Chameleon

Smarter World

Using Nessus to scan for vulnerabilities in the MOP web application

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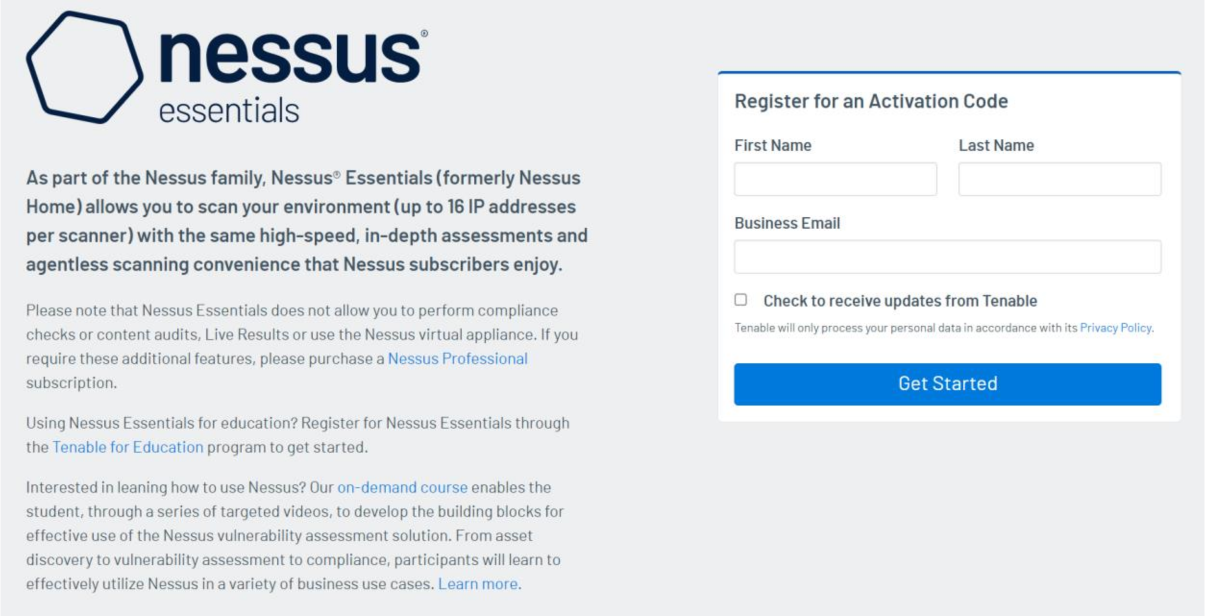
Contents

Setting up Nessus

Sign up for Nessus from this link to begin the set-up process. You are unable to download Nessus without first setting up an account as it will redirect you to the download page.



As part of the Nessus family, Nessus® Essentials (formerly Nessus Home) allows you to scan your environment (up to 16 IP addresses per scanner) with the same high-speed, in-depth assessments and agentless scanning convenience that Nessus subscribers enjoy.

Please note that Nessus Essentials does not allow you to perform compliance checks or content audits, Live Results or use the Nessus virtual appliance. If you require these additional features, please purchase a Nessus Professional subscription.

Using Nessus Essentials for education? Register for Nessus Essentials through the Tenable for Education program to get started.

Interested in leaning how to use Nessus? Our on-demand course enables the student, through a series of targeted videos, to develop the building blocks for effective use of the Nessus vulnerability assessment solution. From asset discovery to vulnerability assessment to compliance, participants will learn to effectively utilize Nessus in a variety of business use cases. Learn more.

