1. INTRODUCTION

1.1 KALI LINUX

Kali Linux is a Debian-based Linux distribution aimed at advanced Penetration Testing and Security Auditing. Kali contains several hundred tools which are geared towards various information security tasks, such as Penetration Testing, Security research, Computer Forensics and Reverse Engineering. It was developed by Mati Aharoni and Devon Kearns of Offensive Security through the rewrite of Backtrack, their previous information security testing Linux distribution based on Knoppix. The third core developer Raphael Hertzog joined them as a Debian expert. Kali Linux was released on the 13th march, 2013 as a complete, top to bottom. Rebuild of Backtrack Linux, adhering completely to Debian development standards.

Features and other information of Kali Linux includes

- Over 600 penetration testing tools pre-installed
- Multi-language support
- Developed in a secure environment
- Free of cost
- OS Family - Unix like
- Working State - Active
- Platforms - x86, x86-64, armel, armhf
- Kernel Type - Monolithic kernel (Linux)
- Default UI - GNOME3

1.2PENETRATION TESTING

Penetration testing which is also called pen testing is refers to the process of testing a computer system, network or Web application to find vulnerabilities that an attacker could exploit and make use of it. Pen test can be done manually or it can be done automatically through software application. In either way, the process includes collecting information about the target before the test (reconnaissance), identify possible loop holes (entry points), attempting to break in (either virtually or for real) and reporting back the finding. The main objective of penetration testing is to determine security weakness.

Different Strategies

- Targeted testing - Testing team working together.
- External testing - Targets externally visible servers or devices.
- Internal testing - Attack behind the firewall.
- Blind testing - Simulates the actions of a real attacker

Targeted testing:

This testing is performed by the organization's IT testing team and the penetration testing team working together. It's sometimes referred to as a "lights-turned-on" approach because everyone can see and know the test being carried out.

External testing:

This type of pen test targets a company's externally visible servers or devices including domain name servers (DNS), e-mail servers, Web servers or firewalls. The objective is to find out if an outside attacker can get in and how far they can get in once they've gained access.

Internal testing:

This test mimics an inside attack behind the firewall by an authorized user with standard access privileges. This kind of test is useful for estimating how much damage a disgruntled employee could cause.

Blind testing:

A blind test strategy simulates the actions and procedures of a real attacker by severely limiting the information given to the person or team that's performing the test beforehand. Typically, they may only be given the name of the company. Because this type of test can require a considerable amount of time for reconnaissance, it can be expensive.

Benefits of Penetration Testing

- Intelligently manage vulnerabilities.
- Avoid the cost of network downtime.
- Meet regulatory requirements and avoid fines.
- Preserve corporate image and customer loyalty.

2. NESSUS

2.1 INTRODUCTION TO NESSUS

Nessus is a great vulnerability scanning tool. It comes with an easy to use graphical user interface and is capable of scanning multiple networks for open ports and vulnerabilities. Nessus support Mac, linux and windows operating system. Nessus is a remote scanning tool that you can use to check computers for security vulnerabilities. It does not actively block any vulnerabilities that your computers have but it will be able to sniff them out by quickly running 1200+ vulnerability checks and throwing alerts when any security patches need to be made. If you are an administrator in charge of any computer (or group of computers) connected to the internet, Nessus is a great tool help keep their domains free of the easy vulnerabilities that hackers and viruses commonly look to exploit.

Nessus holds a significant place among the penetration testing tool, which is branded susceptibility scanner and has been advanced by Tenable Network Security use it for free only if you use it for personal use amid a non-enterprise setting. However, it allows you to scan for numerous kinds of vulnerabilities. Nessus does not actively prevent attacks, it is only a tool that checks your computers to find vulnerabilities that hackers cloud exploit.

2.2 FEATURES

Performance:

- Issue tracking
- Detection rate
- False positives
- Automated scans

Network

- Compliance Testing
- Perimeter Scanning

- Configuration Scanning

Application

- Manual Application Testing
- Code Analysis
- Black-Box Scanning

2.3 INSTALLING AND CONFIGURING NESSUS

Nessus does not come pre-installed on Kali Linux, but can be installed and activated easily:

Step 1: Purchase Nessus

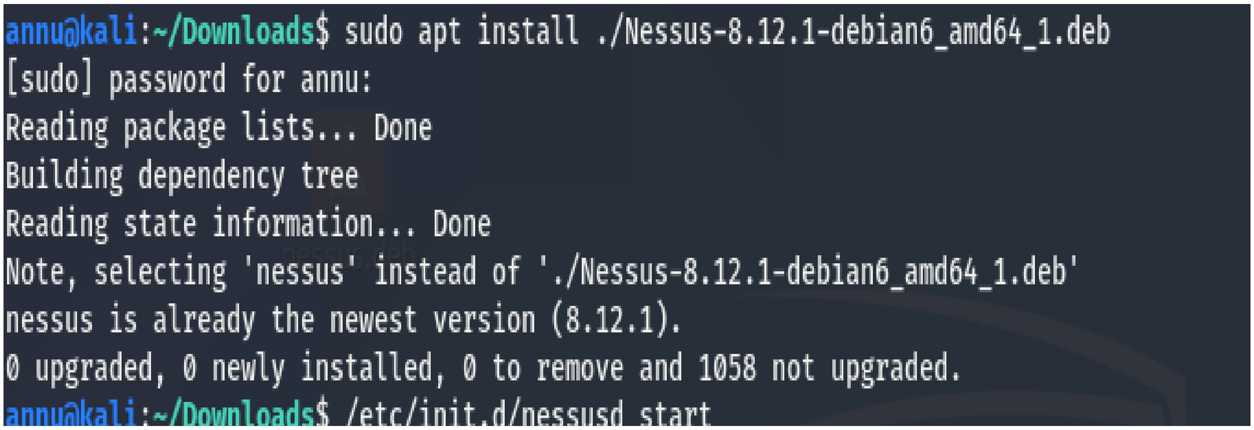
You can purchase Nessus from Tenable's online store (including bundles containing training and additional products such as the Passive Vulnerability Scanner) or through one of our resellers.

