**Vulnerability Assessment Report**

**For**



**Date**

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# Restrictions on disclosure and use of information

Restriction on Disclosure and Use of Confidential Information. The Executive understands and agrees that the Confidential Information constitutes an asset of the Company and its affiliated entities and may not be converted to the Executive's own use. Accordingly, the Executive hereby agrees that the Executive shall not, directly, or indirectly, at any time, reveal, divulge, or disclose to any Person not expressly authorized by the Company any Confidential Information, and the Executive shall not, directly, or indirectly, use or make use of any Confidential Information in connection with any business activity other than that of the Company. The parties acknowledge and agree that this Agreement is not intended to, and does not, alter either the Company's rights or the Executive's obligations under any state or federal statutory or common law regarding trade secrets and unfair trade.

# Operation Method

* 1. Posture Review
  2. Information Gathering
  3. Enumeration
  4. Vulnerability Assessment
  5. Analyze & Evaluate Risk Value
  6. Report



Figure 1: Operation Method

# Project Scope

## **3.1 Infrastructure Vulnerability Assessment**

**Target / IP Address:**

| **No.** | **Domain / Server Name** | **Public IP Address** | **Private IP Address** | **OS/Model** | **Functions** | **Public Assessment** | **Private Assessment** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | DATABASE01 | - | 172.16.69.13 | Ubuntu 18 | Database Server 01 |  | ✓ |
| 2 | WEB01 | 123.123.123.123 | 172.16.69.14 | Ubuntu 20 | Web Server |  | ✓ |
| 3 | TERM | - | 172.16.69.52 | Windows Server 2016 | Terminal Server |  | ✓ |
| 4 | SMB01 | 12.12.12.12 | 172.16.69.53 | Windows Server 2019 | SMB Server |  | ✓ |
| 5 | DATABASE02 | - | 172.16.69.54 | Ubuntu 18 | Database Server 02 |  | ✓ |

## **3.2 Web Application Vulnerability Assessment**

**Target / IP Address:**

| **No.** | **Domain / Server Name** | **Public IP Address** | **Private IP Address** | **OS/Model** | **Functions** | **Public Assessment** | **Private Assessment** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | https://example.com/ | 123.123.123.123 | 172.16.69.14 | Ubuntu 20 | เว็บไซต์ขายของ | ✓ |  |

# Testing Tools

|  |  |
| --- | --- |
| **Tool Name** | **Testing Type** |
| Nmap | Host and Service Discovery |
| Nessus | Infrastructure Vulnerability Assessment |
| Acunetix | Web Application Vulnerability Assessment |

# Infrastructure Vulnerability Assessment

**Vulnerability Assessment from Public Access (for public target)**

**Testing date:** March 30, 2021

**Tester IP Address:** 203.150.110.29

Diagram

Description automatically generated

Figure 2: Vulnerability Assessment from Public Access

**Vulnerability Assessment from Private Access (for private or restricted access target)**

**Testing date:** March 30, 2021

**Tester IP Address:** Private IP from VPN access

A picture containing diagram

Description automatically generated

Figure 3: Vulnerability Assessment from Private Access

## **5.1 Target Information**

| **No.** | **Domain / Server Name** | **IP Address** | **OS/Model** | **Port** |
| --- | --- | --- | --- | --- |

## **5.2 Executive summary**

The purpose of this activity is to find the vulnerability on the target infrastructure.

### **5.2.1 Summary Vulnerability by Severity**



Figure 4: Summary by Severity of Infrastructure Vulnerability Assessment

### **5.2.2 Vulnerability by Target**

| **No.** | **Domain/Server Name** | **IP Address** | **Critical** | **High** | **Medium** | **Low** | **Total** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | https://demo.testfire.net | 65.61.137.117 | 0 | 6 | 1 | 4 | 11 |
| **Total** | | | 0 | 6 | 1 | 4 | 11 |

## **5.3 Infrastructure Vulnerability Detail**



# Web Application Vulnerability Assessment

**Vulnerability Assessment from Public Access (for public target)**

**Testing date:** March 30, 2021

**Tester IP Address:** 203.150.79.252

Diagram

Description automatically generated

Figure 5: Vulnerability Assessment from Public Access

## **6.1 Target Information**

| **No.** | **Domain / Server Name** | **IP Address** | **OS/Model** | **Port** |
| --- | --- | --- | --- | --- |
| 1 | https://example.com | 123.123.123.123 | Ubuntu 20 | TCP 22, 53, 80, 113, 123, 443, 2000, 4118, 4119, 4120, 4121, 4122, 4444, 5000, 5060, 8008, 8082 |

## **6.2 Executive summary**

The purpose of this activity is to find the vulnerability on the target web application.