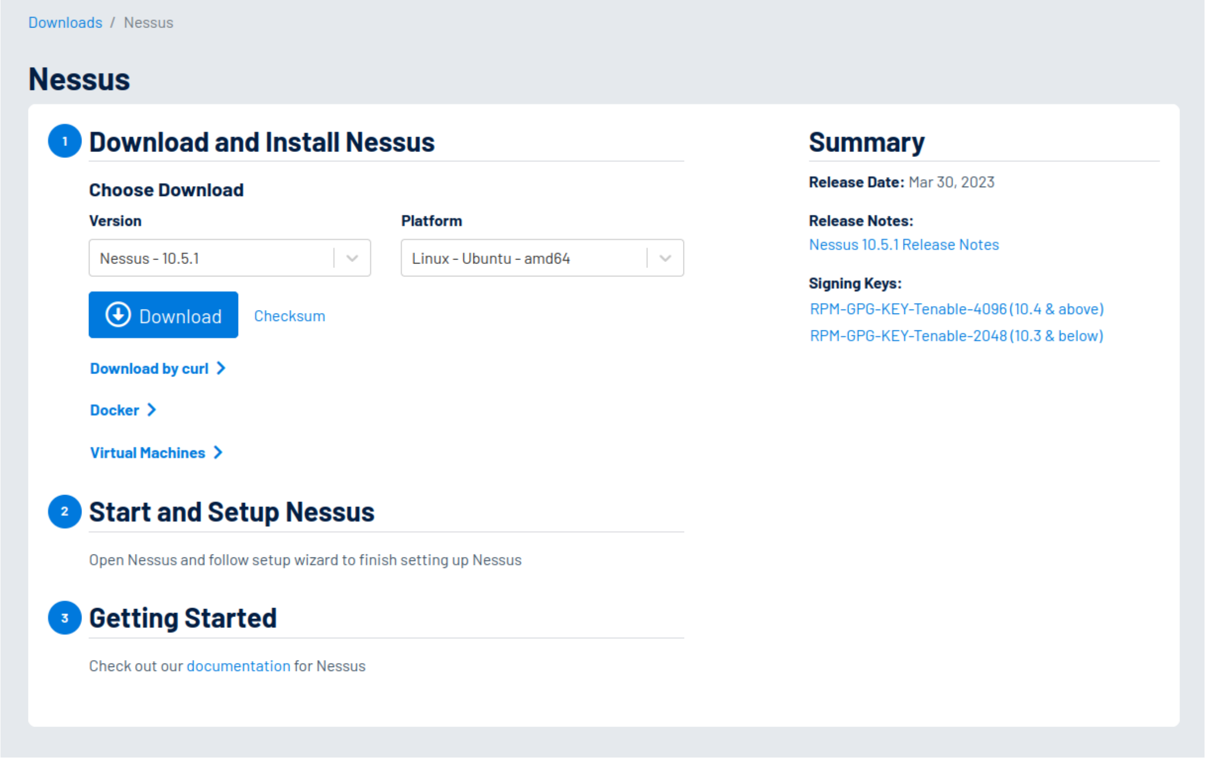
Register for an Activation Code

First Name
Last Name
Business Email

□ Check to receive updates from Tenable

Tenable will only process your personal data in accordance with its Privacy Policy.

After signing up for Nessus, you will be directed to a page to download the installation package. This report will be using Nessus Essentials, however Tenable offers many different versions of Nessus that can be used for different coverage of scans.



Downloads / Nessus

Nessus

1 **Download and Install Nessus**

Choose Download

Version: Nessus - 10.5.1

Platform: Linux - Ubuntu - amd64

2 **Start and Setup Nessus**

Open Nessus and follow setup wizard to finish setting up Nessus

3 **Getting Started**

Check out our documentation for Nessus

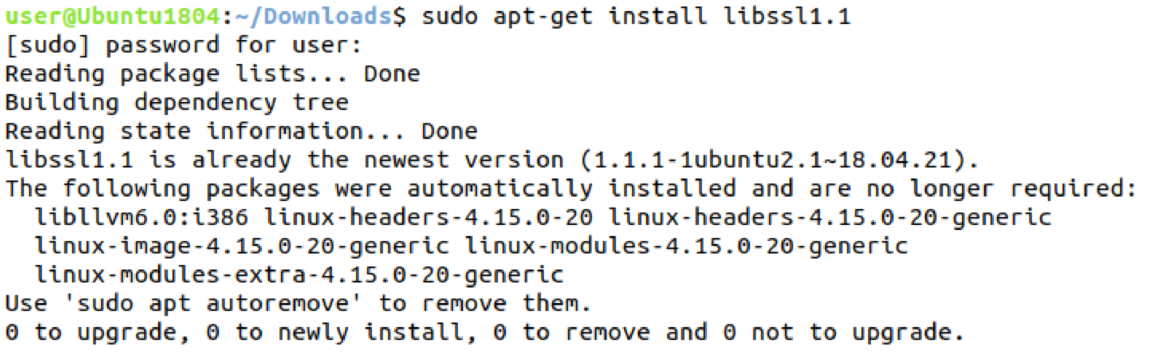
Summary

Release Date: Mar 30, 2023

Release Notes:
Nessus 10.5.1 Release Notes

Signing Keys:
RPM-GPG-KEY-Tenable-4096 (10.4 & above)
RPM-GPG-KEY-Tenable-2048 (10.3 & below)