Step 2: Obtain Nessus and an Activation Code

Once you've purchased Nessus, you will receive an account on the Tenable Support Portal and an activation code to be used in the installation process.

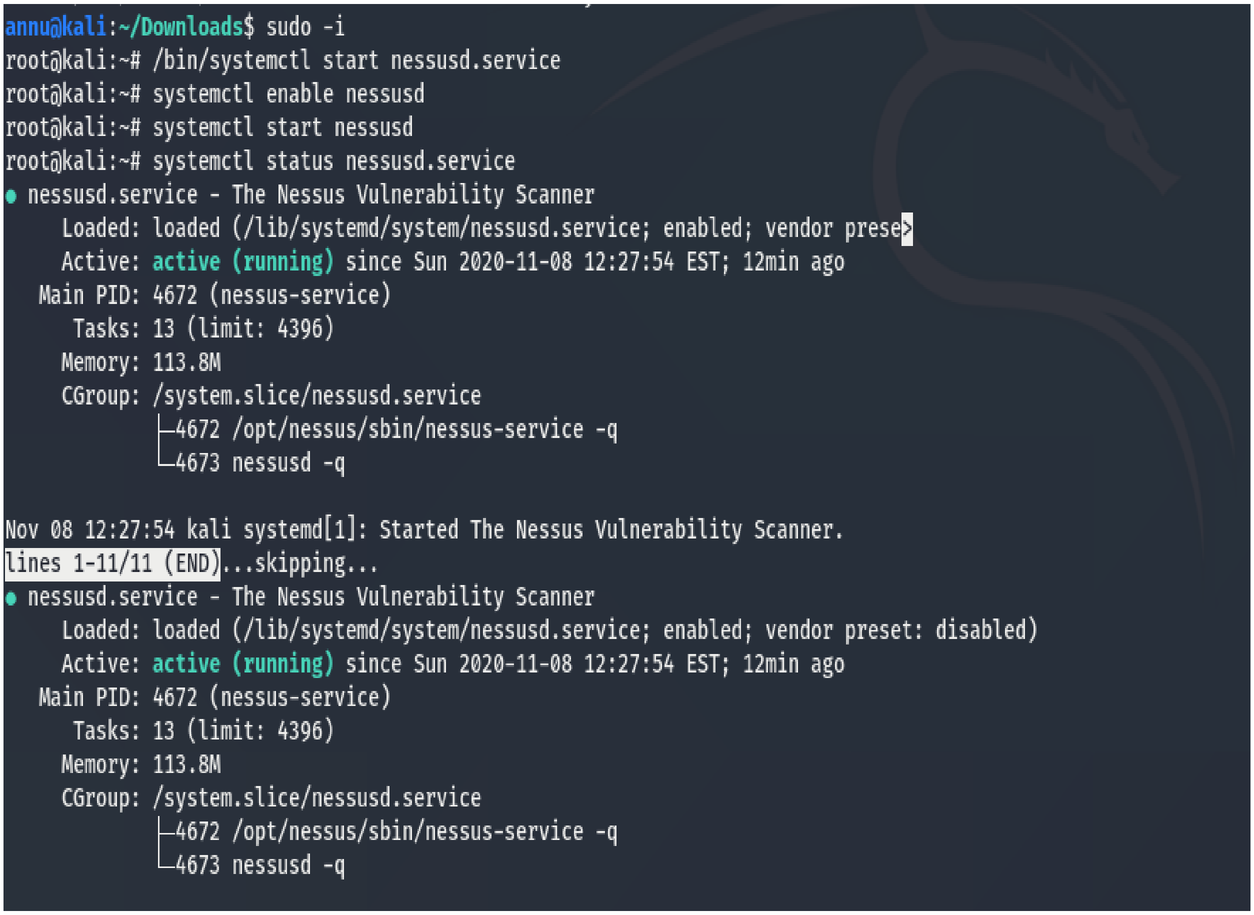
Step 3: Installing Nessus

Once you've transferred the appropriate Nessus Debian package to your Kali Linux installation, run the following commands to install and start Nessus (it is assumed that your Kali Linux is configured with access to the Internet):



```
annu@kali:~/Downloads$ sudo apt install ./Nessus-8.12.1-debian6_amd64_1.deb
[sudo] password for annu:
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'nessus' instead of './Nessus-8.12.1-debian6_amd64_1.deb'
nessus is already the newest version (8.12.1).
0 upgraded, 0 newly installed, 0 to remove and 1058 not upgraded.
annu@kali:~/Downloads$ /etc/init.d/nessusd start
```

