote web server contains a PHP application that is affected by a code execution vulnerability.

Description

The setup script included with the version of phpMyAdmin installed on the remote host does not properly sanitize user-supplied input before using it to generate a config file for the application. This version is affected by the following vulnerabilities :

- The setup script inserts the unsanitized verbose server name into a C-style comment during config file generation.
- An attacker can save arbitrary data to the generated config file by altering the value of the 'textconfig' parameter during a POST request to config.php.

An unauthenticated, remote attacker can exploit these issues to execute arbitrary PHP code.

Solution

Upgrade to phpMyAdmin 3.1.3.2. Alternatively, apply the patches referenced in the project's advisory.

Risk Factor

High

CVSS v2.0 Base Score

7.5 (CVSS2#AV:N/AC:L/Au:N/C:P/I:P/A:P)

References

BID	34526
CVE	CVE-2009-1285
XREF	TRA:TRA-2009-02
XREF	SECUNIA:34727
XREF	CWE:94

Network Scan

Thu, 03 Oct 2024 10:55:23 EDT

TABLE OF CONTENTS

- **Vulnerabilities by Host**
    - 20.0.0.200

Vulnerabilities by Host

20.0.0.200

Scan Information

Start time:	Thu Oct 3 10:07:00 2024
End time:	Thu Oct 3 10:19:46 2024

Host Information

IP:	20.0.0.200

Vulnerabilities

50686 - IP Forwarding Enabled

Synopsis

The remote host has IP forwarding enabled.

Description

The remote host has IP forwarding enabled. An attacker can exploit this to route packets through the host and potentially bypass some firewalls / routers / NAC filtering.
Unless the remote host is a router, it is recommended that you disable IP forwarding.

Solution

On Linux, you can disable IP forwarding by doing :

```
echo 0 > /proc/sys/net/ipv4/ip_forward
```

On Windows, set the key 'IPEnableRouter' to 0 under
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\Tcpip\Parameters

On Mac OS X, you can disable IP forwarding by executing the command :

```
sysctl -w net.inet.ip.forwarding=0
```

Risk Factor

Medium

CVSS v3.0 Base Score

6.5 (CVSS:3.0/AV:A/AC:L/PR:L/UI:N/S:C/C:L/I:L/A:L)

References

CVE	CVE-1999-0511