Lab - Vulnerability Scanning with Kali Tools

Objectives

In this lab, you will explore network vulnerability scanning tools and use them to perform a vulnerability scan on a target host.

• Perform network scans with Nmap

• Use Greenbone Vulnerability Management to perform a vulnerability scan.

Background / Scenario

In a previous lab, you used Nmap to enumerate a host computer that was creating unusual traffic on the network. In this lab, you will use Nmap and Greenbone Vulnerability Management (GVM) to scan the system to identify potential vulnerabilities.

Required Resources

= Kali VM customized for the Ethical Hacker course

= Internet access

Step 1: Start and login to the Kali virtual machine. a. Start and log into the Kali virtual machine. b. Start a terminal session.

```
┌──(kali㉿Kali)-[~]
└─$ ping -c5 10.6.6.23
PING 10.6.6.23 (10.6.6.23) 56(84) bytes of data.
64 bytes from 10.6.6.23: icmp_seq=1 ttl=64 time=0.059 ms
64 bytes from 10.6.6.23: icmp_seq=2 ttl=64 time=0.051 ms
64 bytes from 10.6.6.23: icmp_seq=3 ttl=64 time=0.103 ms
64 bytes from 10.6.6.23: icmp_seq=4 ttl=64 time=0.059 ms
64 bytes from 10.6.6.23: icmp_seq=5 ttl=64 time=0.053 ms

── 10.6.6.23 ping statistics ──
5 packets transmitted, 5 received, 0% packet loss, time 4127ms
rtt min/avg/max/mdev = 0.051/0.065/0.103/0.019 ms
```

Identify open ports and services. Review the results of a Nmap scan on the host with the IP address 10.6.6.23

```
┌──(kali㉿Kali)-[~]
└─$ nmap -sV 10.6.6.23
Starting Nmap 7.94 ( https://nmap.org ) at 2025-10-08 13:20 UTC
Nmap scan report for gravemind.vm (10.6.6.23)
Host is up (0.00018s latency).
Not shown: 994 closed tcp ports (conn-refused)
PORT    STATE SERVICE     VERSION
21/tcp  open  ftp         vsftpd 3.0.3
22/tcp  open  ssh         OpenSSH 7.9p1 Debian 10+deb10u2 (protocol 2.0)
53/tcp  open  domain      ISC BIND 9.11.5-P4-5.1+deb10u5 (Debian Linux)
80/tcp  open  http        nginx 1.14.2
139/tcp open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
Service Info: Host: GRAVEMIND; OSs: Unix, Linux; CPE: cpe:/o:linux:linux_kernel
```

Identify the operating system running on the target computer using the nmap -O command.

```
┌──(kali㉿Kali)-[~]
└─$ sudo nmap -O 10.6.6.23
[sudo] password for kali:
Starting Nmap 7.94 ( https://nmap.org ) at 2025-10-08 13:21 UTC
Nmap scan report for gravemind.vm (10.6.6.23)
Host is up (0.00010s latency).
Not shown: 994 closed tcp ports (reset)
PORT    STATE SERVICE
21/tcp  open  ftp
22/tcp  open  ssh
53/tcp  open  domain
80/tcp  open  http
139/tcp open  netbios-ssn
445/tcp open  microsoft-ds
MAC Address: 02:42:0A:06:06:17 (Unknown)
Device type: general purpose
Running: Linux 4.X|5.X
OS CPE: cpe:/o:linux:linux_kernel:4 cpe:/o:linux:linux_kernel:5
OS details: Linux 4.15 - 5.8
Network Distance: 1 hop

OS detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 1.96 seconds
```

Use the Nmap Vulners script to scan for vulnerabilities.