Start Nessus



```
annu@kali:~/Downloads$ sudo -i
root@kali:~# /bin/systemctl start nessusd.service
root@kali:~# systemctl enable nessusd
root@kali:~# systemctl start nessusd
root@kali:~# systemctl status nessusd.service
● nessusd.service - The Nessus Vulnerability Scanner
     Loaded: loaded (/lib/systemd/system/nessusd.service; enabled; vendor prese>
     Active: active (running) since Sun 2020-11-08 12:27:54 EST; 12min ago
   Main PID: 4672 (nessus-service)
      Tasks: 13 (limit: 4396)
     Memory: 113.8M
     CGroup: /system.slice/nessusd.service
             ├─4672 /opt/nessus/sbin/nessus-service -q
             └─4673 nessusd -q

Nov 08 12:27:54 kali systemd[1]: Started The Nessus Vulnerability Scanner.
lines 1-11/11 (END)...skipping...
● nessusd.service - The Nessus Vulnerability Scanner
     Loaded: loaded (/lib/systemd/system/nessusd.service; enabled; vendor preset: disabled)
     Active: active (running) since Sun 2020-11-08 12:27:54 EST; 12min ago
   Main PID: 4672 (nessus-service)
      Tasks: 13 (limit: 4396)
     Memory: 113.8M
     CGroup: /system.slice/nessusd.service
             ├─4672 /opt/nessus/sbin/nessus-service -q
             └─4673 nessusd -q
```

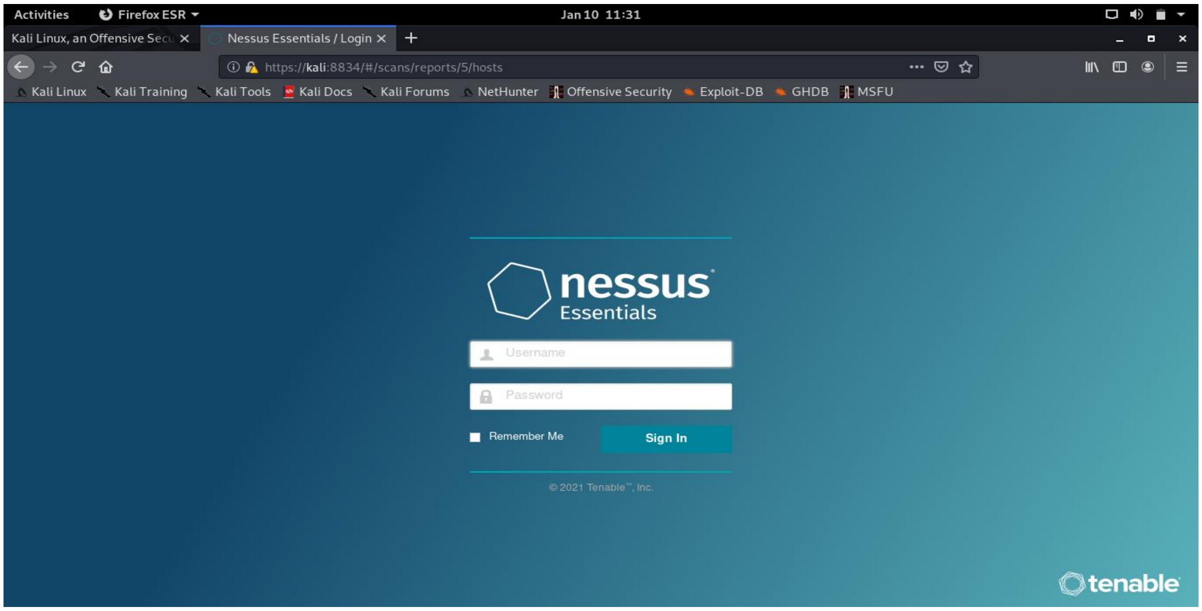
Installing Nessus on Kali Linux via the command line. The web interface can be accessed with your browser by making an HTTPS connection to TCP port 8834 (e.g. https://localhost:8834/). You can also access the Nessus Web Interface remotely by using the default IP address assigned to Kali Linux (e.g. https://192.168.1.250:8834/). Make certain that javascript is enabled in the browser you are using to manage the Nessus server.

Step 4: Configure and use Nessus

To configure Nessus, follow the installation wizard. Create an administrator user account, activate with your activation code from the Tenable Support Portal and let Nessus fetch and process the plugins. This account is used to login to the Nessus.

