**Vulnerability Assessment Report**

**For**



**Network Cloud**

**Date March 03 2022**

**Document Security Level:** Confidential

**Document Version:** 1.0

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| Name |  | **Name** |  |
| Position |  | **Position** |  |
| Tel |  | **Tel** |  |
| Signature |  | **Signature** |  |

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# Restrictions on disclosure and use of information

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# 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** |
| --- | --- | --- | --- | --- |
| 1 |  | 10.11.12.72 |  | TCP : 2000, 5060 |
| 2 |  | 10.11.12.123 |  | TCP : 22, 80, 443, 541, 2000, 5060, 8010 |
| 3 |  | 10.11.12.210 |  | TCP : 22, 80, 443, 2000, 5060 |
| 4 |  | 10.11.30.1 |  | TCP : 22, 80, 443, 2000, 5060 |
| 5 |  | 10.11.30.5 |  | TCP : 23, 2000, 5060 |
| 6 |  | 10.11.30.15 |  | TCP : 22, 443, 2000, 5060 |
| 7 |  | 10.11.30.20 |  | TCP : 22, 443, 2000, 5060 |
| 8 |  | 10.11.30.253 |  | TCP : 22, 23, 2000, 4786, 5060 |

## **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**

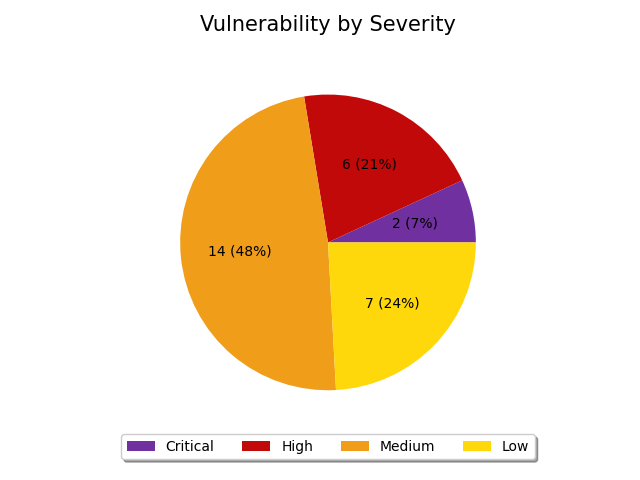


Figure 4: Summary by Severity of Infrastructure Vulnerability Assessment

### **5.2.2 Vulnerability by Target**

| **No.** | **Domain/Server Name** | **IP Address** | **Critical** | **High** | **Medium** | **Low** | **Total** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | - | 10.11.12.72 | 0 | 0 | 0 | 0 | 0 |
| 2 | - | 10.11.12.123 | 0 | 1 | 3 | 3 | 7 |
| 3 | - | 10.11.12.210 | 0 | 0 | 0 | 1 | 1 |
| 4 | - | 10.11.30.1 | 2 | 5 | 5 | 0 | 12 |
| 5 | - | 10.11.30.5 | 0 | 0 | 1 | 0 | 1 |
| 6 | - | 10.11.30.15 | 0 | 0 | 2 | 0 | 2 |
| 7 | - | 10.11.30.20 | 0 | 0 | 2 | 0 | 2 |
| 8 | - | 10.11.30.253 | 0 | 0 | 1 | 3 | 4 |
| **Total** | | | 2 | 6 | 14 | 7 | 29 |