### **6.2.1 Summary Vulnerability by Severity**

Figure 6: Summary by Severity of Web Application Vulnerability Assessment

### **6.2.2 Vulnerability by Target**

| **No.** | **Domain/Server Name** | **IP Address** | **Critical** | **High** | **Medium** | **Low** | **Total** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | https://example.com | 123.123.123.123 | 0 | 0 | 1 | 3 | 4 |
| **Total** | | | **0** | **0** | **1** | **3** | **4** |

## **6.3 Web Application Vulnerability Detail**

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 1 | **Finding** | Clickjacking: X-Frame-Options header |
| **Severity** | **Low** | **Port** | TCP 443 |
| **Target** | https://example.com/  https://example.com/sitemap.xml  https://example.com/sitemap.xml.gz  https://example.com/login  https://example.com/backend/  https://example.com/backend/api/v1/  https://example.com/backend/api/  https://example.com/backend.bak  https://example.com/backend.7z  https://example.com/backend.cfg  https://example.com/backend.csv  https://example.com/backend.dump  https://example.com/backend.ini  https://example.com/backend.jar  https://example.com/backend.old  https://example.com/backend.ost  https://example.com/backend.pst  https://example.com/backend.sh  https://example.com/backend.sln  https://example.com/backend.tar  https://example.com/backend.war | | |
| **Detail** | Clickjacking (User Interface redress attack, UI redress attack, UI redressing) is a malicious technique of tricking a Web user into clicking on something different from what the user perceives they are clicking on, thus potentially revealing confidential information, or taking control of their computer while clicking on seemingly innocuous web pages.  The server did not return an X-Frame-Options header with the value DENY or SAMEORIGIN, which means that this website could be at risk of a clickjacking attack. The X-Frame-Options HTTP response header can be used to indicate whether a browser should be allowed to render a page inside a frame or iframe. Sites can use this to avoid clickjacking attacks, by ensuring that their content is not embedded into untrusted sites. | | |
| **Impact** | The impact depends on the affected web application. | | |
| **Solution** | Configure your web server to include an X-Frame-Options header and a CSP header with frame-ancestors directive. Consult Web references for more information about the possible values for this header. | | |
| **Remark** | - | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 2 | **Finding** | HTTP Strict Transport Security (HSTS) not implemented |
| **Severity** | **Low** | **Port** | TCP 443 |
| **Target** | https://example.com/  https://example.com/sitemap.xml  https://example.com/sitemap.xml.gz  https://example.com/login  https://example.com/backend/  https://example.com/backend/api/v1/  https://example.com/backend/api/  https://example.com/backend.bak  https://example.com/backend.7z  https://example.com/backend.cfg  https://example.com/backend.csv  https://example.com/backend.dump  https://example.com/backend.ini  https://example.com/backend.jar  https://example.com/backend.old  https://example.com/backend.ost  https://example.com/backend.pst  https://example.com/backend.sh  https://example.com/backend.sln  https://example.com/backend.tar  https://example.com/backend.war | | |
| **Detail** | HTTP Strict Transport Security (HSTS) tells a browser that a web site is only accessable using HTTPS. It was detected that your web application doesn't implement HTTP Strict Transport Security (HSTS) as the Strict Transport Security header is missing from the response. | | |
| **Impact** | HSTS can be used to prevent and/or mitigate some types of man-in-the-middle (MitM) attacks | | |
| **Solution** | It's recommended to implement HTTP Strict Transport Security (HSTS) into your web application. Consult web references for more information | | |
| **Remark** | |  | | --- | | https://developer.mozilla.org/en-US/docs/Web/HTTP/Headers/Strict-Transport-Security | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 3 | **Finding** | Sensitive pages could be cached |
| **Severity** | **Low** | **Port** | TCP 443 |
| **Target** | https://example.com/?password=g00dPa$$w0rD&username=pHqghUme | | |
| **Detail** | One or more pages contain possible sensitive information (e.g., a password parameter) and could be potentially cached. Even in secure SSL channels sensitive data could be stored by intermediary proxies and SSL terminators. To prevent this, a Cache-Control header should be specified. | | |
| **Impact** | Possible sensitive information disclosure. | | |
| **Solution** | Prevent caching by adding "Cache Control: No-store" and "Pragma: no-cache" to the HTTP response header. | | |
| **Remark** | - | | |

# Port Discovery

| **Port** | **Protocol** | **Service** |
| --- | --- | --- |
| 22 | TCP | ssh |
| 80 | TCP | http |
| 110 | TCP | pop3 |
| 143 | TCP | imap-proxy |
| 443 | TCP | https |
| 465 | TCP | ssl/smtp |
| 587 | TCP | smtp |
| 993 | TCP | ssl/imap-proxy |
| 995 | TCP | ssl/pop3 |
| 8443 | TCP | https-alt? |
| 9071 | TCP | ssl/http |

# Appendix

## **8.1 About Nessus**

Nessus is a proprietary vulnerability scanner developed by Tenable, Inc. Nessus is trusted by more than 30,000 organizations worldwide as one of the most widely deployed security technologies on the planet - and the gold standard for vulnerability assessment.