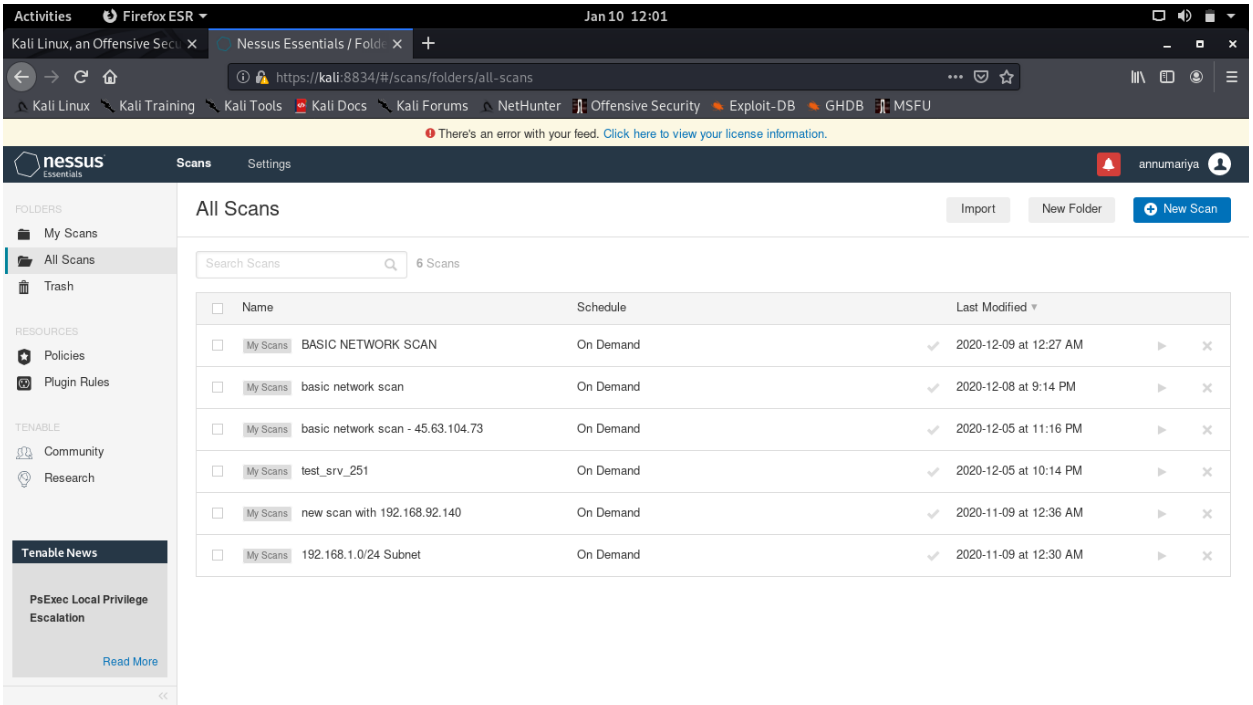
3. IMPLEMENTATION AND SCREENSHOTS

SIGN IN TO NESSUS



To sign in enter user name and password.

ALL SCAN



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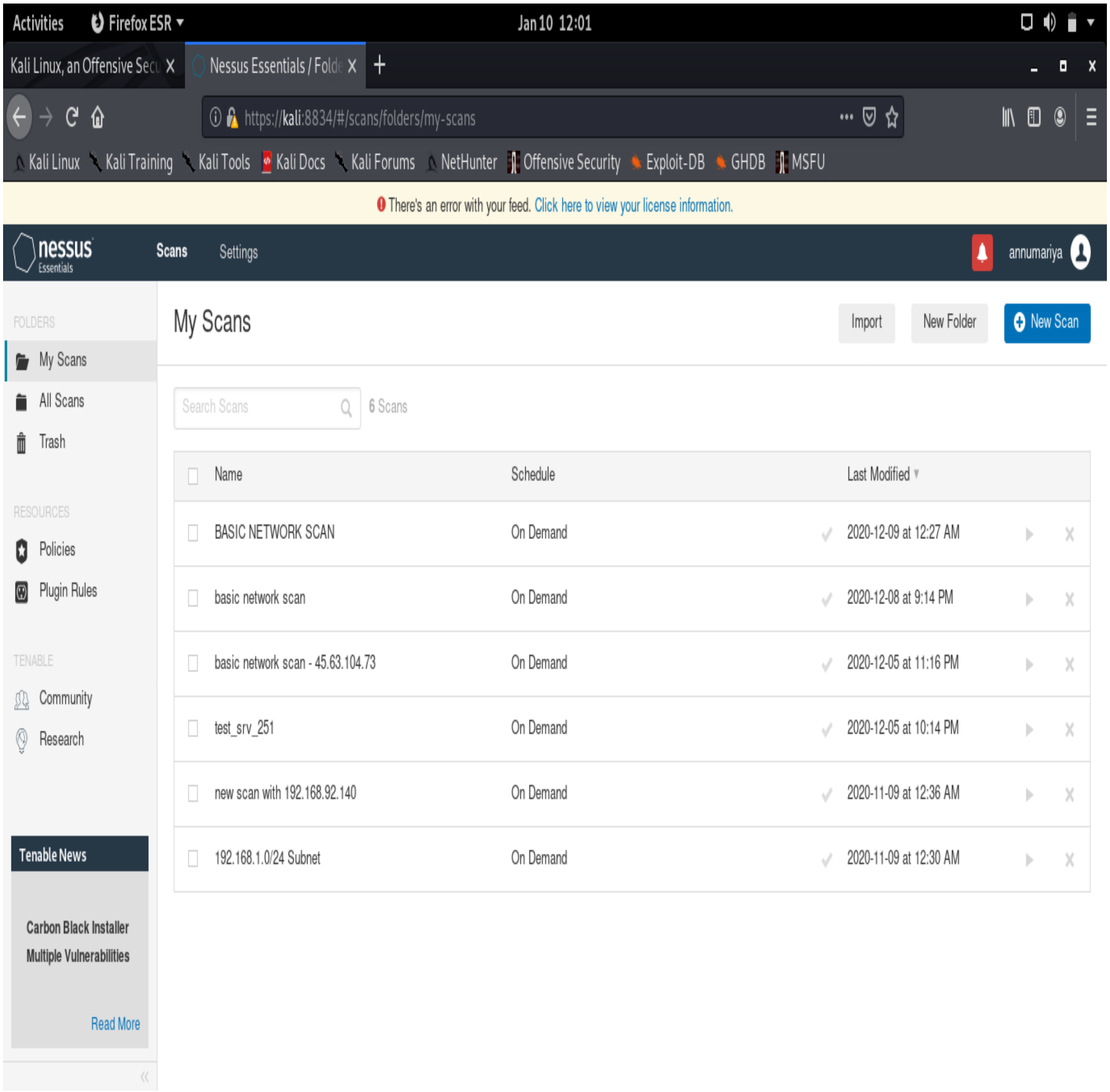
Name	Schedule	Last Modified
My Scans BASIC NETWORK SCAN	On Demand	2020-12-09 at 12:27 AM
My Scans basic network scan	On Demand	2020-12-08 at 9:14 PM
My Scans basic network scan - 45.63.104.73	On Demand	2020-12-05 at 11:16 PM
My Scans test_srv_251	On Demand	2020-12-05 at 10:14 PM
My Scans new scan with 192.168.92.140	On Demand	2020-11-09 at 12:36 AM
My Scans 192.168.1.0/24 Subnet	On Demand	2020-11-09 at 12:30 AM

