Module 09: Social Engineering

Scenario

Organizations fall victim to social engineering tactics despite having strong security policies and solutions in place. This is because social engineering exploits the most vulnerable link in information system security—employees. Cybercriminals are increasingly using social engineering techniques to target people's weaknesses or play on their good natures.

Social engineering can take many forms, including phishing emails, fake sites, and impersonation. If the features of these techniques make them an art, the psychological insights that inform them make them a science.

While non-existent or inadequate defense mechanisms in an organization can encourage attackers to use various social engineering techniques to target its employees, the bottom line is that there is no technological defense against social engineering. Organizations must educate employees on how to recognize and respond to these attacks, but only constant vigilance will minimize attackers' chances of success.

As an expert ethical hacker and penetration tester, you need to assess the preparedness of your organization or the target of evaluation against social engineering attacks. It is important to note, however, that social engineering primarily requires soft skills. The labs in this module therefore demonstrate several techniques that facilitate or automate certain facets of social engineering attacks.

Objective

The objective of the lab is to use social engineering and related techniques to:

- **Sniff user/employee credentials such as employee IDs, names, and email addresses**
- **Obtain employees' basic personal details and organizational information**
- **Obtain usernames and passwords**
- **Perform phishing**
- **Detect phishing**
- **Use AI to craft phishing mails**

Overview of Social Engineering

Social engineering is the art of manipulating people to divulge sensitive information that will be used to perform some kind of malicious action. Because social engineering targets human weakness, even organizations with strong security policies are vulnerable to being compromised by attackers. The impact of social engineering attacks on organizations can include economic losses, damage to goodwill, loss of privacy, risk of terrorism, lawsuits and arbitration, and temporary or permanent closure.

There are many ways in which companies may be vulnerable to social engineering attacks. These include:

- Insufficient security training

- Unregulated access to information
- An organizational structure consisting of several units
- Non-existent or lacking security policies

Lab Tasks

Ethical hackers or penetration testers use numerous tools and techniques to perform social engineering tests. The recommended labs that will assist you in learning various social engineering techniques are:

1. **Perform social engineering using various techniques**
    - **Sniff credentials using the Social-Engineer Toolkit (SET)**
2. **Detect a phishing attack**
    - **Detect phishing using Netcraft**

Lab 1: Perform Social Engineering using Various Techniques

Lab Scenario

As a professional ethical hacker or penetration tester, you should use various social engineering techniques to examine the security of an organization and the awareness of employees.

In a social engineering test, you should try to trick the user into disclosing personal information such as credit card numbers, bank account details, telephone numbers, or confidential information about their organization or computer system. In the real world, attackers would use these details either to commit fraud or to launch further attacks on the target system

Lab Objectives

- **Sniff credentials using the Social-Engineer Toolkit (SET)**

Overview of Social Engineering Techniques

There are three types of social engineering attacks: human-, computer-, and mobile-based.

- Human-based social engineering uses interaction to gather sensitive information, employing techniques such as impersonation, vishing, and eavesdropping
- Computer-based social engineering uses computers to extract sensitive information, employing techniques such as phishing, spamming, and instant messaging
- Mobile-based social engineering uses mobile applications to obtain information, employing techniques such as publishing malicious apps, repackaging legitimate apps, using fake security applications, and SMiShing (SMS Phishing)

Task 1: Sniff Credentials using the Social-Engineer Toolkit (SET)

The Social-Engineer Toolkit (SET) is an open-source Python-driven tool aimed at penetration testing via social engineering. SET is particularly useful to attackers, because it is freely available and can be used to carry out a range of attacks. For example, it allows attackers to draft email messages, attach malicious files, and send them to a large number of people using spear phishing. Moreover, SET's

multi-attack method allows Java applets, the Metasploit browser, and Credential Harvester/Tabnabbing to be used simultaneously. SET categorizes attacks according to the attack vector used such as email, web, and USB.

Although many kinds of attacks can be carried out using SET, it is also a must-have tool for penetration testers to check for vulnerabilities. For this reason, SET is the standard for social engineering penetration tests, and is strongly supported within the security community.

As an ethical hacker, penetration tester, or security administrator, you should be familiar with SET and be able to use it to perform various tests for network vulnerabilities.

Here, we will sniff user credentials using the SET.

1. Click on Parrot Security to switch to the Parrot Security machine. Login using attacker/toor.

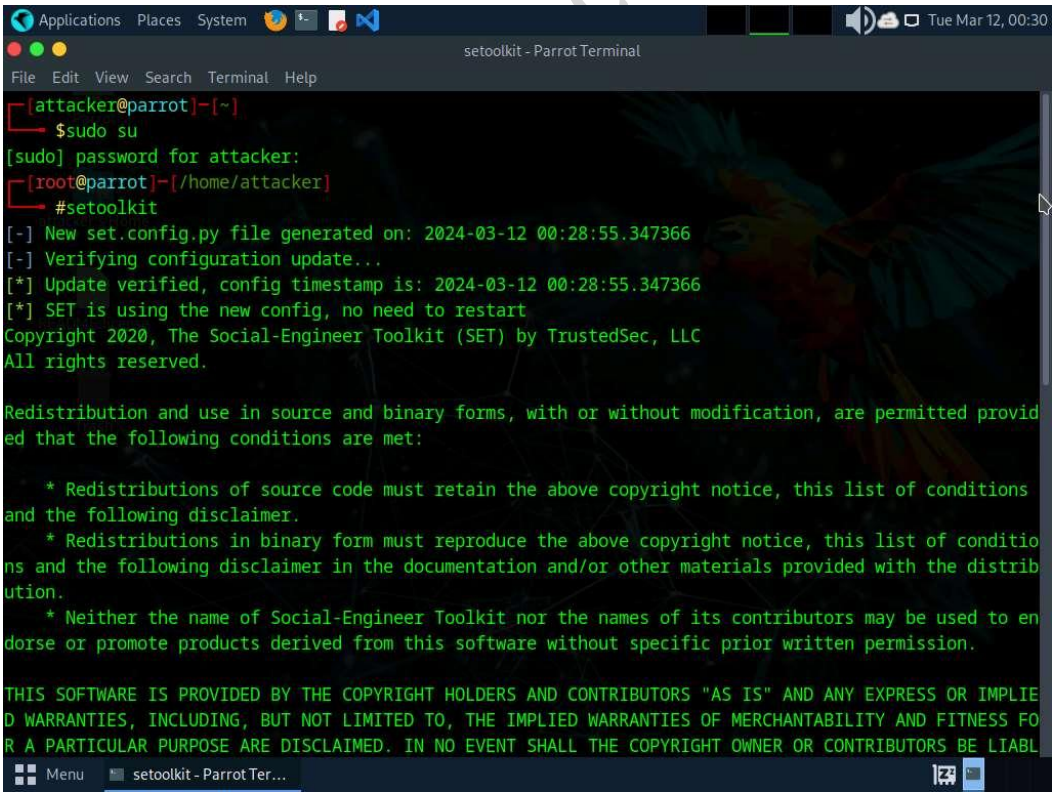
If a Question pop-up window appears asking you to update the machine, click No to close the window.

2. Open a Terminal window and execute sudo su to run the programs as a root user (When prompted, enter the password toor).