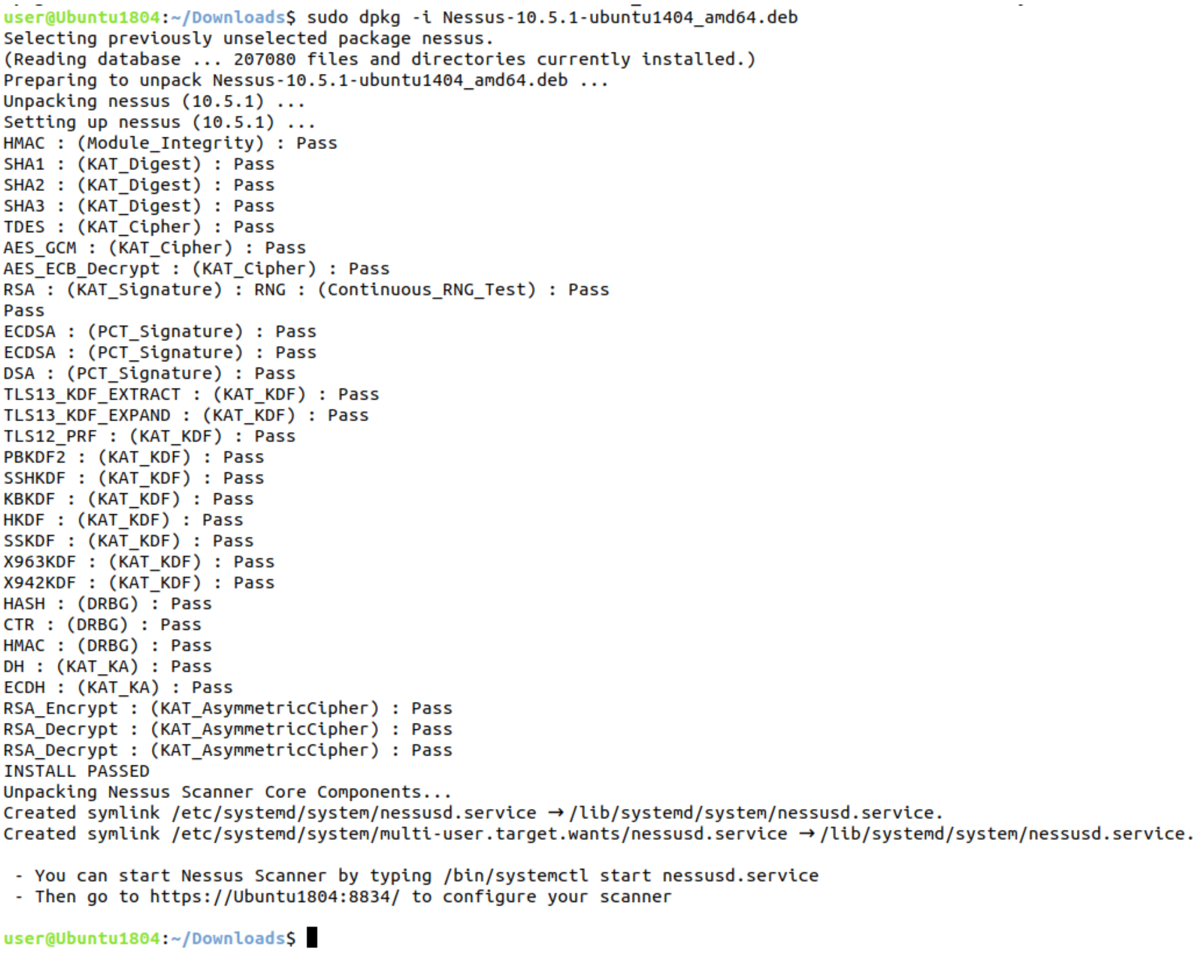
After installing the correct version, we will use the command ‘**sudo apt-get install libssl1.1**’ to install the required dependencies



```
user@Ubuntu1804:~/Downloads$ sudo apt-get install libssl1.1
[sudo] password for user:
Reading package lists... Done
Building dependency tree
Reading state information... Done
libssl1.1 is already the newest version (1.1.1-1ubuntu2.1~18.04.21).
The following packages were automatically installed and are no longer required:
  libllvm6.0:i386 linux-headers-4.15.0-20 linux-headers-4.15.0-20-generic
  linux-image-4.15.0-20-generic linux-modules-4.15.0-20-generic
  linux-modules-extra-4.15.0-20-generic
Use 'sudo apt autoremove' to remove them.
0 to upgrade, 0 to newly install, 0 to remove and 0 not to upgrade.
```

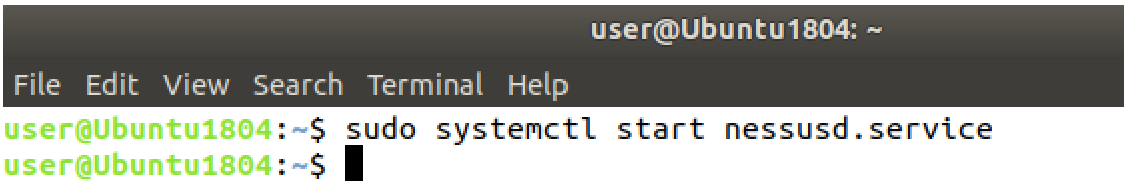
To install Nessus, navigate to the folder containing the package. In our case it will be in the Downloads folder. Then, use the command ‘**sudo dpkg -I Nessus-10.5.1-ubuntu-1404_amd64.deb**’.