Use the nmap –script command to launch the vulners script. The syntax for the command is nmap -sV - -script vulners [--script-args mincvss=] where the script argument mincvss restricts the output to only those CVEs that have a higher CVSS score than the one specified in the argument.

```
└─$ nmap -sV --script vulners --script-args mincvss=4 10.6.6.23
Starting Nmap 7.94 ( https://nmap.org ) at 2025-10-08 13:22 UTC
Nmap scan report for gravemind.vm (10.6.6.23)
Host is up (0.00012s latency).
Not shown: 994 closed tcp ports (conn-refused)
PORT    STATE SERVICE     VERSION
21/tcp  open  ftp         vsftpd 3.0.3
| vulners:
|   vsftpd 3.0.3:
|       CVE-2021-30047  7.5     https://vulners.com/cve/CVE-2021-30047
|_      CVE-2021-3618   7.4     https://vulners.com/cve/CVE-2021-3618
22/tcp  open  ssh         OpenSSH 7.9p1 Debian 10+deb10u2 (protocol 2.0)
| vulners:
|   cpe:/a:openbsd:openssh:7.9p1:
|       PACKETSTORM:173661      9.8     https://vulners.com/packetstorm/PACKETSTORM:173661      *EXPLOIT*
|       F0979183-AE88-53B4-86CF-3AF0523F3807    9.8     https://vulners.com/githubexploit/F0979183-AE88-53B4-86
CF-3AF0523F3807 *EXPLOIT*
|       CVE-2023-38408  9.8     https://vulners.com/cve/CVE-2023-38408
|       B8190CDB-3EB9-5631-9828-8064A1575B23    9.8     https://vulners.com/githubexploit/B8190CDB-3EB9-5631-98
28-8064A1575B23 *EXPLOIT*
|       8FC9C5AB-3968-5F3C-825E-E8DB5379A623    9.8     https://vulners.com/githubexploit/8FC9C5AB-3968-5F3C-82
5E-E8DB5379A623 *EXPLOIT*
|       8AD01159-548E-546E-AA87-2DE89F3927EC    9.8     https://vulners.com/githubexploit/8AD01159-548E-546E-AA
87-2DE89F3927EC *EXPLOIT*
|       2227729D-6700-5C8F-8930-1EEAFD4B9FF0    9.8     https://vulners.com/githubexploit/2227729D-6700-5C8F-89
30-1EEAFD4B9FF0 *EXPLOIT*
|       0221525F-07F5-5790-912D-F4B9E2D1B587    9.8     https://vulners.com/githubexploit/0221525F-07F5-5790-91
2D-F4B9E2D1B587 *EXPLOIT*
|       BA3887BD-F579-53B1-A4A4-FF49E953E1C0    8.1     https://vulners.com/githubexploit/BA3887BD-F579-53B1-A4
A4-FF49E953E1C0 *EXPLOIT*
|       4FB01B00-F993-5CAF-BD57-D7E290D10C1F    8.1     https://vulners.com/githubexploit/4FB01B00-F993-5CAF-BD
57-D7E290D10C1F *EXPLOIT*
|       CVE-2020-15778  7.8     https://vulners.com/cve/CVE-2020-15778
|       CVE-2019-16905  7.8     https://vulners.com/cve/CVE-2019-16905
|       C94132FD-1FA5-5342-B6EE-0DAF45EEFFE3    7.8     https://vulners.com/githubexploit/C94132FD-1FA5-5342-B6
EE-0DAF45EEFFE3 *EXPLOIT*
|       2E719186-2FED-58A8-A150-762EFBAAA523    7.8     https://vulners.com/gitee/2E719186-2FED-58A8-A150-762EF
```