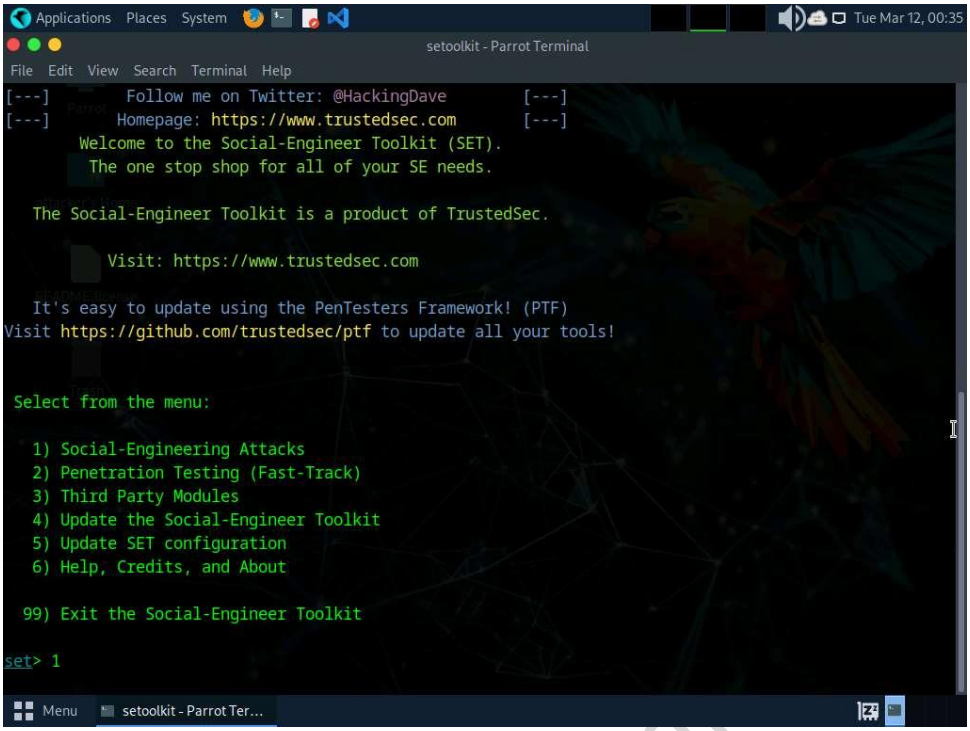
The password that you type will not be visible.

3. Run setoolkit to launch Social-Engineer Toolkit.

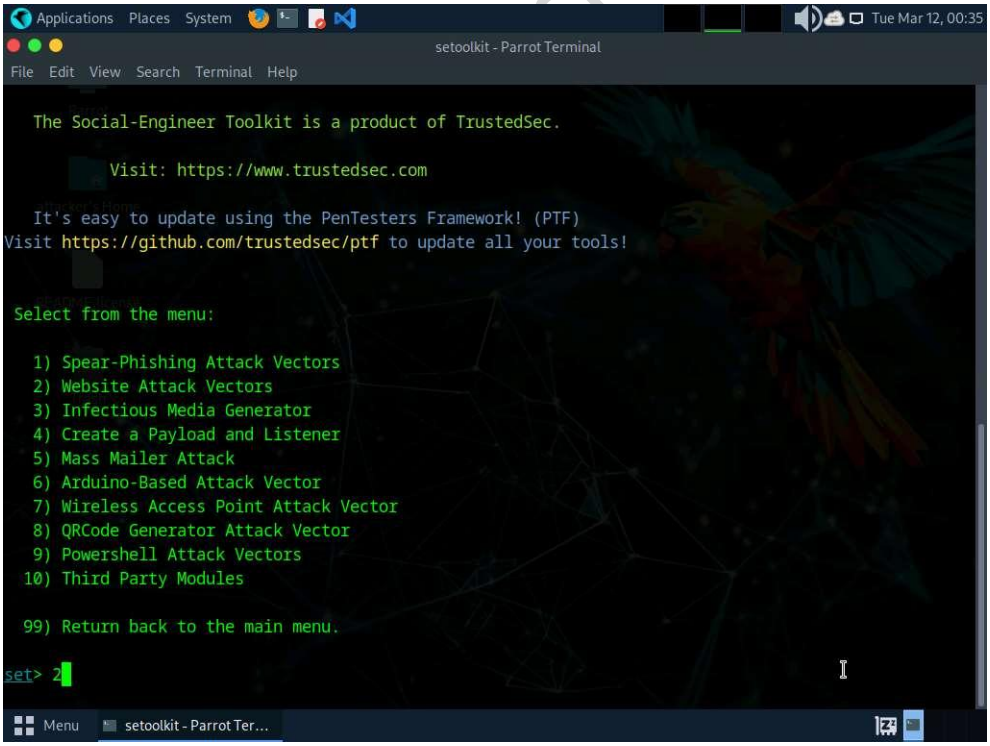
If a Do you agree to the terms of service [y/n] question appears, enter y and press Enter.



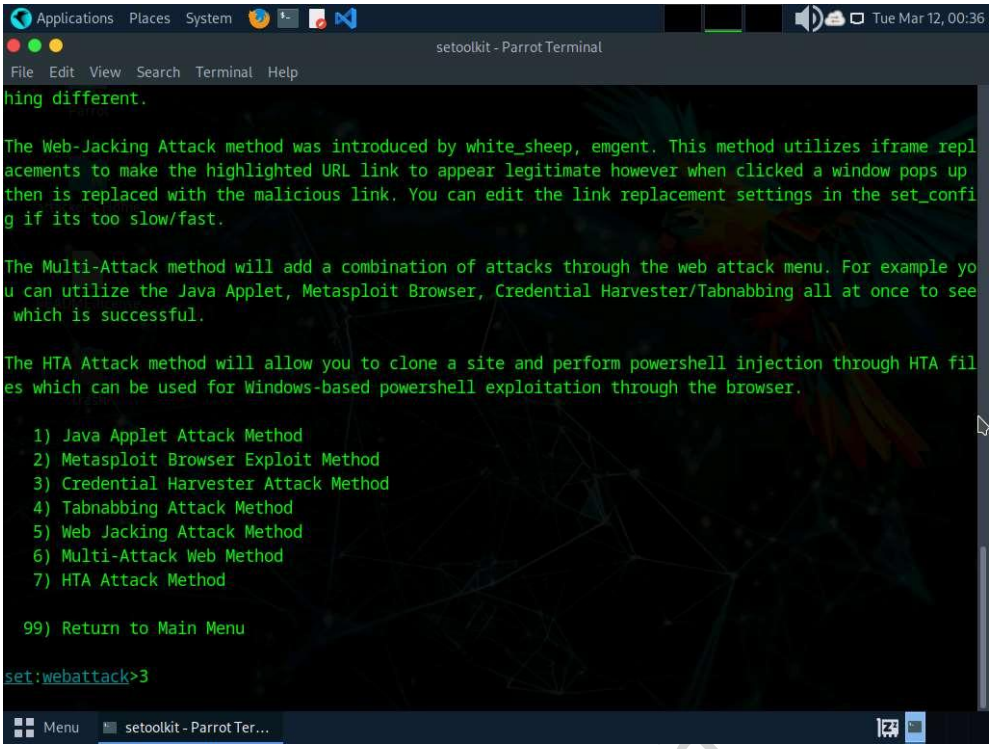
4. The SET menu appears, as shown in the screenshot. Type 1 and press Enter to choose Social-Engineering Attacks.