MY SCAN



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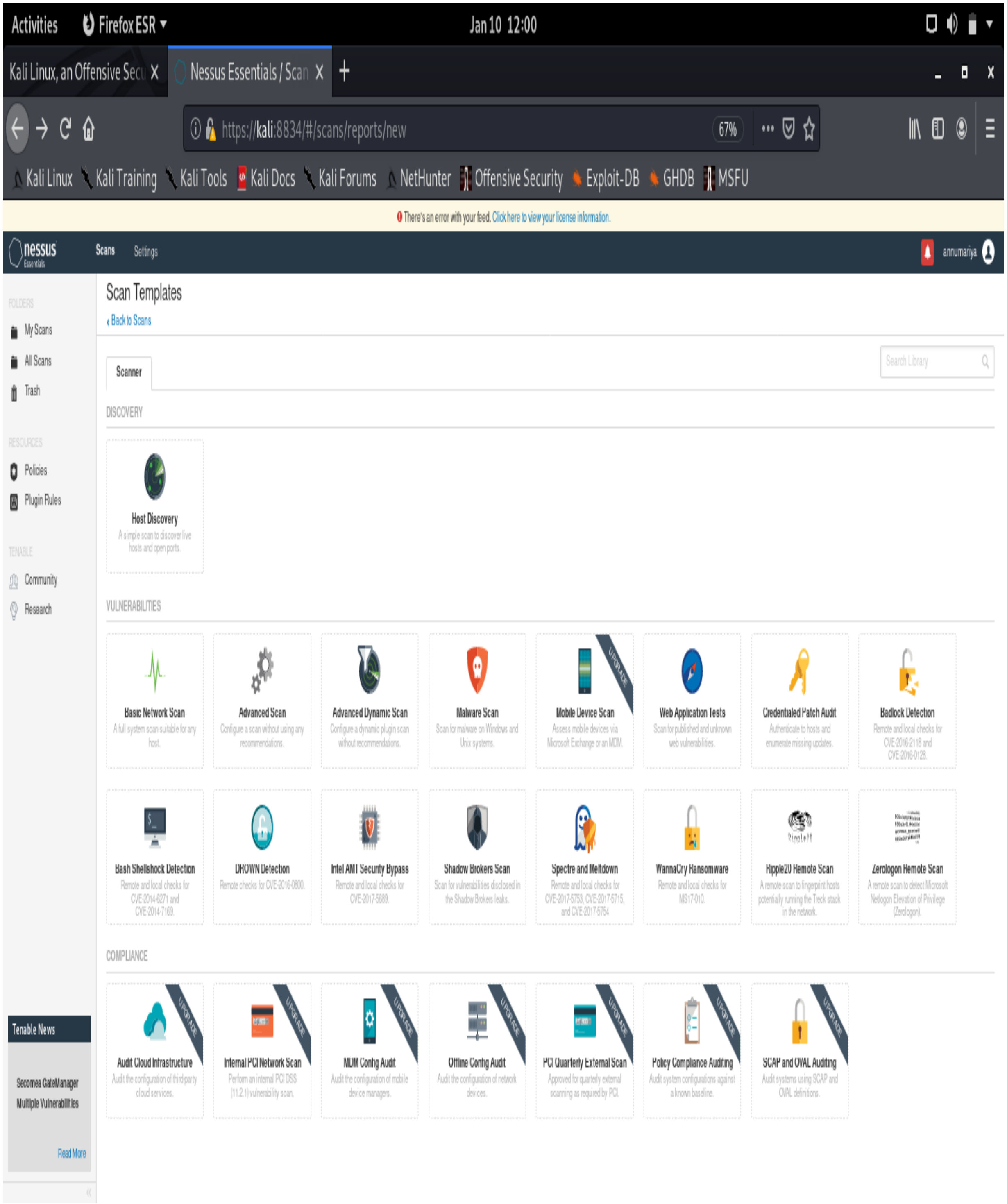
My Scans

6 Scans

Name	Schedule	Last Modified
BASIC NETWORK SCAN	On Demand	2020-12-09 at 12:27 AM
basic network scan	On Demand	2020-12-08 at 9:14 PM
basic network scan - 45.63.104.73	On Demand	2020-12-05 at 11:16 PM
test_srv_251	On Demand	2020-12-05 at 10:14 PM
new scan with 192.168.92.140	On Demand	2020-11-09 at 12:36 AM
192.168.1.0/24 Subnet	On Demand	2020-11-09 at 12:30 AM

Take new scan - some scanning templates will appear from that take web application test.

SCAN TEMPLATE



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Scan Templates

‹ Back to Scans

Seconea GateManager Multiple Vulnerabilities

DISCOVERY

Host Discovery
A simple scan to discover live hosts and open ports.

VULNERABILITIES

Basic Network Scan
A full system scan suitable for any host.

Advanced Scan
Configure a scan without using any recommendations.

Advanced Dynamic Scan
Configure a dynamic plugin scan without recommendations.