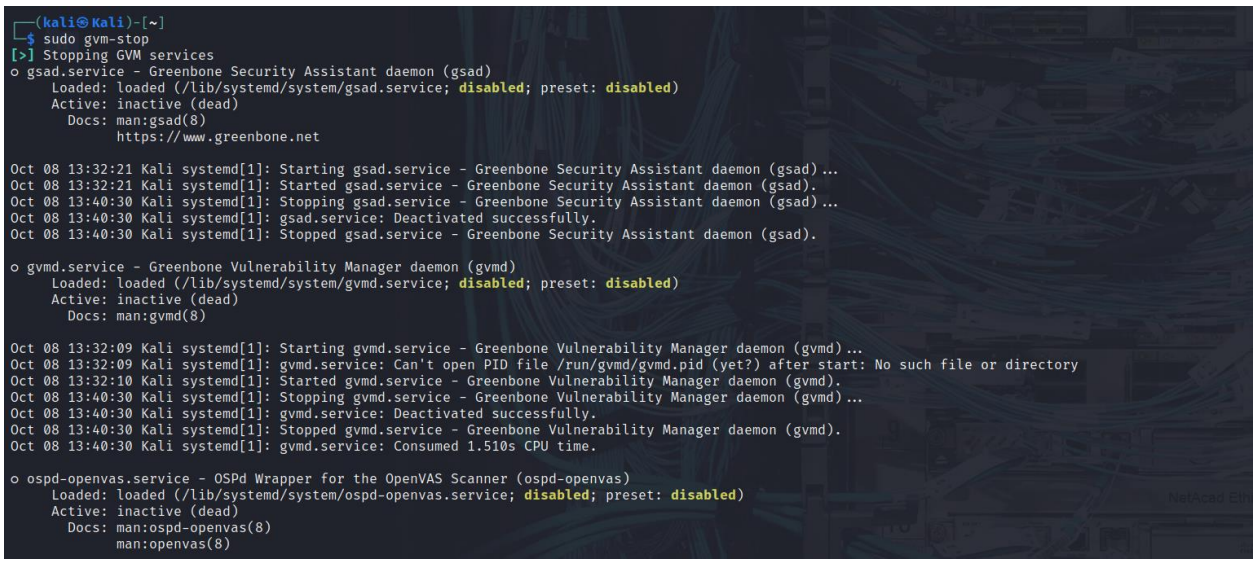
GVM is part of the Open Source Vulnerability Management suite of products produced by Greenbone Networks GmbH. The GVM scanner is one of the most widely used open-source vulnerability scanners. Unlike Nmap, GVM uses a graphical user interface to initiate scans and report vulnerability scan results.

Step 1: Verify the GVM Product Installation.

Before beginning any scan, it is important to verify that GVM is correctly installed and that the files it uses to identify vulnerabilities are up-to-date. a. Verify the setup of the GVM service using the sudo gvm-check-setup command. This command verifies that the setup completed correctly and the

necessary files are available. The verification will flag any issues that need fixing and will provide the commands to use to fix the issues

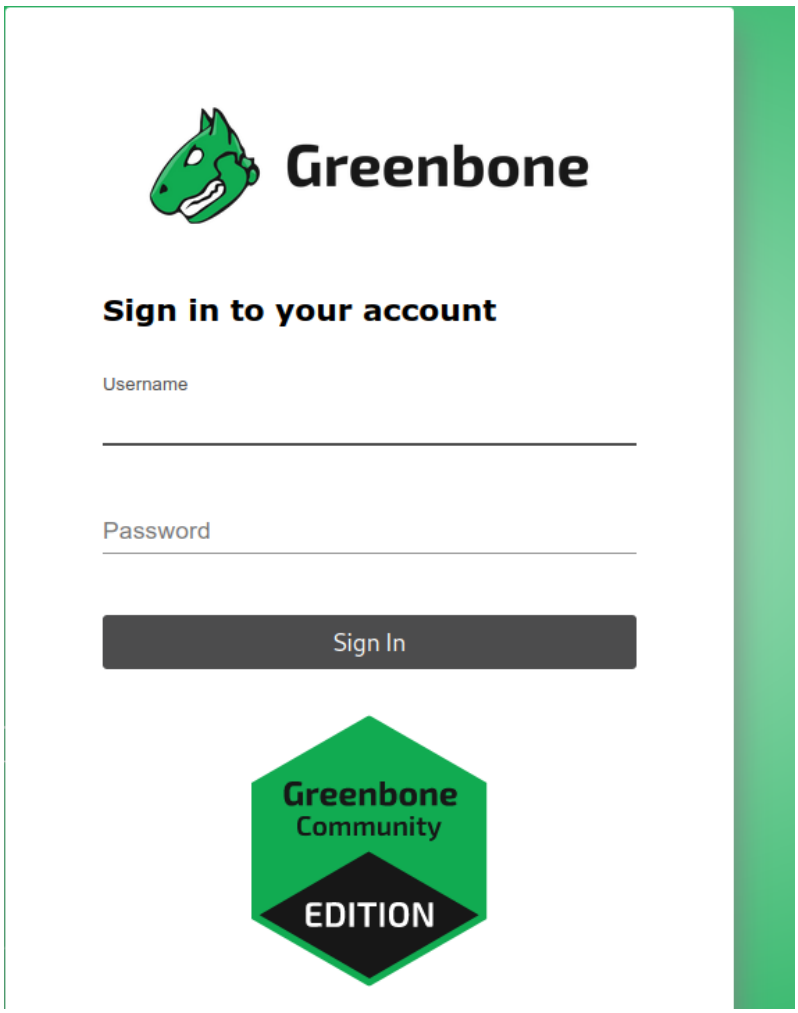
Just for this activity, stop the GVM service so you can observe the startup output.