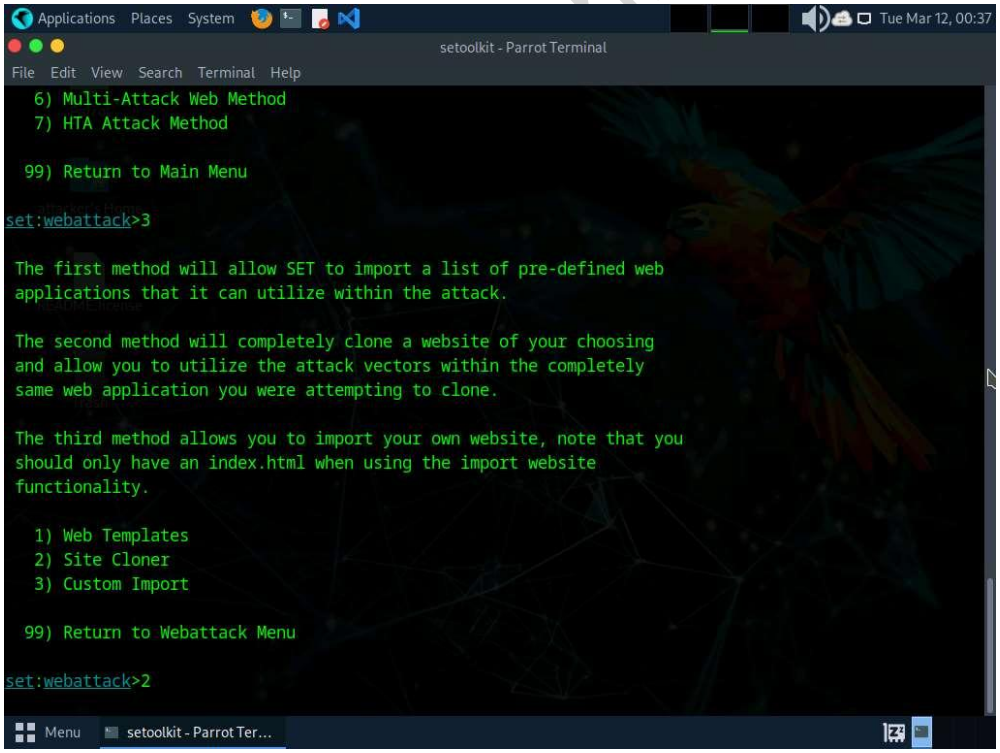
5. A list of options for Social-Engineering Attacks appears; type 2 and press Enter to choose Website Attack Vectors**.**



6. A list of options in Website Attack Vectors appears; type 3 and press Enter to choose Credential Harvester Attack Method.



7. Type 2 and press Enter to choose Site Cloner from the menu.

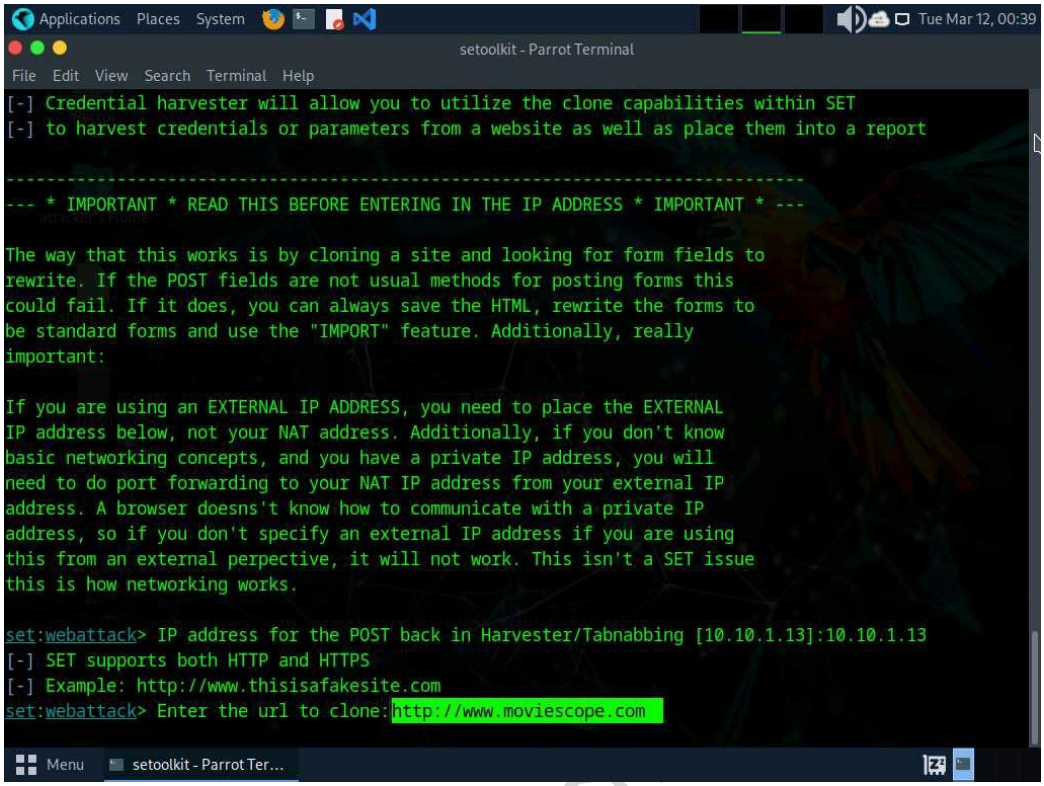


8. Type the IP address of the local machine (10.10.1.13) in the prompt for “IP address for the POST back in Harvester/Tabnabbing” and press Enter.

In this case, we are targeting the Parrot Security machine (IP address: 10.10.1.13).

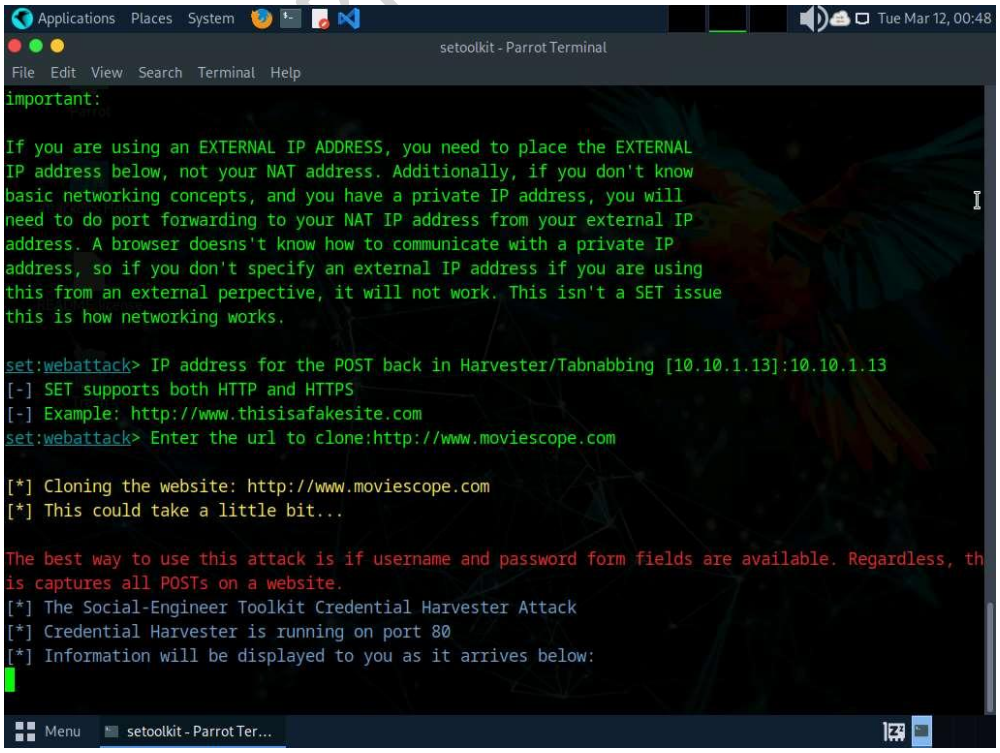
9. Now, you will be prompted for the URL to be cloned; type the desired URL in “Enter the url to clone” and press Enter. In this task, we will clone the URL http://www.moviescope.com.