## **5.3 Infrastructure Vulnerability Detail**

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 1 | **Finding** | Cisco Application Policy Infrastructure Controller Arbitrary File Read and Write (cisco-sa-capic-frw-Nt3RYxR2) |
| **Severity** | Critical | **Port** | TCP: 80, 443 |
| **Target** | 10.11.30.1(80, 443) | | |
| **Detail** | According to its self-reported version, Cisco Application Policy Infrastructure Controller is affected by a  vulnerability in an API endpoint which could allow a remote, unauthenticated attacker to read or write  arbitrary files on an affected system.  Please see the included Cisco BIDs and Cisco Security Advisory for more information.  Note that Nessus has not tested for this issue but has instead relied only on the application's self-reported  version number. | | |
| **Solution** | Upgrade to the relevant fixed version referenced in Cisco bug ID CSCvw57556 | | |
| **Remark** | http://www.nessus.org/u?2af4b01f https://bst.cloudapps.cisco.com/bugsearch/bug/CSCvw57556 | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 2 | **Finding** | SSL Medium Strength Cipher Suites Supported (SWEET32) |
| **Severity** | High | **Port** | TCP: 8010 |
| **Target** | 10.11.12.123(8010) | | |
| **Detail** | 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.  Note that it is considerably easier to circumvent medium strength encryption if the attacker is on the same physical network. | | |
| **Solution** | Reconfigure the affected application if possible to avoid use of medium strength ciphers. | | |
| **Remark** | https://www.openssl.org/blog/blog/2016/08/24/sweet32/ https://sweet32.info | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 3 | **Finding** | Cisco Application Policy Infrastructure Controller Linux Kernel IP Fragment Reassembly DoS |
| **Severity** | High | **Port** | TCP: 0 |
| **Target** | 10.11.30.1(0) | | |
| **Detail** | According to its self-reported version, the Cisco Application Policy Infrastructure Controller (APIC) is affected by a vulnerability in the IP stack that is used by the Linux Kernel publicly known as FragmentSmack.  The vulnerability could allow an unauthenticated, remote attacker to cause a denial of service (DoS) condition on an affected device. An attack could be executed by an attacker who can submit a stream of fragmented IPv4 or IPv6 packets that are designed to trigger the issue on an affected device. | | |
| **Solution** | Upgrade to Cisco Application Policy Infrastructure Controller to 3.2.4 / 4.0. | | |
| **Remark** | http://www.nessus.org/u?8d625ffb http://www.nessus.org/u?15f05a53 | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 4 | **Finding** | Cisco Application Policy Infrastructure Controller REST API Privilege Escalation Vulnerability |
| **Severity** | High | **Port** | TCP: 0 |
| **Target** | 10.11.30.1(0) | | |
| **Detail** | According to its self-reported version, Cisco Application Policy Infrastructure Controller (APIC) is affected by a privilege escalation vulnerability in the REST API. An authenticated, remote attacker could exploit this, via a malicious software upload using the REST API, to gain root access to the system.  Please see the included Cisco BIDs and Cisco Security Advisory for more information | | |
| **Solution** | Upgrade to the relevant fixed version referenced in Cisco bug ID CSCvp64857 | | |
| **Remark** | http://www.nessus.org/u?2c3ac97d https://bst.cloudapps.cisco.com/bugsearch/bug/CSCvp64857 | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 5 | **Finding** | Cisco Application Policy Infrastructure Controller Privilege Escalation (cisco-sa-20190501-apic-priv-escalation) |
| **Severity** | High | **Port** | TCP: 0 |
| **Target** | 10.11.30.1(0) | | |
| **Detail** | According to its self-reported version, Cisco Application Policy Infrastructure Controller (APIC) is affected by a vulnerability in the FUSE filesystem functionality. This is due to insufficient input validation of CLI commands. An authenticated, local attacker can exploit this by alter certain definitions in a affected file, allowing them to execute commands and gain root privilages.   Please see the included Cisco BIDs and Cisco Security Advisory for more information | | |
| **Solution** | Upgrade to the relevant fixed version referenced in Cisco bug ID CSCvn09779 | | |
| **Remark** | http://www.nessus.org/u?55ee56eb https://bst.cloudapps.cisco.com/bugsearch/bug/CSCvn09779 | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 6 | **Finding** | Cisco Application Policy Infrastructure Controller Multiple Vulnerabilities (cisco-sa-capic-mdvul-HBsJBuvW) |
| **Severity** | High | **Port** | TCP: 80, 443 |
| **Target** | 10.11.30.1(80, 443) | | |