Start the GVM scanner using the sudo gvm-start command. You can also access the gvm-start script

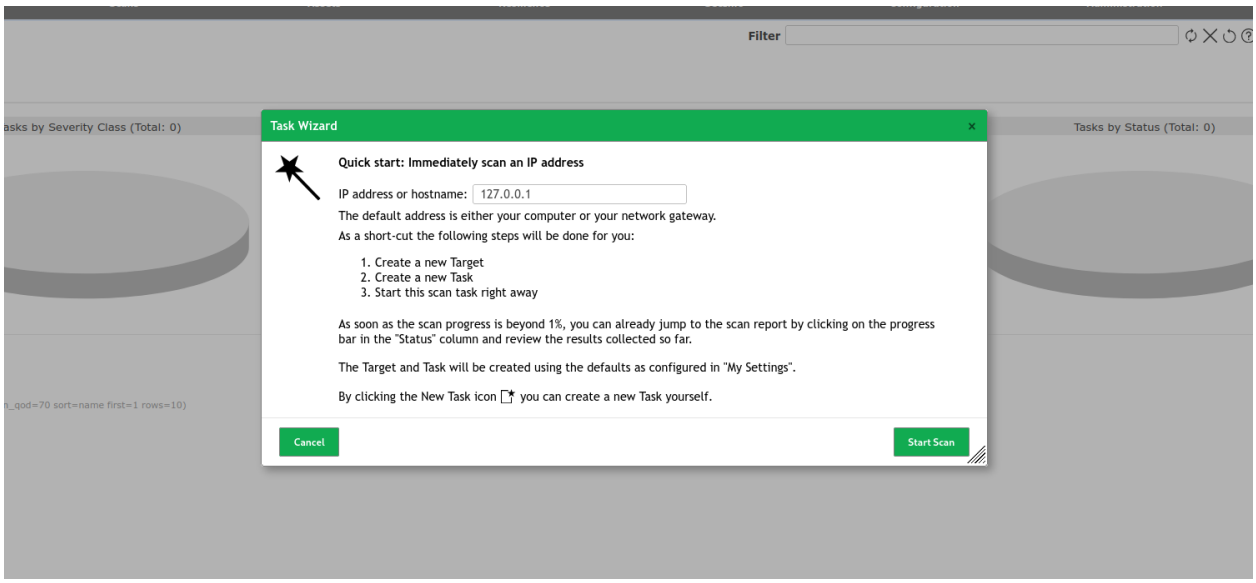
using the Applications menu on the Kali desktop, Kali ->02-Vulnerability Analysis -> gvm start. It is possible that GVM may already be running as a result of the check setup process.