You can clone any URL of your choice.



10. If a message appears that reads Press {return} if you understand what we're saying here, press Enter.

11. After cloning is completed, a highlighted message appears. The credential harvester initiates, as shown in the screenshot.



12. Having successfully cloned a website, you must now send the IP address of your Parrot Security machine to a victim and try to trick him/her into clicking on the link.

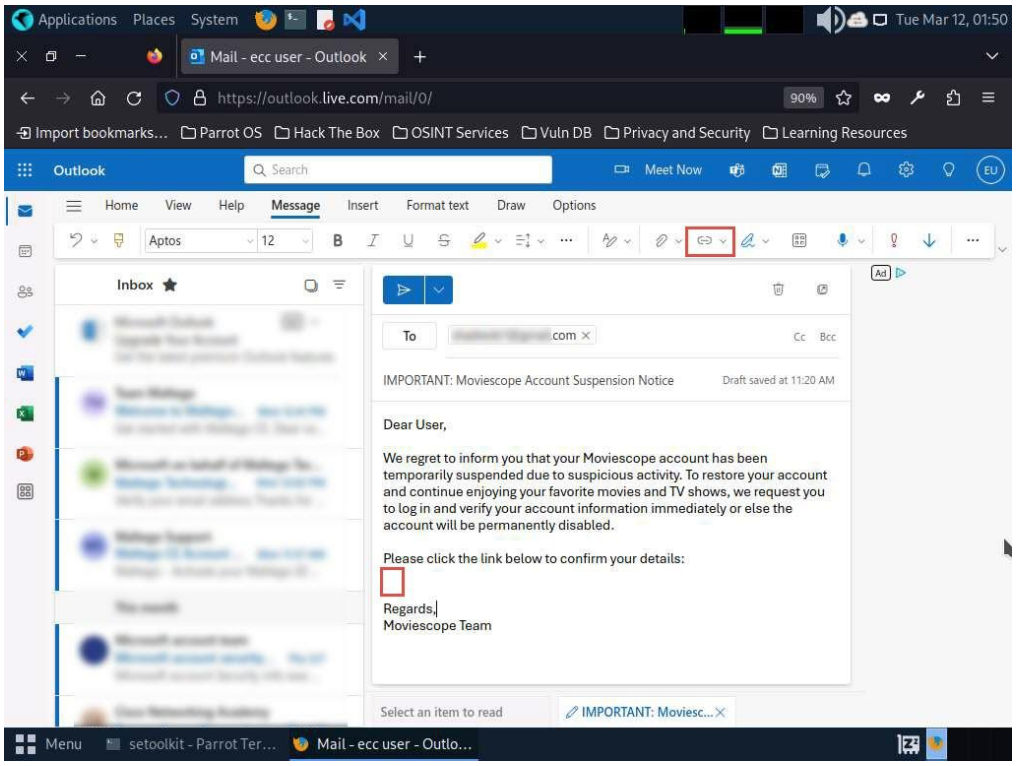
13. Click Firefox icon from the top-section of the Desktop to launch a web browser window and open your email account (in this example, we are using Mozilla Firefox and Outlook, respectively). Log in, and compose an email.

You can log in to any email account of your choice.

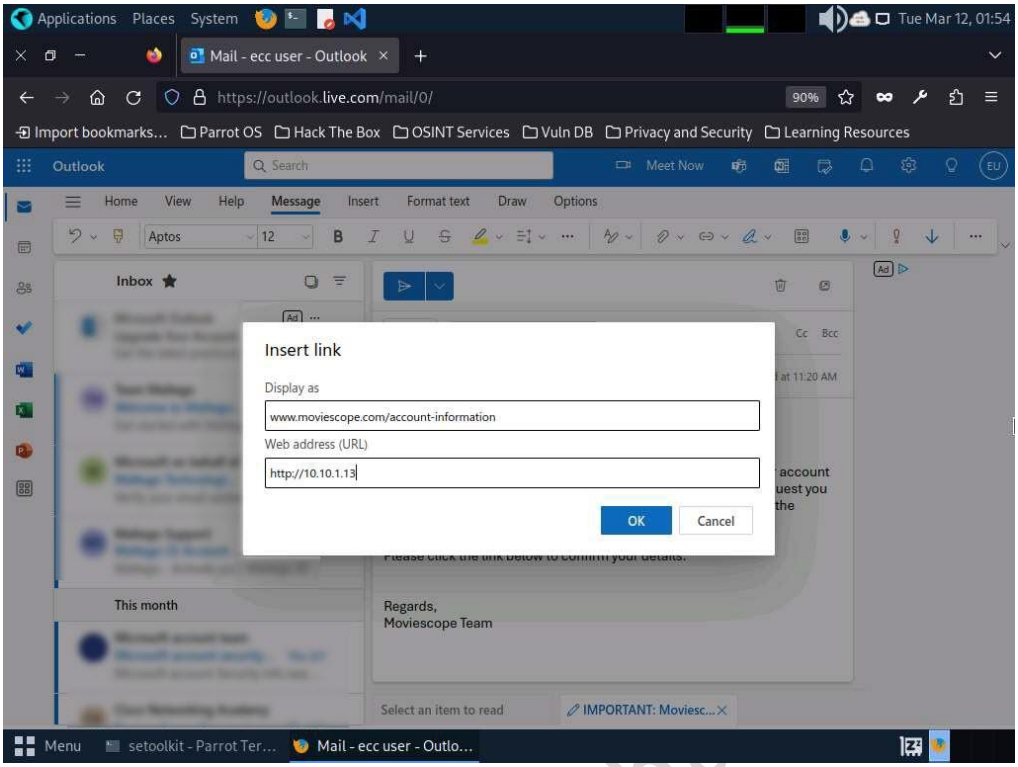
14. After logging into your email account, click the New Mail button in the left pane and compose a fake but enticing email to lure a user into opening the email and clicking on a malicious link.

A good way to conceal a malicious link in a message is to insert text that looks like a legitimate MovieScope URL (in this case), but that actually links to your malicious cloned MovieScope page.