Reference: https://www.tenable.com/products/nessus

### **8.1.1 Nessus vulnerabilities**

As information about new vulnerabilities are discovered and released into the public domain, Tenable, Inc. research staff designs programs to enable Nessus to detect them. These programs are named plugins, and are written in the Nessus proprietary scripting language, called Nessus Attack Scripting Language (NASL). Plugins contain vulnerability information, a generic set of remediation actions, and the algorithm to test for the presence of the security issue.

Reference: https://www.tenable.com/plugins

### **8.1.2 Nessus risk score**

There are four risk levels in this document: Critical, High, Medium, and Low. There are methods for determining the risk level. Based on the Common Vulnerability Scoring System (CVSS), a standard for assessing the severity of vulnerabilities in computer systems. Regarded by the NIAC (National Infrastructure Advisory Council), expert assessments are measured in a range of 0 – 10

| **Severity** | **Description** | **Score** |
| --- | --- | --- |
| Critical | Vulnerabilities that score in the critical range usually have most of the following characteristics:   * Exploitation of the vulnerability likely results in root-level compromise of servers or infrastructure devices. * Exploitation is usually straightforward, in the sense that the attacker does not need any special authentication credentials or knowledge about individual victims, and does not need to persuade a target user, for example via social engineering, into performing any special functions.   For critical vulnerabilities, is advised that you patch or upgrade as soon as possible, unless you have other mitigating measures in place. For example, a mitigating factor could be if your installation is not accessible from the Internet. | 9.0 – 10.0 |
| High | Vulnerabilities that score in the high range usually have some of the following characteristics:   * The vulnerability is difficult to exploit. * Exploitation could result in elevated privileges. * Exploitation could result in a significant data loss or downtime. | 7.0 – 8.9 |
| Medium | Vulnerabilities that score in the medium range usually have some of the following characteristics:   * Vulnerabilities that require the attacker to manipulate individual victims via social engineering tactics. * Denial of service vulnerabilities that are difficult to set up. * Exploits that require an attacker to reside on the same local network as the victim. * Vulnerabilities where exploitation provides only very limited access. * Vulnerabilities that require user privileges for successful exploitation. | 4.0 – 6.9 |
| Low | Vulnerabilities in the low range typically have very little impact on an organization's business. Exploitation of such vulnerabilities usually requires local or physical system access. | 0.1 – 3.9 |

## **8.2 About Acunetix**

Acunetix by Invicti Security is an application security testing tool built to help small & mid-size organizations around the world take control of their web security. Acunetix is built to evolve and stay ahead of cybersecurity changes. Acunetix industry-leading dynamic and interactive application security testing (DAST and IAST) technology automates vulnerability management and empowers security teams to uncover more vulnerabilities, reduce false positives, increase productivity, and simplify remediation efforts.

Reference: https://www.acunetix.com/product/, https://www.acunetix.com/about/

### **8.2.1 Acunetix web vulnerabilities**

The following reference link is a list of known web application vulnerabilities that can be automatically detected by Acunetix.

Reference: https://www.acunetix.com/vulnerabilities/web/

### **8.2.2 Acunetix risk score**

Severity is a metric for classifying the level of risk which a security vulnerability poses. The severity level of a vulnerability is assigned based on the security risk posed to an organization should the vulnerability be exploited, as well as the degree of difficulty involved in exploiting it. The result of a successful attack by exploiting a vulnerability could vary from denial of service and information disclosure to a complete compromise of applications or systems. The following provides a description of what the results in this analysis consider to be the impact of each vulnerability severity level.

| **Severity** | **Description** |
| --- | --- |
| High | An attacker can **fully** compromise the confidentiality, integrity, or availability, of a target system without specialized access, user interaction or circumstances that are beyond the attacker’s control. Very likely to allow lateral movement and escalation of attack to other systems on the internal network of the vulnerable application. |
| Medium | An attacker can **partially** compromise the confidentiality, integrity, or availability, of a target system. Specialized access, user interaction, or circumstances that are beyond the attacker’s control may be required for an attack to succeed. Very likely to be used in conjunction with other vulnerabilities to escalate an attack. |
| Low | An attacker can **limitedly** compromise the confidentiality, integrity, or availability, of a target system. Specialized access, user interaction, or circumstances that are beyond the attacker’s control is required for an attack to succeed. Needs to be used in conjunction with other vulnerabilities to escalate an attack. |