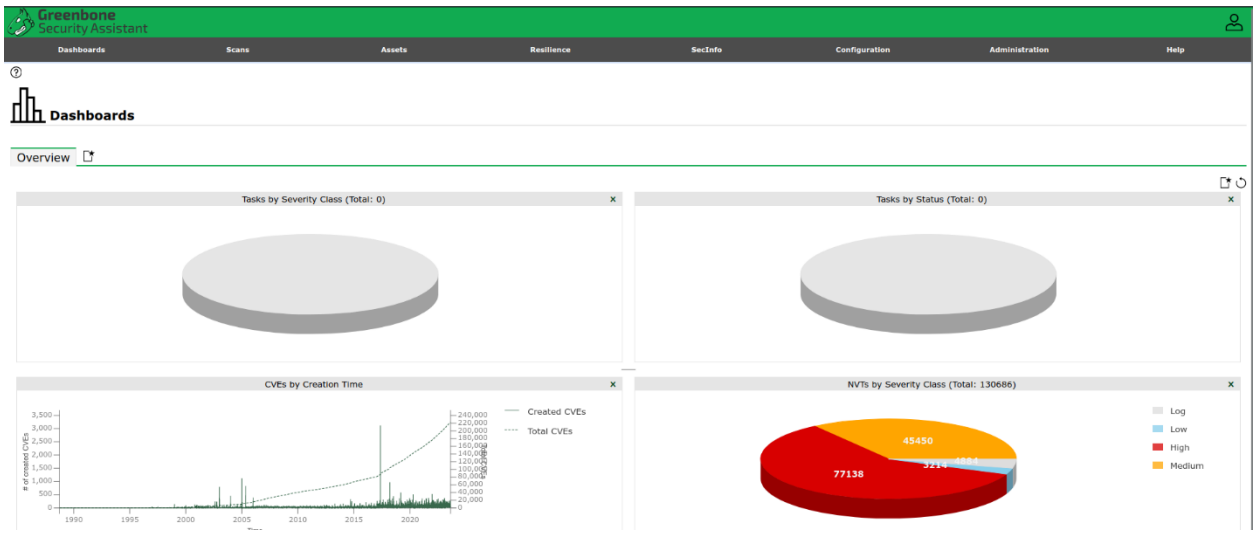
The output of the command should be similar to what is shown below. At the end of the output, a message that the scanner is loading in Firefox will appear.



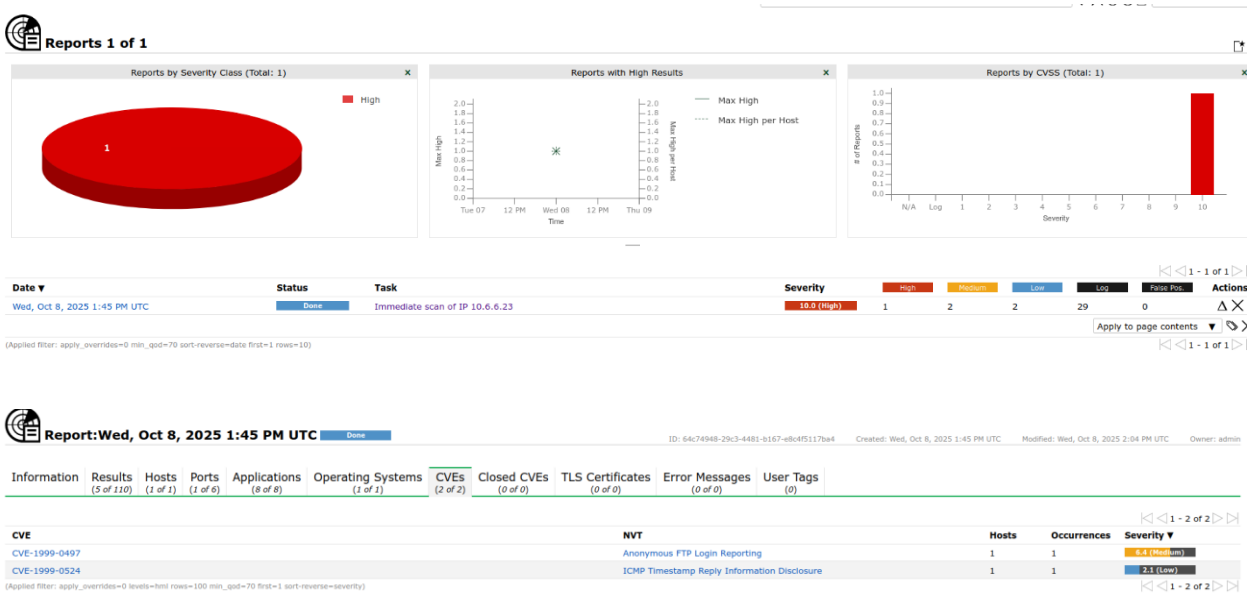
In the Greenbone Security Assistant login box, enter admin as the username and kali as the password. Username: admin Password: kali