15. Position the cursor just above Regards to place the fake URL, then click the Insert link icon.

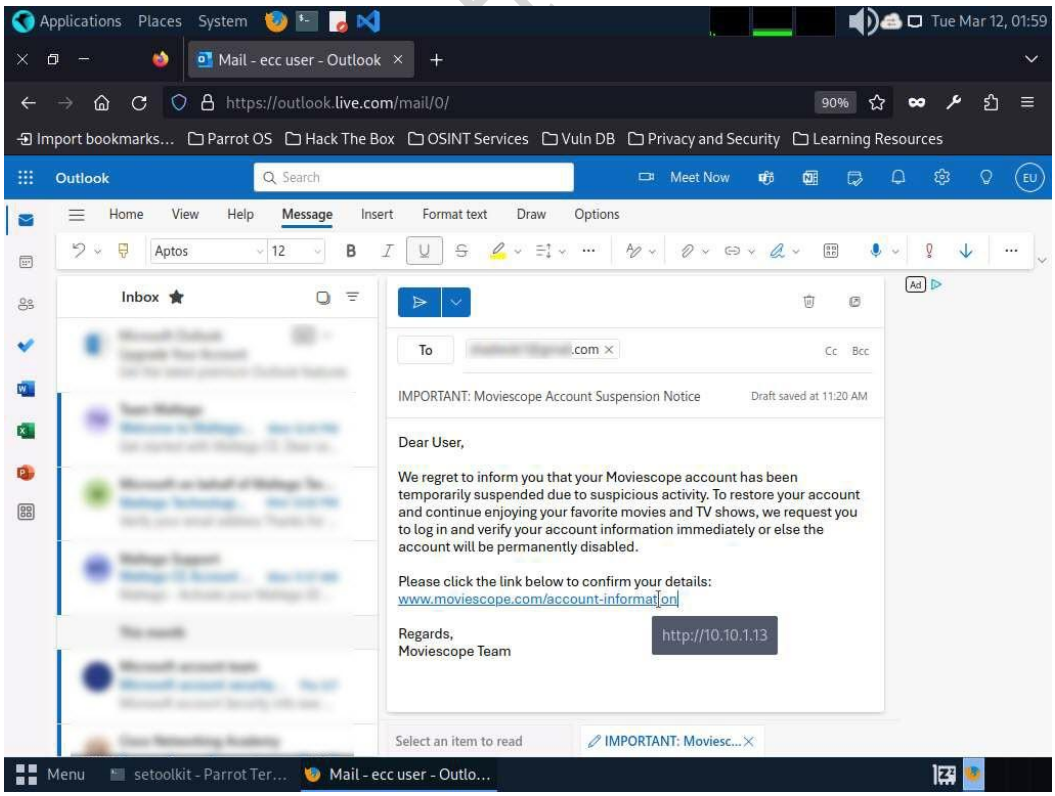


16. In the Insert link window, first type the fake URL in the Display as field. Then, type the actual address of your cloned site in the Web address (URL) field and click OK. In this case, the text that will be displayed in the message is www.moviescope.com/account-information and the actual address of our cloned MovieScope site is http://10.10.1.13.



17. The fake URL should appear in the message body.

18. Verify that the fake URL is linked to the correct cloned site: in Outlook, hover over the link; the actual URL will be displayed. Once verified, send the email to the intended user.



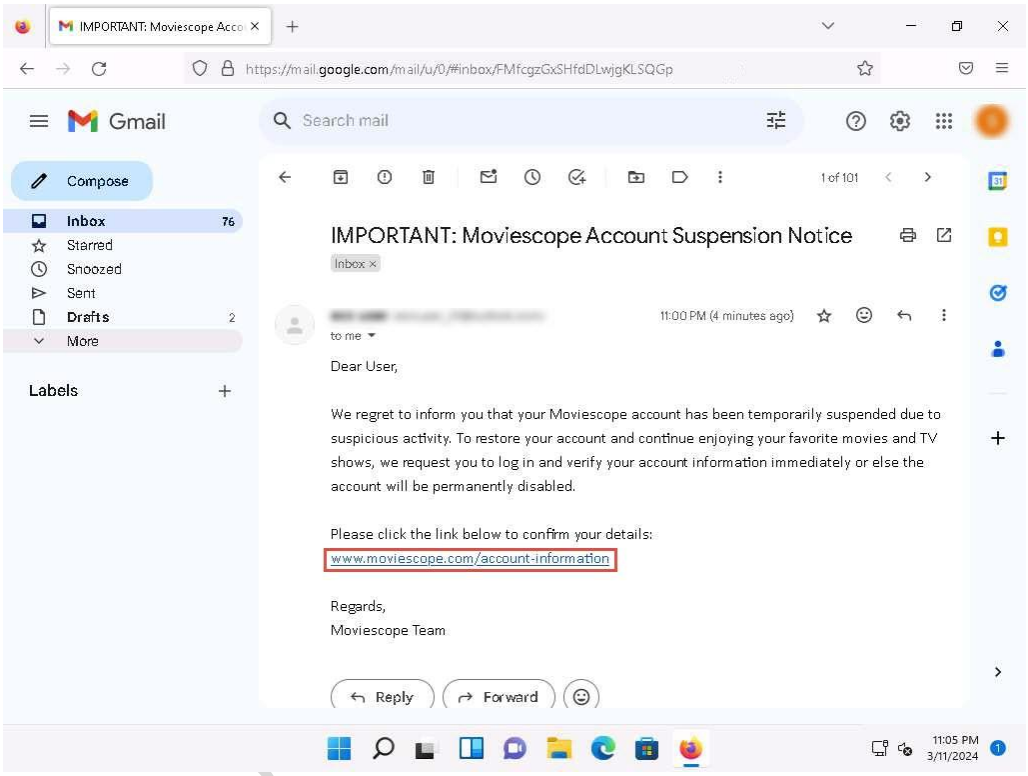
19. Click Windows 11 to switch to the Windows 11 machine and login using Admin/Pa$$w0rd.

Alternatively, you can also click Pa$$w0rd under Windows 11 machine thumbnail in the Resources pane.

If Welcome to Windows wizard appears, click Continue and in Sign in with Microsoft wizard, click Cancel.

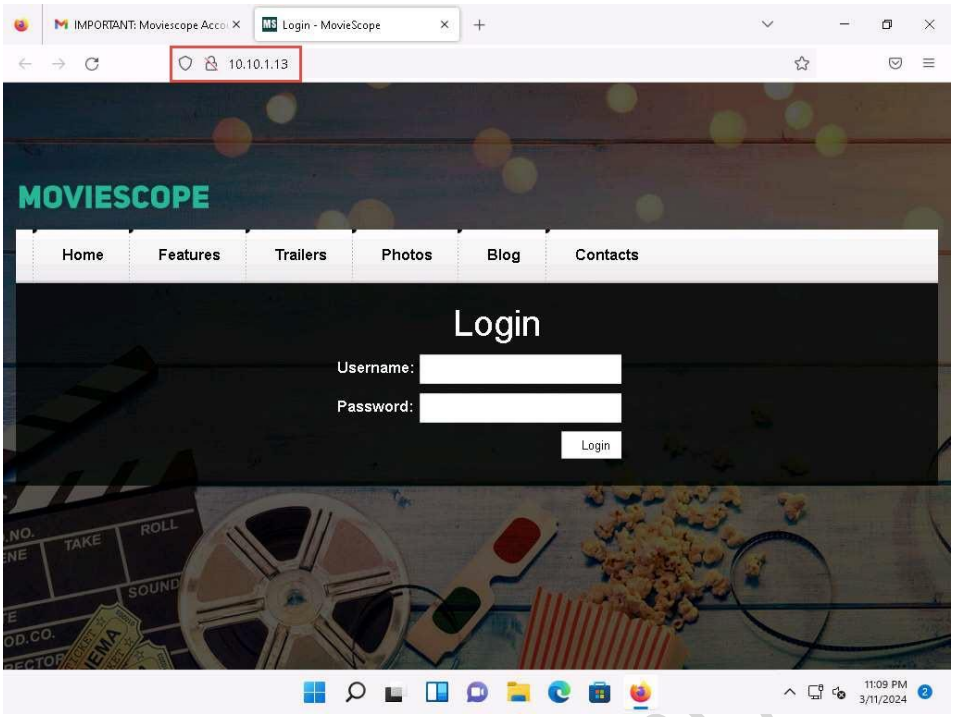
Networks screen appears, click Yes to allow your PC to be discoverable by other PCs and devices on the network.