It should be noted the number after Nessus and the numbers after ubuntu may need to be changed depending on the version you have downloaded.



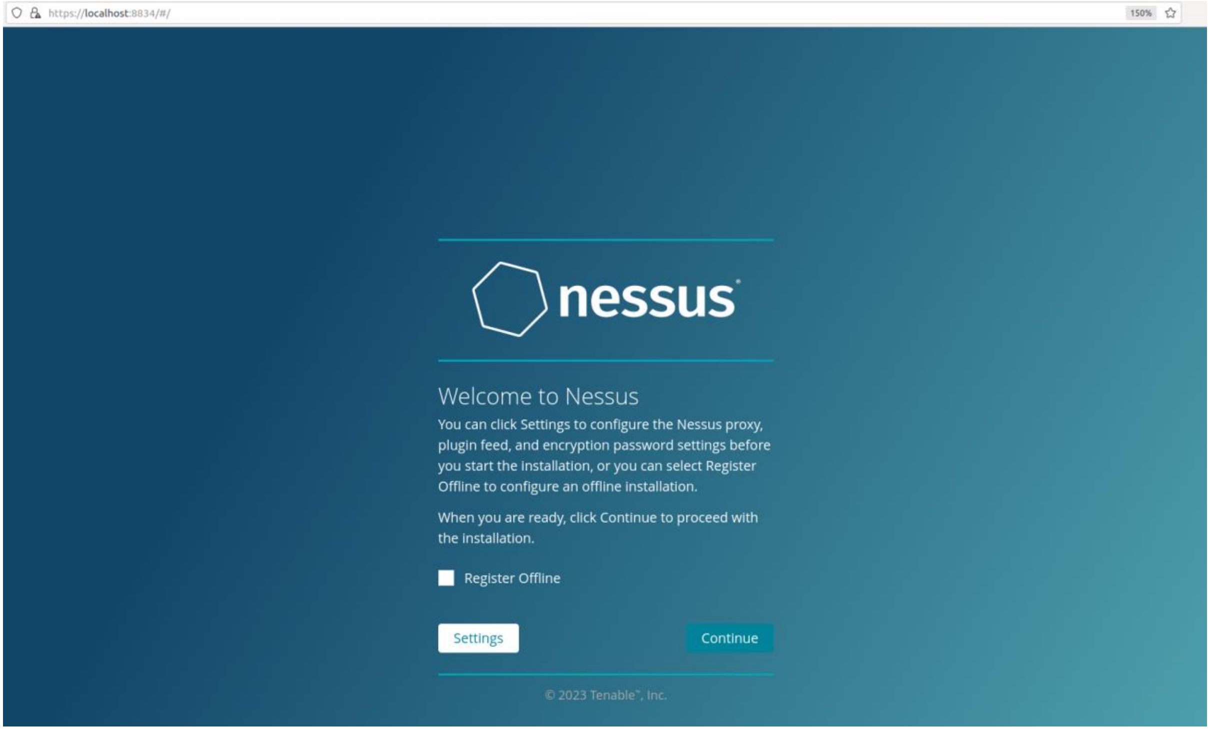
```
user@Ubuntu1804:~/Downloads$ sudo dpkg -i Nessus-10.5.1-ubuntu1404_amd64.deb
Selecting previously unselected package nessus.
(Reading database ... 207080 files and directories currently installed.)
Preparing to unpack Nessus-10.5.1-ubuntu1404_amd64.deb ...
Unpacking nessus (10.5.1) ...
Setting up nessus (10.5.1) ...
HMAC : (Module_Integrity) : Pass
SHA1 : (KAT_Digest) : Pass
SHA2 : (KAT_Digest) : Pass
SHA3 : (KAT_Digest) : Pass
TDES : (KAT_Cipher) : Pass
AES_GCM : (KAT_Cipher) : Pass
AES_ECB_Decrypt : (KAT_Cipher) : Pass
RSA : (KAT_Signature) : RNG : (Continuous_RNG_Test) : Pass
Pass
ECDSA : (PCT_Signature) : Pass
ECDSA : (PCT_Signature) : Pass
DSA : (PCT_Signature) : Pass
TLS13_KDF_EXTRACT : (KAT_KDF) : Pass
TLS13_KDF_EXPAND : (KAT_KDF) : Pass
TLS12_PRF : (KAT_KDF) : Pass
PBKDF2 : (KAT_KDF) : Pass
SSHKDF : (KAT_KDF) : Pass
KBKDF : (KAT_KDF) : Pass
HKDF : (KAT_KDF) : Pass
SSKDF : (KAT_KDF) : Pass
X963KDF : (KAT_KDF) : Pass
X942KDF : (KAT_KDF) : Pass
HASH : (DRBG) : Pass
CTR : (DRBG) : Pass
HMAC : (DRBG) : Pass
DH : (KAT_KA) : Pass
ECDH : (KAT_KA) : Pass
RSA_Encrypt : (KAT_AsymmetricCipher) : Pass
RSA_Decrypt : (KAT_AsymmetricCipher) : Pass
RSA_Decrypt : (KAT_AsymmetricCipher) : Pass
INSTALL PASSED
Unpacking Nessus Scanner Core Components...
Created symlink /etc/systemd/system/nessusd.service → /lib/systemd/system/nessusd.service.
Created symlink /etc/systemd/system/multi-user.target.wants/nessusd.service → /lib/systemd/system/nessusd.service.

 - You can start Nessus Scanner by typing /bin/systemctl start nessusd.service
 - Then go to https://Ubuntu1804:8834/ to configure your scanner

user@Ubuntu1804:~/Downloads$ █
```