| **Detail** | According to its self-reported version, Cisco Application Policy Infrastructure Controller (APIC) is affected by multiple vulnerabilities, including the following:    - A command injection vulnerability exists in Cisco APIC due to invalid input validation. An authenticated,  remote attacker can exploit this, by sending specially crafted requests, to execute arbitrary commands.   (CVE-2021-1580)   - An arbitrary file upload vulnerability exists in Cisco APIC due to improper access control. An   unauthenticated, remote attacker can exploit this to upload arbitrary files on the remote host.   (CVE-2021-1581)  Please see the included Cisco BIDs and Cisco Security Advisory for more information. | | |
| **Solution** | Upgrade to the relevant fixed version referenced in Cisco bug IDs CSCvw57577, CSCvw57581 | | |
| **Remark** | http://www.nessus.org/u?1c1c7a91 https://bst.cloudapps.cisco.com/bugsearch/bug/CSCvw57577 https://bst.cloudapps.cisco.com/bugsearch/bug/CSCvw57581 | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 7 | **Finding** | SSL Certificate Cannot Be Trusted |
| **Severity** | Medium | **Port** | TCP: 443, 8010 |
| **Target** | 10.11.12.123(8010), 10.11.30.1(443), 10.11.30.15(443), 10.11.30.20(443) | | |
| **Detail** | The server's X.509 certificate cannot be trusted. This situation can occur in three different ways, in which the chain of trust can be broken, as stated below :   - First, the top of the certificate chain sent by the  server might not be descended from a known public  certificate authority. This can occur either when the  top of the chain is an unrecognized, self-signed  certificate, or when intermediate certificates are  missing that would connect the top of the certificate  chain to a known public certificate authority.   - Second, the certificate chain may contain a certificate  that is not valid at the time of the scan. This can  occur either when the scan occurs before one of the  certificate's 'notBefore' dates, or after one of the  certificate's 'notAfter' dates.   - Third, the certificate chain may contain a signature  that either didn't match the certificate's information  or could not be verified. Bad signatures can be fixed by  getting the certificate with the bad signature to be  re-signed by its issuer. Signatures that could not be  verified are the result of the certificate's issuer  using a signing algorithm that Nessus either does not  support or does not recognize.  If the remote host is a public host in production, any break in the chain makes it more difficult for users to verify the authenticity and  identity of the web server. This could make it easier to carry out  man-in-the-middle attacks against the remote host. | | |
| **Solution** | Purchase or generate a proper SSL certificate for this service. | | |
| **Remark** | https://www.itu.int/rec/T-REC-X.509/en https://en.wikipedia.org/wiki/X.509 | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 8 | **Finding** | SSL Self-Signed Certificate |
| **Severity** | Medium | **Port** | TCP: 443, 8010 |
| **Target** | 10.11.12.123(8010), 10.11.30.1(443), 10.11.30.15(443), 10.11.30.20(443) | | |
| **Detail** | The X.509 certificate chain for this service is not signed by a recognized certificate authority. If the remote host is a public host in production, this nullifies the use of SSL as anyone could establish a man-in-the-middle attack against the remote host.   Note that this plugin does not check for certificate chains that end in a certificate that is not self-signed, but is signed by an unrecognized certificate authority. | | |
| **Solution** | Purchase or generate a proper SSL certificate for this service. | | |
| **Remark** | - | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 9 | **Finding** | SSH Weak Algorithms Supported |
| **Severity** | Medium | **Port** | TCP: 22 |
| **Target** | 10.11.12.123(22) | | |
| **Detail** | Nessus has detected that the remote SSH server is configured to use the Arcfour stream cipher or no cipher at all. RFC 4253 advises against using Arcfour due to an issue with weak keys. | | |
| **Solution** | Contact the vendor or consult product documentation to remove the weak ciphers. | | |
| **Remark** | https://tools.ietf.org/html/rfc4253#section-6.3 | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 10 | **Finding** | Cisco Application Policy Infrastructure Controller Out Of Band Management IP Tables Bypass (cisco-sa-iptable-bypass-GxW88XjL) |
| **Severity** | Medium | **Port** | TCP: 0 |
| **Target** | 10.11.30.1(0) | | |
| **Detail** | According to its self-reported version, Cisco Application Policy Infrastructure Controller (APIC) is affected by a vulnerability in the out of band (OOB) management interface IP table rule programming. This is due to the configuration of specific IP table entries for which there is a programming logic error that results in the IP port being permitted. An unauthenticated, remote attacker can exploit this, by sending traffic to the OOB management interface, in order to bypass configured IP table rules to drop specific IP port traffic or bypass configured deny entries for specific IP ports.   Please see the included Cisco BIDs and Cisco Security Advisory for more information | | |