20. Open any web browser (here, we are using Mozilla Firefox), sign in to the email account to which you sent the phishing mail as an attacker. Open the email you sent previously and click to open the malicious link.

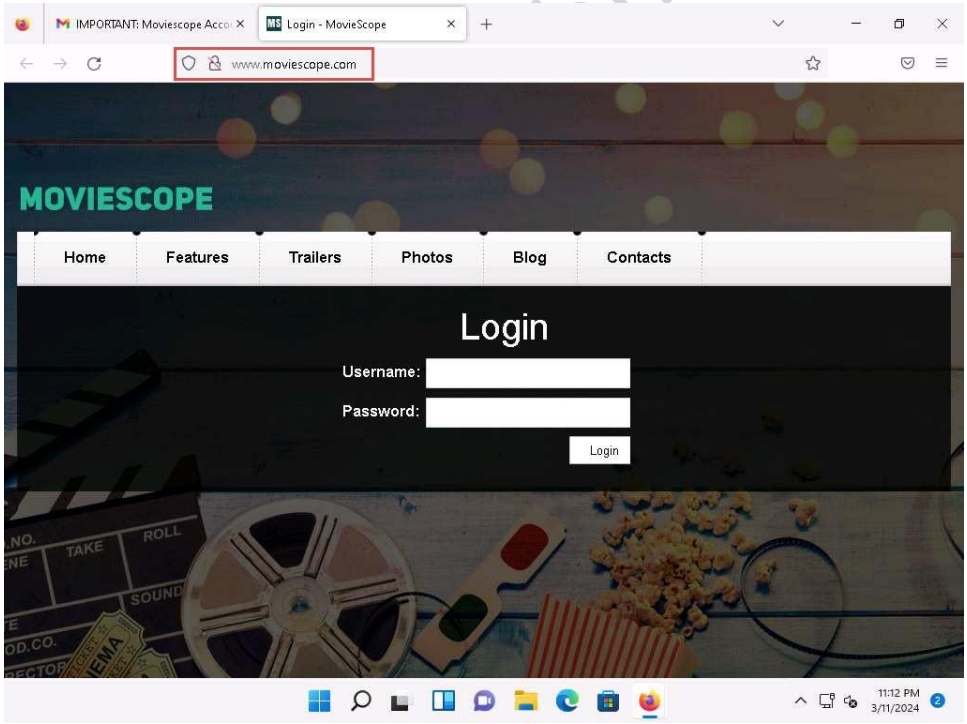


21. When the victim (you in this case) clicks the URL, a new tab opens up, and he/she will be presented with a replica of www.moviescope.com.

22. The victim will be prompted to enter his/her username and password into the form fields, which appear as they do on the genuine website. When the victim enters the Username and Password and clicks Login, he/she will be redirected to the legitimate MovieScope login page. Note the different URLs in the browser address bar for the cloned and real sites.



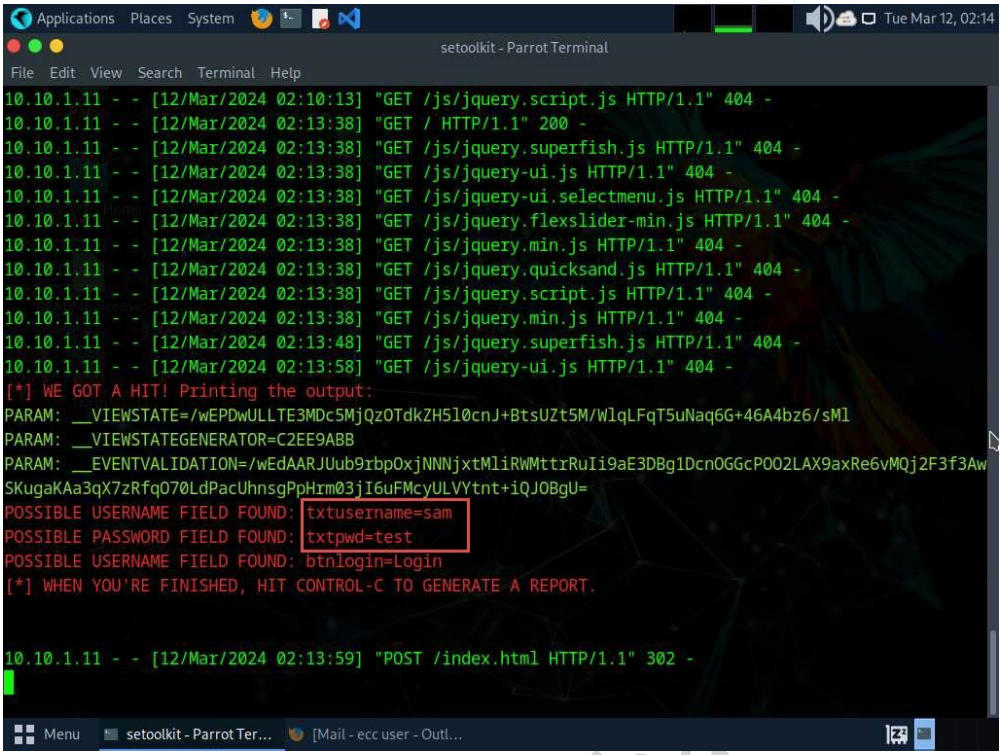
If save credentials notification appears, click Don't Save.



23. Now, click Parrot Security to switch back to the Parrot Security machine and switch to the terminal window.

24. As soon as the victim types in his/her Username and Password and clicks Login, SET extracts the typed credentials. These can now be used by the attacker to gain unauthorized access to the victim's account.

25. Scroll down to find Username and Password displayed in plain text, as shown in the screenshot.



26. This concludes the demonstration of phishing user credentials using the SET.
27. Close all open windows and document all the acquired information.

Lab 2: Detect a Phishing Attack

Lab Scenario

With the tremendous increase in the use of online banking, online shares trading, and e-commerce, there has been a corresponding growth in incidents of phishing being used to carry out financial fraud.

As a professional ethical hacker or penetration tester, you must be aware of any phishing attacks that occur on the network and implement anti-phishing measures. Be warned, however, that even if you employ the most sophisticated and expensive technological solutions, these can all be bypassed and compromised if employees fall for simple social engineering scams.

The success of phishing scams is often due to users' lack of knowledge, being visually deceived, and not paying attention to security indicators. It is therefore imperative that all people in your organization are properly trained to recognize and respond to phishing attacks. It is your responsibility to educate employees about best practices for protecting systems and information.

In this lab, you will learn how to detect phishing attempts using various phishing detection tools.