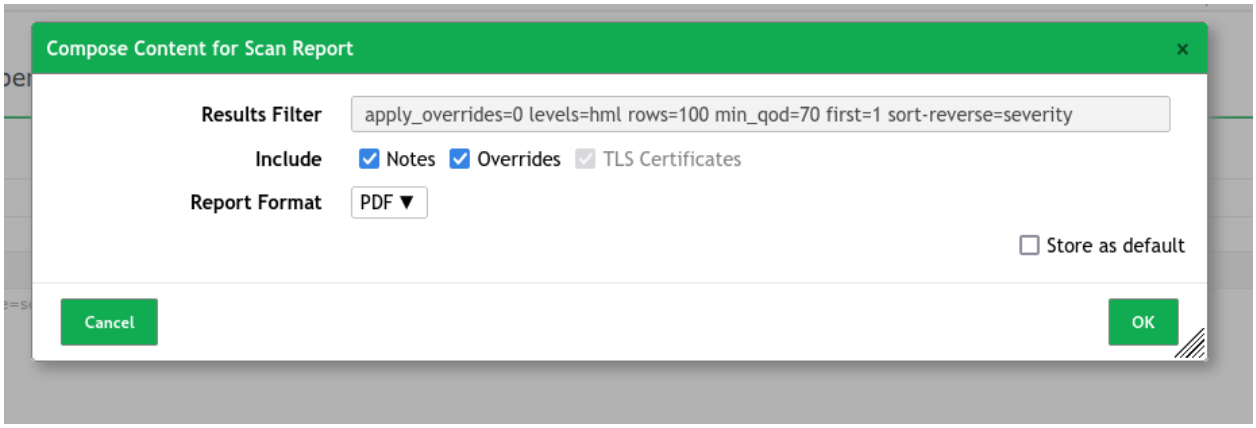
In the IP address or hostname box, enter the IP address 10.6.6.23 or gravemind.vm. Click the Start Scan button at the bottom of the screen. The scan will take a few minutes, so wait for it to complete. The status and percent complete are displayed on the screen. The scan will be finished when the status changes to Done





Download the report by clicking the Download Filtered Report button from the menu in the upper left of the report page. It has a downward-pointing arrow icon. In the settings box, choose to download the report in PDF format. After a brief delay, the PDF file should open in your browser





Scan Report

October 8, 2025

Summary

This document reports on the results of an automatic security scan. All dates are displayed using the timezone "Coordinated Universal Time", which is abbreviated "UTC". The task was "Immediate scan of IP 10.6.6.23". The scan started at Wed Oct 8 13:46:11 2025 UTC and ended at Wed Oct 8 14:04:46 2025 UTC. The report first summarises the results found. Then, for each host, the report describes every issue found. Please consider the advice given in each description, in order to rectify the issue.

Contents

When you are done with GVM services, use the following command to stop GVM.

```
┌──(kali㉿Kali)-[~]
└─$ sudo gvm-stop
[sudo] password for kali:
[>] Stopping GVM services
○ gsad.service - Greenbone Security Assistant daemon (gsad)
     Loaded: loaded (/lib/systemd/system/gsad.service; disabled; preset: disabled)
     Active: inactive (dead)
       Docs: man:gsad(8)
             https://www.greenbone.net

Oct 08 13:32:21 Kali systemd[1]: Started gsad.service - Greenbone Security Assistant daemon (gsad).
Oct 08 13:40:30 Kali systemd[1]: Stopping gsad.service - Greenbone Security Assistant daemon (gsad)...
Oct 08 13:40:30 Kali systemd[1]: gsad.service: Deactivated successfully.
Oct 08 13:40:30 Kali systemd[1]: Stopped gsad.service - Greenbone Security Assistant daemon (gsad).
```

In your opinion, which tool is easier to use? Explain.

In my opinion, GVM is easier to use because it has a clear web interface, flexible configuration options, and does not require a commercial license.2. It is recommended to keep the databases of vulnerabilities updated every few days. Research on the internet

It is recommended to keep the databases of vulnerabilities updated every few days. Research on the internet the necessary commands to update the GVM CVE database. Why do you think it is necessary to keep a database of all CVEs (current and past) for use by vulnerability scanners?

It is necessary to keep the full CVE database (past and current) because old vulnerabilities may still exist in systems. A complete database ensures accurate scans, proper detection, and historical analysis.