Malware Scan
Scan for malware on Windows and Unix systems.

Mobile Device Scan
Assess mobile devices via Microsoft Exchange or an MDM.

Web Application Tests
Scan for published and unknown web vulnerabilities.

Credentialed Patch Audit
Authenticate to hosts and enumerate missing updates.

Badlock Detection
Remote and local checks for CVE-2016-2118 and CVE-2016-0128.

Bash Shellshock Detection
Remote and local checks for CVE-2014-6271 and CVE-2014-7169.

DROWN Detection
Remote checks for CVE-2016-0800.

Intel AMT Security Bypass
Remote and local checks for CVE-2017-5689.

Shadow Brokers Scan
Scan for vulnerabilities disclosed in the Shadow Brokers leaks.

Spectre and Meltdown
Remote and local checks for CVE-2017-5753, CVE-2017-5715, and CVE-2017-5754

WannaCry Ransomware
Remote and local checks for MS17-010.

Ripple20 Remote Scan
A remote scan to fingerprint hosts potentially running the Treck stack in the network.

Zerologon Remote Scan
A remote scan to detect Microsoft Netlogon Elevation of Privilege (Zerologon).

COMPLIANCE

Audit Cloud Infrastructure
Audit the configuration of third-party cloud services.

Internal PCI Network Scan
Perform an internal PCI DSS (11.2.1) vulnerability scan.

MDM Config Audit
Audit the configuration of mobile device managers.

Offline Config Audit
Audit the configuration of network devices.

PCI Quarterly External Scan
Approved for quarterly external scanning as required by PCI.

Policy Compliance Auditing
Audit system configurations against a known baseline.

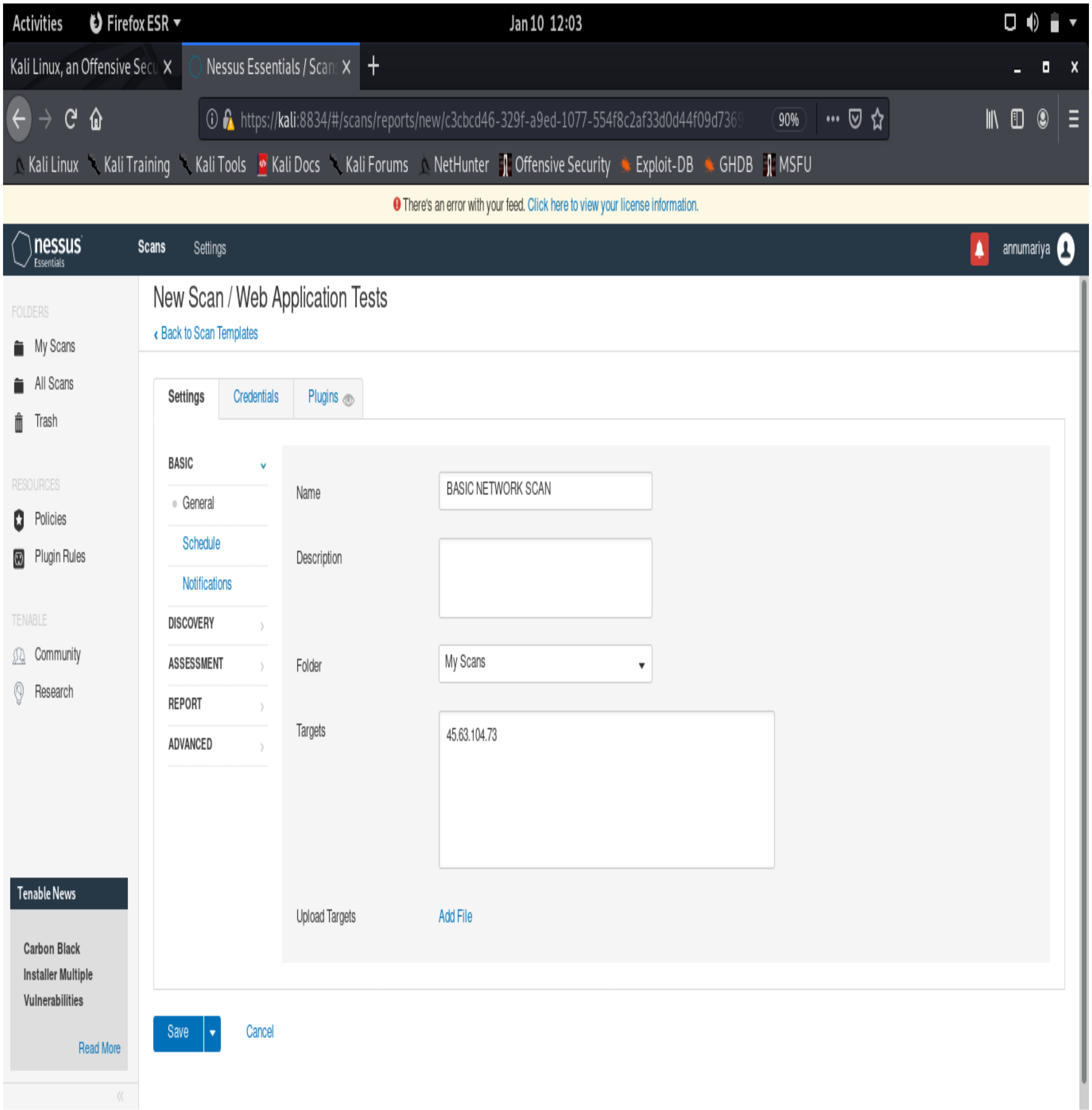
SCAP and OVAL Auditing
Audit systems using SCAP and OVAL definitions.