Lab Objectives

- **Detect phishing using Netcraft**

Overview of Detecting Phishing Attempts

Phishing attacks are difficult to guard against, as the victim might not be aware that he or she has been deceived. They are very much like the other kinds of attacks used to extract a company's valuable data. To guard against phishing attacks, a company needs to evaluate the risk of different kinds of attacks, estimate possible losses and spread awareness among its employees.

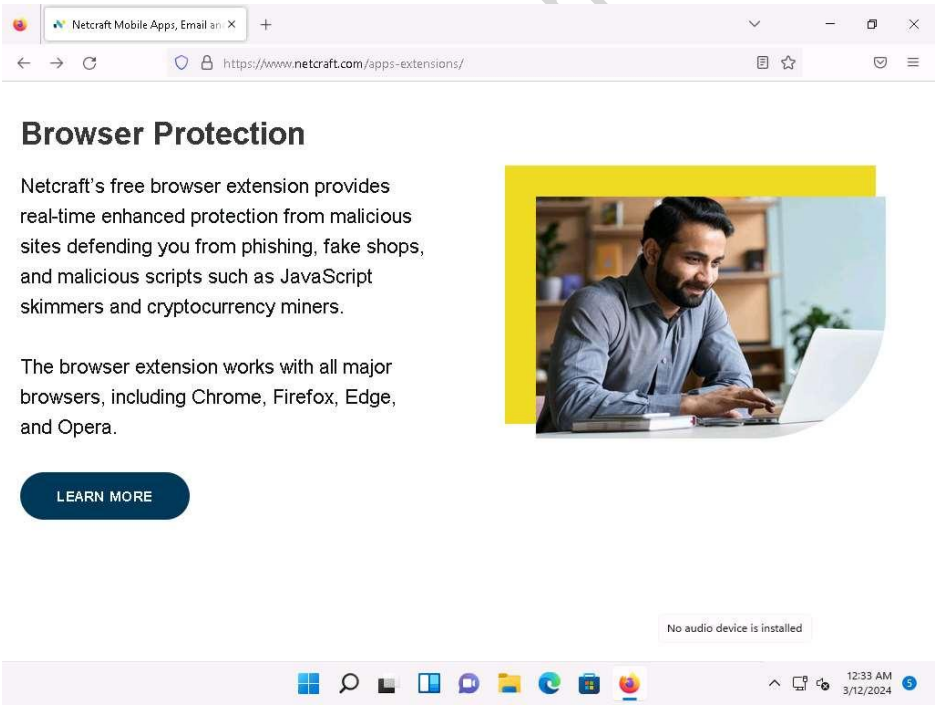
Task 1: Detect Phishing using Netcraft

The Netcraft anti-phishing community is a giant neighborhood watch scheme, empowering the most alert and most expert members to defend everyone within the community against phishing attacks. The Netcraft Extension provides updated and extensive information about sites that users visit regularly; it also blocks dangerous sites. This information helps users to make an informed choice about the integrity of those sites.

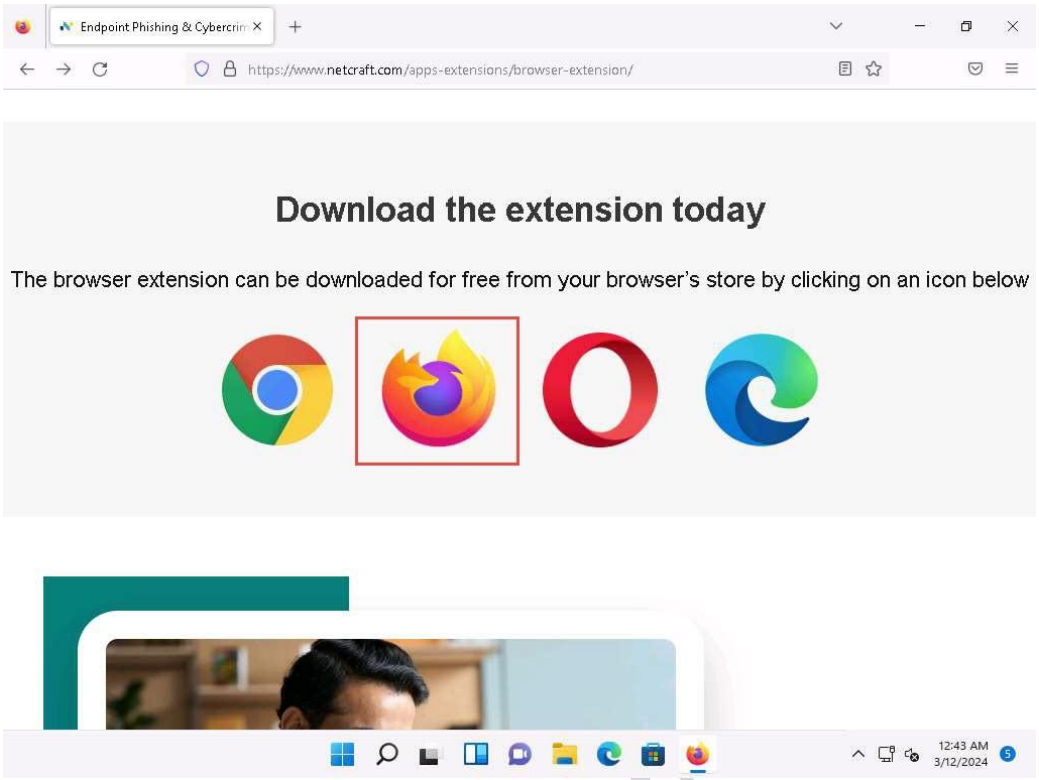
Here, we will use the Netcraft Extension to detect phishing sites.

1. Click on the Windows 11 to switch to the Windows 11 machine.
2. First, it is necessary to install the Netcraft extension. Launch any web browser, and go to https://www.netcraft.com/apps-extensions (here, we are using Mozilla Firefox).
3. The Netcraft website appears, as shown in the screenshot. Scroll-down and click LEARN MORE button under Browser Protection section on the webpage.

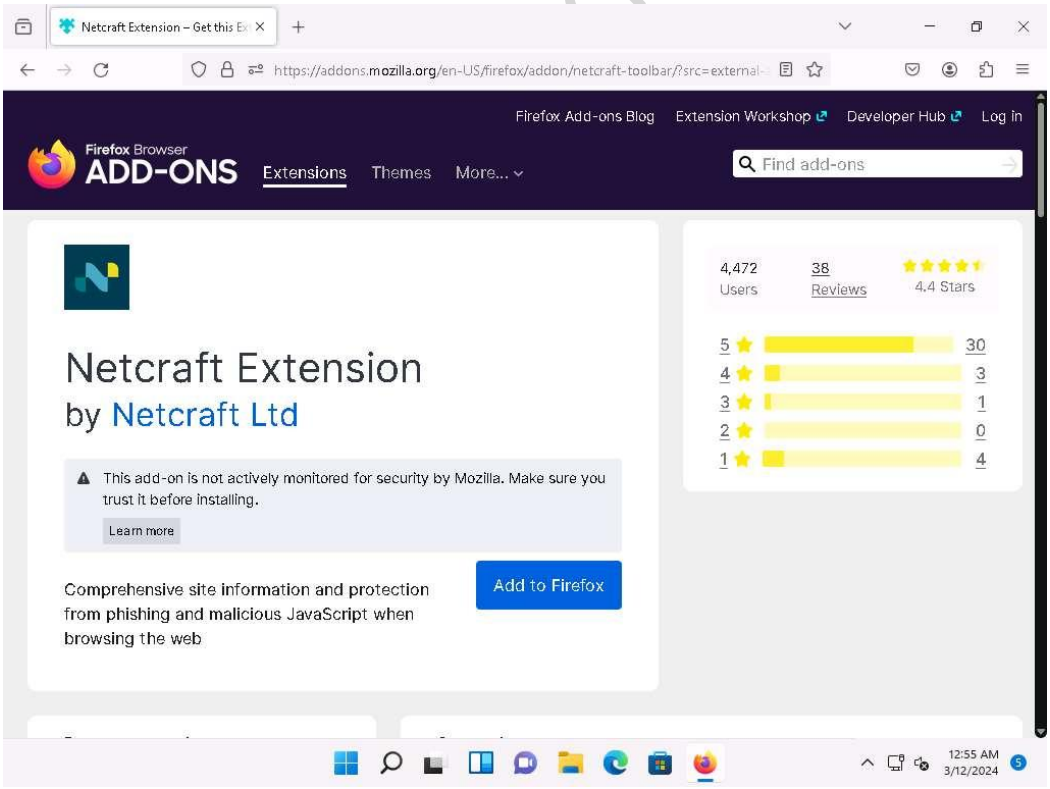
If the cookie pop-up appears, click ACCEPT to continue.