To start Nessus, use the command ‘**sudo systemctl start nessusd.service**’.



```
user@Ubuntu1804:~$ sudo systemctl start nessusd.service
user@Ubuntu1804:~$ 
```

Open your browser and go to ‘**https://localhost:8834/**’ to access the Nessus web interface



Welcome to Nessus

You can click Settings to configure the Nessus proxy, plugin feed, and encryption password settings before you start the installation, or you can select Register Offline to configure an offline installation.

When you are ready, click Continue to proceed with the installation.

□ Register Offline

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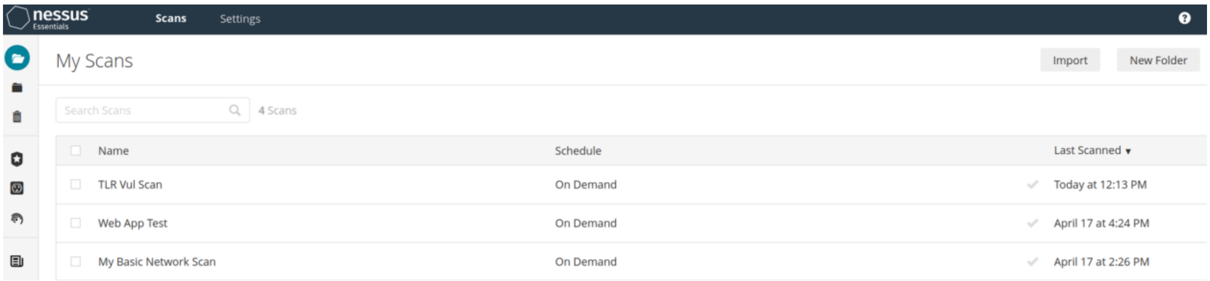
Follow the on-screen instructions to access, making sure to grab the activation code from the email you signed up with.

Note: While Nessus does require a paid subscription to use, they offer a 7-day free trial to test out the software and complete scans. You do not need to fill out any payment information to get the free trial you can just sign up with your email and when it finishes, you can use the same email to renew the trial, however reports will not save.

Scans Completed

Nessus offers a wide range of scan types depending on the specific things you are looking for. It ranges from a basic network scan to looking for specific malware such as the WannaCry ransomware. I chose three scan types for this vulnerability check to check for basic vulnerabilities in case the MOP website had some small flaws that needed to be patched. I conducted a basic network scan, web app test, and TLR vulnerability scan. TLR is the Threat Report Landscape from 2022 which would highlight the issues most prevalent in web servers last year.



Name	Schedule	Last Scanned ▾
TLR Vul Scan	On Demand	✓ Today at 12:13 PM
Web App Test	On Demand	✓ April 17 at 4:24 PM
My Basic Network Scan	On Demand	✓ April 17 at 2:26 PM