| **Solution** | Upgrade to the relevant fixed version referenced in Cisco bug ID CSCvs10135 | | |
| **Remark** | http://www.nessus.org/u?c63345bb https://bst.cloudapps.cisco.com/bugsearch/bug/CSCvs10135 | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 11 | **Finding** | Cisco Application Policy Infrastructure Controller Stored XSS (cisco-sa-capic-scss-bFT75YrM) |
| **Severity** | Medium | **Port** | TCP: 80, 443 |
| **Target** | 10.11.30.1(80, 443) | | |
| **Detail** | According to its self-reported version, Cisco Application Policy Infrastructure Controller is affected by a stored  cross-site scripting (XSS) vulnerability in its Web UI component due to improper validation of user-supplied input  before returning it to users. An authenticated, remote attacker can exploit this, by convincing a user to click a  specially crafted URL, to execute arbitrary script code in a user's browser session.   Please see the included Cisco BIDs and Cisco Security Advisory for more information. | | |
| **Solution** | Upgrade to the relevant fixed version referenced in Cisco bug ID CSCvy64858 | | |
| **Remark** | http://www.nessus.org/u?9366d73e https://bst.cloudapps.cisco.com/bugsearch/bug/CSCvy64858 | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 12 | **Finding** | Unencrypted Telnet Server |
| **Severity** | Medium | **Port** | TCP: 23 |
| **Target** | 10.11.30.5(23), 10.11.30.253(23) | | |
| **Detail** | The remote host is running a Telnet server over an unencrypted channel.  Using Telnet over an unencrypted channel is not recommended as logins, passwords, and commands are transferred in cleartext. This allows a  remote, man-in-the-middle attacker to eavesdrop on a Telnet session to obtain credentials or other sensitive information and to modify traffic exchanged between a client and server.  SSH is preferred over Telnet since it protects credentials from eavesdropping and can tunnel additional data streams such as an X11 session. | | |
| **Solution** | Disable the Telnet service and use SSH instead. | | |
| **Remark** | - | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 13 | **Finding** | SSH Server CBC Mode Ciphers Enabled |
| **Severity** | Low | **Port** | TCP: 22 |
| **Target** | 10.11.12.123(22), 10.11.30.253(22) | | |
| **Detail** | The SSH server is configured to support Cipher Block Chaining (CBC) encryption. This may allow an attacker to recover the plaintext message from the ciphertext.   Note that this plugin only checks for the options of the SSH server and does not check for vulnerable software versions. | | |
| **Solution** | Contact the vendor or consult product documentation to disable CBC mode cipher encryption, and enable CTR or GCM cipher mode encryption. | | |
| **Remark** | - | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 14 | **Finding** | SSH Weak MAC Algorithms Enabled |
| **Severity** | Low | **Port** | TCP: 22 |
| **Target** | 10.11.12.123(22), 10.11.30.253(22) | | |
| **Detail** | The remote SSH server is configured to allow either MD5 or 96-bit MAC algorithms, both of which are considered weak.  Note that this plugin only checks for the options of the SSH server, and it does not check for vulnerable software versions. | | |
| **Solution** | Contact the vendor or consult product documentation to disable MD5 and 96-bit MAC algorithms. | | |
| **Remark** | - | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **ID.** | 15 | **Finding** | SSH Weak Key Exchange Algorithms Enabled |
| **Severity** | Low | **Port** | TCP: 22 |
| **Target** | 10.11.12.123(22), 10.11.12.210(22), 10.11.30.253(22) | | |
| **Detail** | The remote SSH server is configured to allow key exchange algorithms which are considered weak.  This is based on the IETF draft document Key Exchange (KEX) Method Updates and Recommendations for Secure Shell (SSH) draft-ietf-curdle-ssh-kex-sha2-20. Section 4 lists guidance on key exchange algorithms that SHOULD NOT and MUST NOT be enabled. This includes:   diffie-hellman-group-exchange-sha1   diffie-hellman-group1-sha1   gss-gex-sha1-\*   gss-group1-sha1-\*   gss-group14-sha1-\*   rsa1024-sha1  Note that this plugin only checks for the options of the SSH server, and it does not check for vulnerable software versions. | | |
| **Solution** | Contact the vendor or consult product documentation to disable the weak algorithms. | | |
| **Remark** | http://www.nessus.org/u?b02d91cd https://datatracker.ietf.org/doc/html/rfc8732 | | |



# 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. |