NEW SCAN

BASIC NETWORK SCAN

TARGET: 45.63.104.73

Then enter name and target then save.



https://kali:8834/#/scans/reports/new/c3cbcd46-329f-a9ed-1077-554f8c2af33d0d44f09d736

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New Scan / Web Application Tests

Name: BASIC NETWORK SCAN

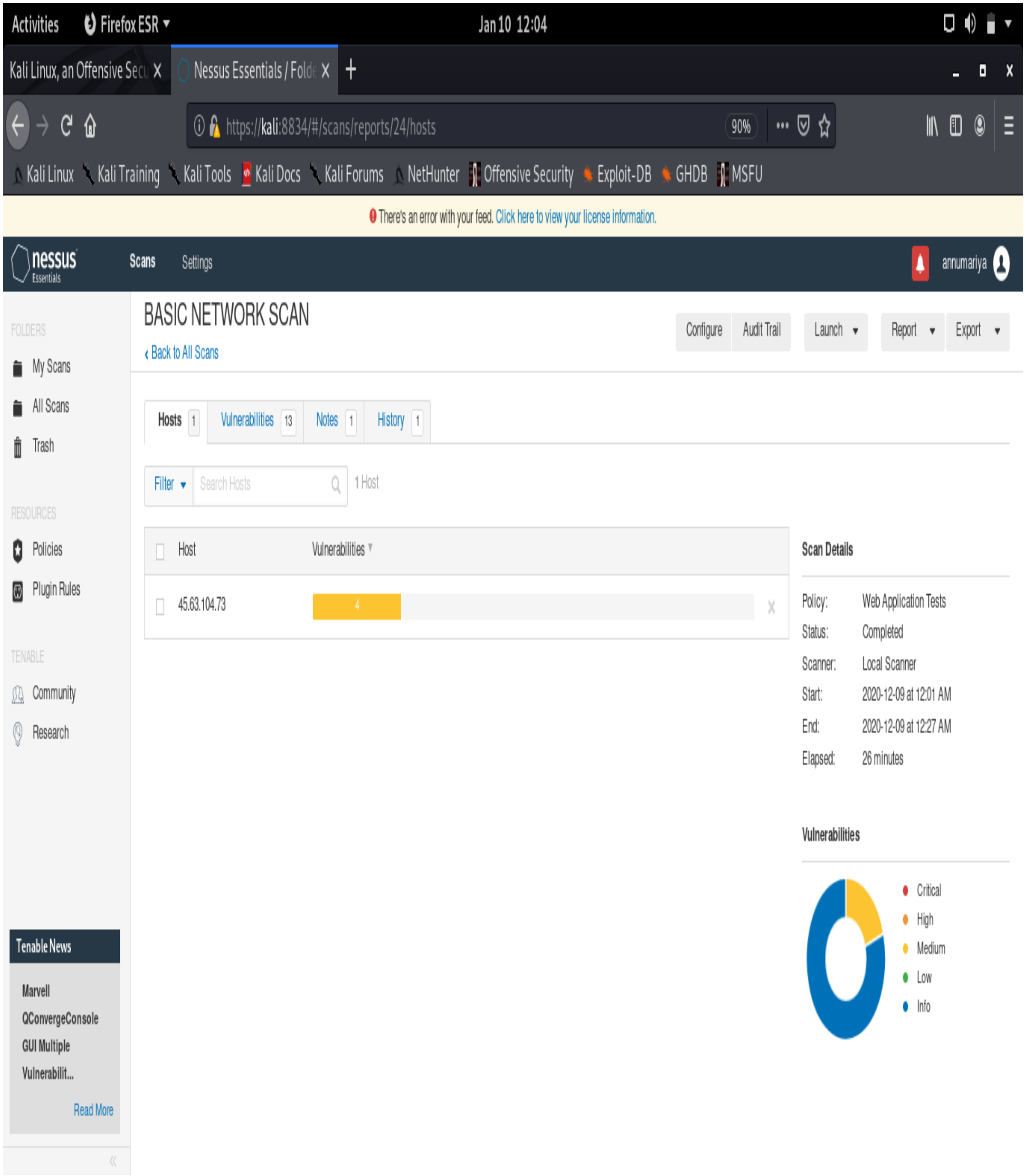
Description:

Folder: My Scans

Targets: 45.63.104.73

Upload Targets: Add File

OUTPUT



https://kali:8834/#/scans/reports/24/hosts

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BASIC NETWORK SCAN

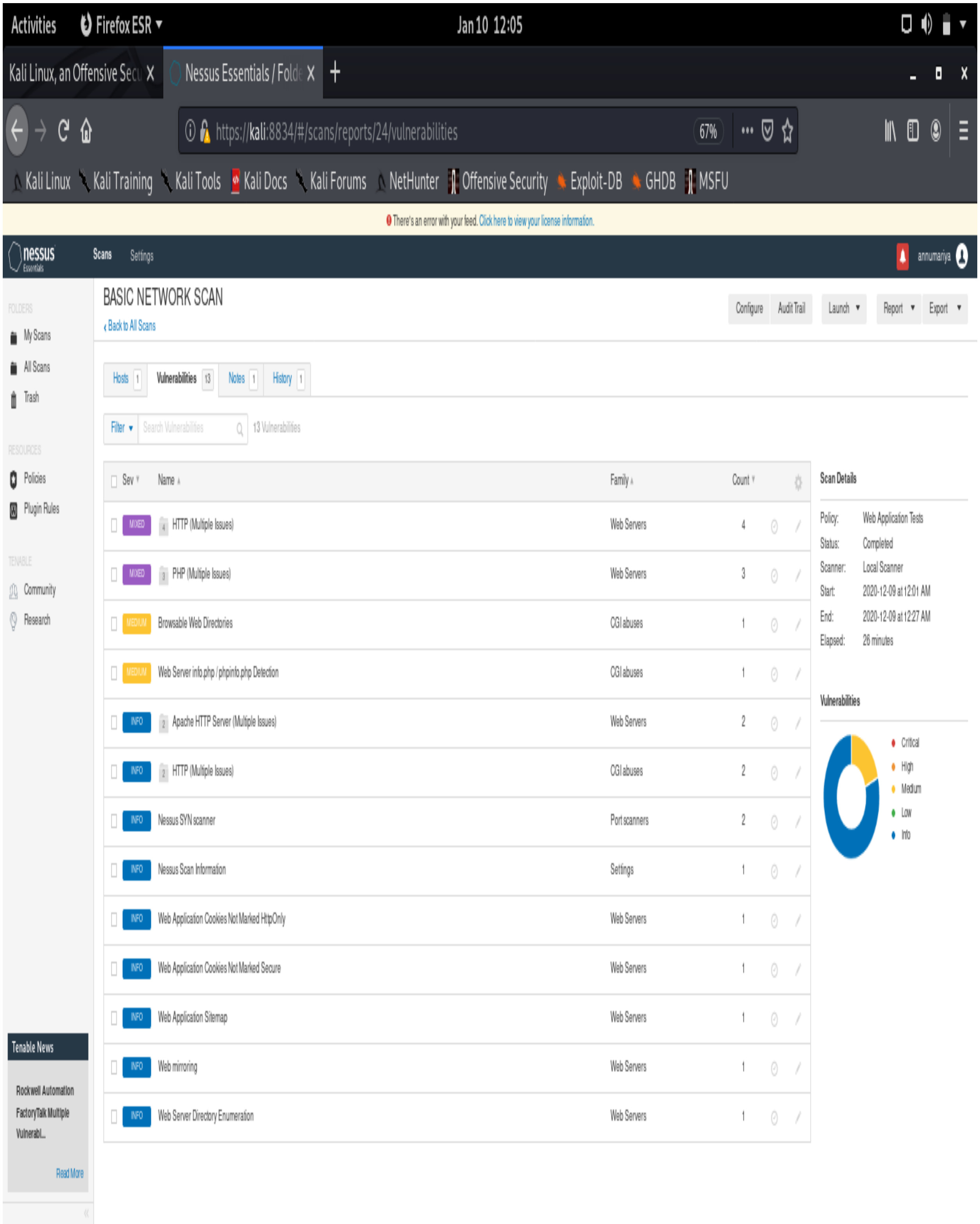
Host	Vulnerabilities
45.63.104.73	4

Scan Details

Policy: Web Application Tests
Status: Completed
Scanner: Local Scanner
Start: 2020-12-09 at 12:01 AM
End: 2020-12-09 at 12:27 AM
Elapsed: 26 minutes

Vulnerabilities

NESSUS



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BASIC NETWORK SCAN

‹ Back to All Scans

13 Vulnerabilities

Sev	Name	Family	Count
MIXED	HTTP (Multiple Issues)	Web Servers	4
MIXED	PHP (Multiple Issues)	Web Servers	3
MEDIUM	Browsable Web Directories	CGI abuses	1
MEDIUM	Web Server info.php / phpinfo.php Detection	CGI abuses	1
INFO	Apache HTTP Server (Multiple Issues)	Web Servers	2
INFO	HTTP (Multiple Issues)	CGI abuses	2
INFO	Nessus SYN scanner	Port scanners	2
INFO	Nessus Scan Information	Settings	1
INFO	Web Application Cookies Not Marked HttpOnly	Web Servers	1
INFO	Web Application Cookies Not Marked Secure	Web Servers	1
INFO	Web Application Sitemap	Web Servers	1
INFO	Web mirroring	Web Servers	1
INFO	Web Server Directory Enumeration	Web Servers	1

Scan Details

Policy:	Web Application Tests
Status:	Completed
Scanner:	Local Scanner
Start:	2020-12-09 at 12:01 AM
End:	2020-12-09 at 12:27 AM
Elapsed:	26 minutes

Vulnerabilities

After the operation is performed vulnerabilities will be displayed.

4. CONCLUSION

Nessus is the world’s most widely-deployed vulnerability assessment solution. Nessus quickly and accurately identifies vulnerabilities, configuration issues and malware in physical, virtual and cloud environments to help you prioritize what to fix first. Combine Nessus with Kali Linux to build a superior pen testing toolkit that provides deep insight into your network systems. Nessus holds a significant place among the penetration testing tool, which is branded susceptibility scanner and has been advanced by Tenable Network Security use it for free only if you use it for personal use amid a non-enterprise setting. However, it allows you to scan for numerous kinds of vulnerabilities. Nessus does not actively prevent attacks, it is only a tool that checks your computers to find vulnerabilities that hackers cloud exploit.

5. REFERENCE

https://www.tenable.com/blog/installing-and-using-nessus-on-kali-linux

https://www.tenable.com/blog/getting-started-with-nessus-on-kali-linux

https://linuxhint.com/nessus_installation_kali_linux/

https://youtu.be/Fu7MiHcyd44