Results

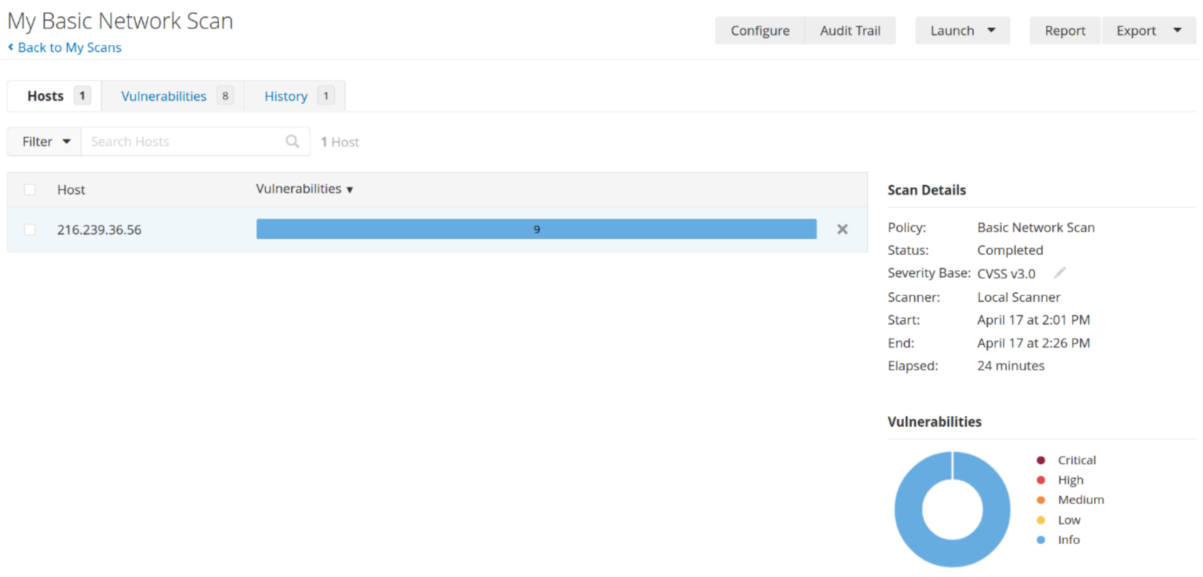
The results of the scans show that the basic network scan found 9 vulnerabilities, the web app test found 8, and the TLR scan found 3. Overall, the three scans combined found 9 unique vulnerabilities that may be impacting the server. Nessus ranks the level of concern for the vulnerabilities on a five-point scale from info being of little to no concern, and critical being of extreme importance. There were no concerning vulnerabilities found in the results as they were all in the 'info' level of concern, making the webapp very secure. The results can be found on this table:

Basic Network Scan	Web App Test	TLR Vulnerability Scan
Nessus SYN Scanner	HTTP Methods Allowed	Nessus SYN Scanner
Common Platform Enumeration	HSTS Missing from HTTPS Server	
Device Type		
HTTP Information	HTTP Information	
OS Identification		
Service Detection		
Traceroute Information		

**Red Text = Overlap in scan results

You may notice the number of vulnerabilities may not match the amount in the table. This is due to each open port being counted as a vulnerability, as well as Nessus listing the scan information as a vulnerability.

The least important scan completed was the TLR scan as it was the results were an overlap of the other two scans completed. It is important to check regardless as the different scan types may find different results.



My Basic Network Scan

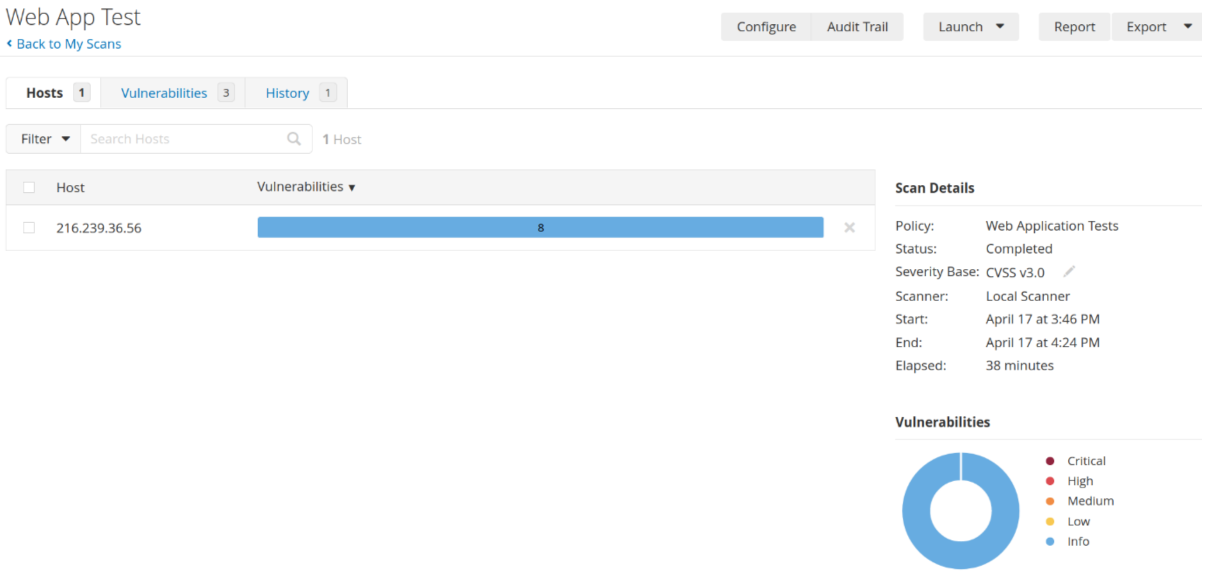
1 Host

Host	Vulnerabilities ▾
216.239.36.56	9

Scan Details

Policy:	Basic Network Scan
Status:	Completed
Severity Base:	CVSS v3.0
Scanner:	Local Scanner
Start:	April 17 at 2:01 PM
End:	April 17 at 2:26 PM
Elapsed:	24 minutes

Vulnerabilities



Web App Test

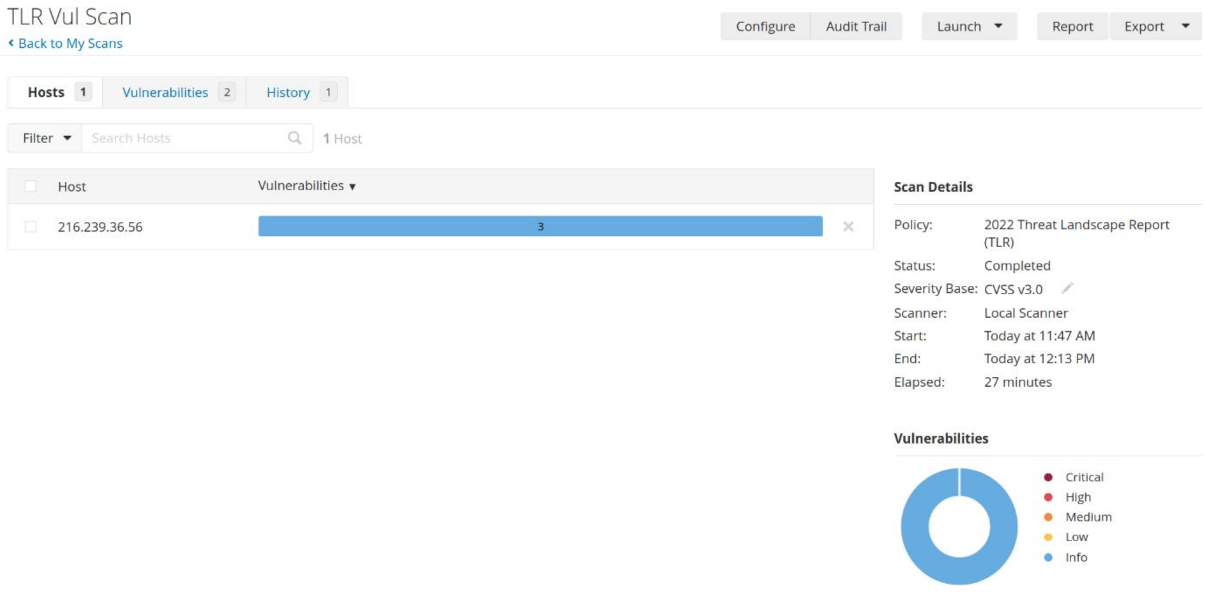
1 Host

Host	Vulnerabilities ▾
216.239.36.56	8

Scan Details

Policy:	Web Application Tests
Status:	Completed
Severity Base:	CVSS v3.0
Scanner:	Local Scanner
Start:	April 17 at 3:46 PM
End:	April 17 at 4:24 PM
Elapsed:	38 minutes

Vulnerabilities



TLR Vul Scan

1 Host

Host	Vulnerabilities ▾
216.239.36.56	3

Scan Details

Policy:	2022 Threat Landscape Report (TLR)
Status:	Completed
Severity Base:	CVSS v3.0
Scanner:	Local Scanner
Start:	Today at 11:47 AM
End:	Today at 12:13 PM
Elapsed:	27 minutes

Vulnerabilities

Vulnerability Analysis

This section will detail the vulnerabilities that were found in the scans. It should be noted that it will only detail each unique vulnerability as each scan had a few overlaps and solutions will only be added if they are necessary as per the results.

Common Platform Enumeration (CPE)

Synopsis: It was possible to enumerate CPE names that matched on the remote system.

Description: By using information obtained from a Nessus scan, this plugin reports CPE (Common Platform Enumeration) matches for various hardware and software products found on a host.

Risk Factor: None

Device Type

Synopsis: It is possible to guess the remote device type.

Description: Based on the remote operating system, it is possible to determine what the remote system type is (e.g.: a printer, router, general-purpose computer, etc).

Risk Factor: None

Hypertext Transfer Protocol (HTTP) Information

Synopsis: Some information about the remote HTTP configuration can be extracted.

Description: This test gives some information about the remote HTTP protocol - the version used, whether HTTP Keepalive and HTTP pipelining are enabled, etc...

This test is informational only and does not denote any security problem.

Risk Factor: None

Nessus SYN scanner

Synopsis: It is possible to determine which TCP ports are open.

Description: This plugin is a SYN 'half-open' port scanner. It shall be reasonably quick even against a firewalled target.

Note that SYN scans are less intrusive than TCP (full connect) scans against broken services, but they might cause problems for less robust firewalls and also leave unclosed connections on the remote target, if the network is loaded.

Solution: Protect your target with an IP filter.

Risk Factor: None

Port 80/tcp was found to be open

Port 443/tcp was found to be open

OS Identification

Synopsis: It is possible to guess the remote operating system.

Description: Using a combination of remote probes (e.g., TCP/IP, SMB, HTTP, NTP, SNMP, etc.), it is possible to guess the name of the remote operating system in use. It is also possible sometimes to guess the version of the operating system.

Risk Factor: None

Remote operating system : AIX 5.3

Confidence Level: 65

Method: SinFP

The remote host is running AIX 5.3

Service Detection

Synopsis: The remote service could be identified.

Description: Nessus was able to identify the remote service by its banner or by looking at the error message it sends when it receives an HTTP request.

Risk Factor: None

Traceroute Information

Synopsis: It was possible to obtain traceroute information.

Description: Makes a traceroute to the remote host.

Risk Factor: None

For your information, here is the traceroute from 10.0.2.15 to 216.239.36.56 :

10.0.2.15

10.0.2.2

216.239.36.56

Hop Count: 2

84502 - HSTS Missing From HTTPS Server

Synopsis: The remote web server is not enforcing HSTS.

Description: The remote HTTPS server is not enforcing HTTP Strict Transport Security (HSTS). HSTS is an optional response header that can be configured on the server to instruct the browser to only communicate via HTTPS. The lack of HSTS allows downgrade attacks, SSL-stripping man-in-the-middle attacks and weakens cookie-hijacking protections.

Solution: Configure the remote web server to use HSTS.

Risk Factor: None

```
    The remote HTTPS server does not send the HTTP "Strict-Transport-Security" header.
```

HTTP Methods Allowed (per directory)

Synopsis

This plugin determines which HTTP methods are allowed on various CGI directories.

Description

By calling the OPTIONS method, it is possible to determine which HTTP methods are allowed on each

directory.

The following HTTP methods are considered insecure:

PUT, DELETE, CONNECT, TRACE, HEAD

Many frameworks and languages treat 'HEAD' as a 'GET' request, albeit one without any body in the response. If a security constraint was set on 'GET' requests such that only 'authenticatedUsers' could access GET requests for a particular servlet or resource, it would be bypassed for the 'HEAD' version. This allowed unauthorized blind submission of any privileged GET request.

As this list may be incomplete, the plugin also tests - if 'Thorough tests' are enabled or 'Enable web applications tests' is set to 'yes' in the scan policy - various known HTTP methods on each directory and considers them as unsupported if it receives a response code of 400, 403, 405, or 501.

Note that the plugin output is only informational and does not necessarily indicate the presence of any security vulnerabilities

Risk factor: none

```
    Based on tests of each method :

        - HTTP methods ACL BASELINE-CONTROL BCOPY BDELETE BMOVE BPROPFIND

        BPROPPATCH CHECKIN CHECKOUT COPY DEBUG DELETE GET HEAD INDEX

        LABEL LOCK MERGE MKACTIVITY MKCOL MKWORKSPACE MOVE NOTIFY OPTIONS

        ORDERPATCH PATCH POLL POST PROPFIND PROPPATCH PUT REPORT

        RPC_IN_DATA RPC_OUT_DATA SEARCH SUBSCRIBE TRACE UNCHECKOUT UNLOCK
```

UNSUBSCRIBE UPDATE VERSION-CONTROL X-MS-ENUMATTS are allowed on

Conclusion

The scans that I was able to complete using Nessus' wide range of tools helped to give me a great insight into the security that the MOP project already has in place.

Though I was expecting more issues to show up in the results, it is great to see that there are only extremely minor things that were picked up in the scan. Not having many major issues reduces a lot of the worry that may be had by the web dev team as they will be able to know the extent of their security.

There are not many changes that can be added from the results of these scans. There are some solutions in some of the vulnerabilities that may be a place to start but the results conclude that the risk factor is nowhere near high enough to warrant immediate action.