4. Scroll-down to Download the extension today and click on Firefox logo, as shown in the screenshot.

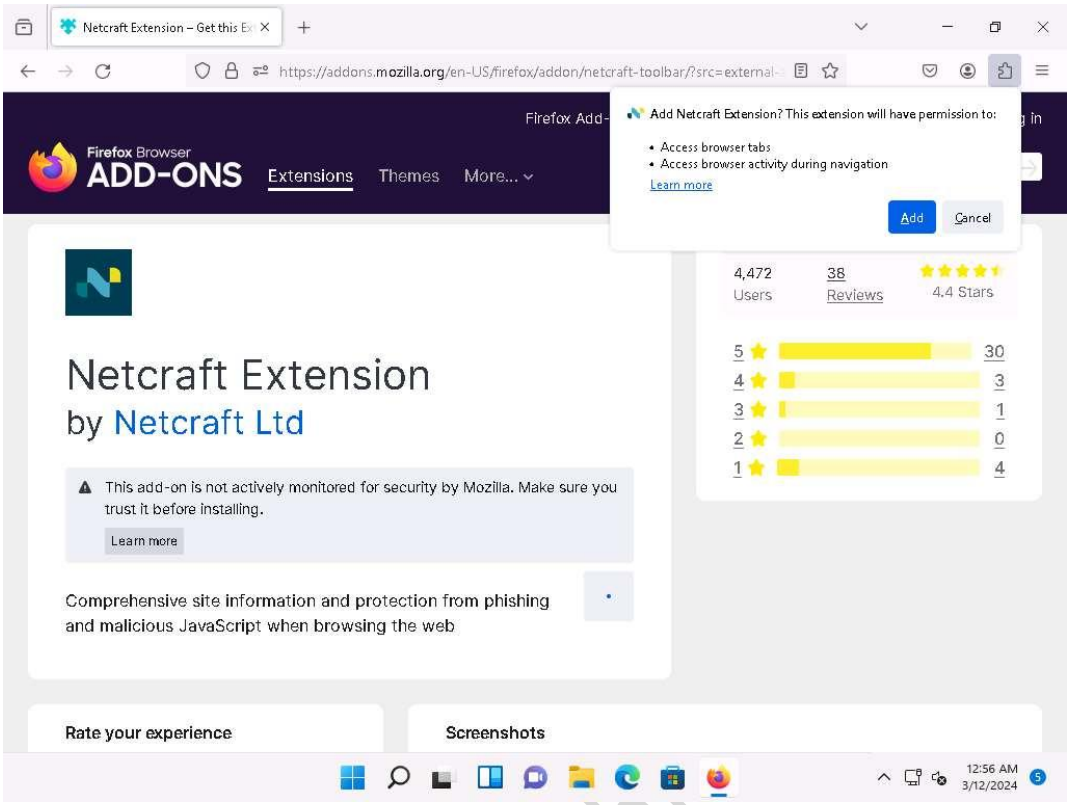


5. On the next page, click the Add to Firefox button to install the Netcraft extension.



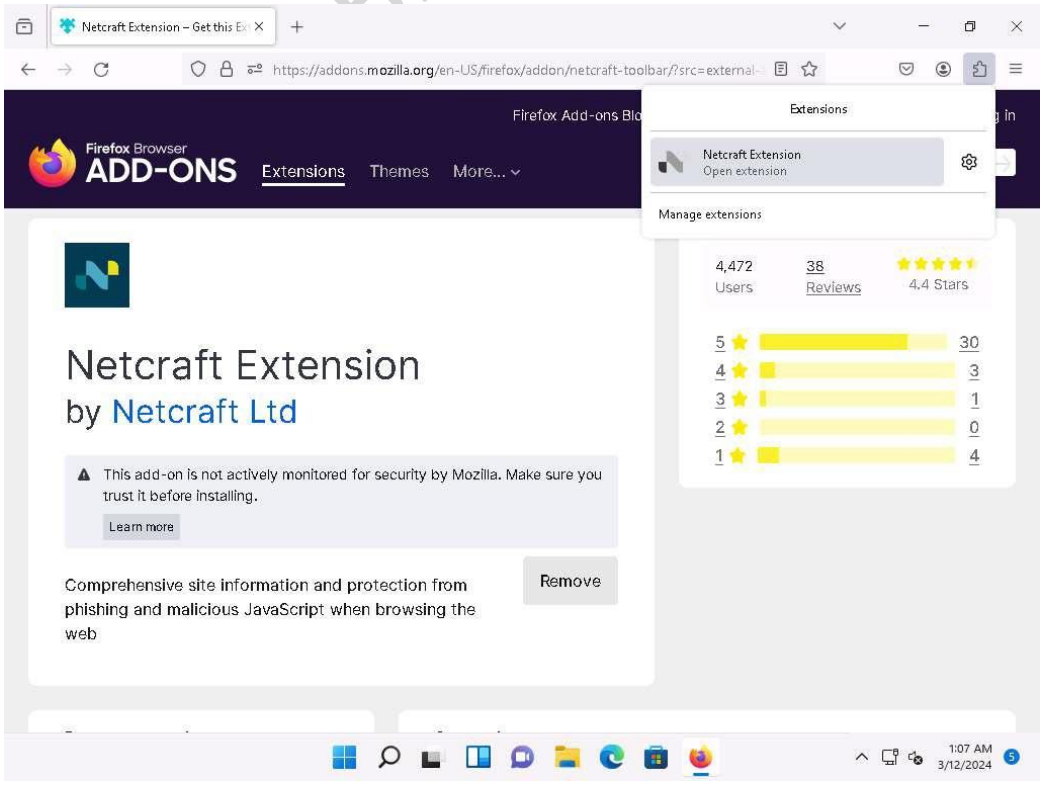
6. When the Add Netcraft Extension? notification pop-up appears on top of the window, click Add. If Access your data for all websites, pop-up appears, click Allow.

If the Netcraft Extension has been added to Firefox pop-up appears in the top section of the browser, click Okay.



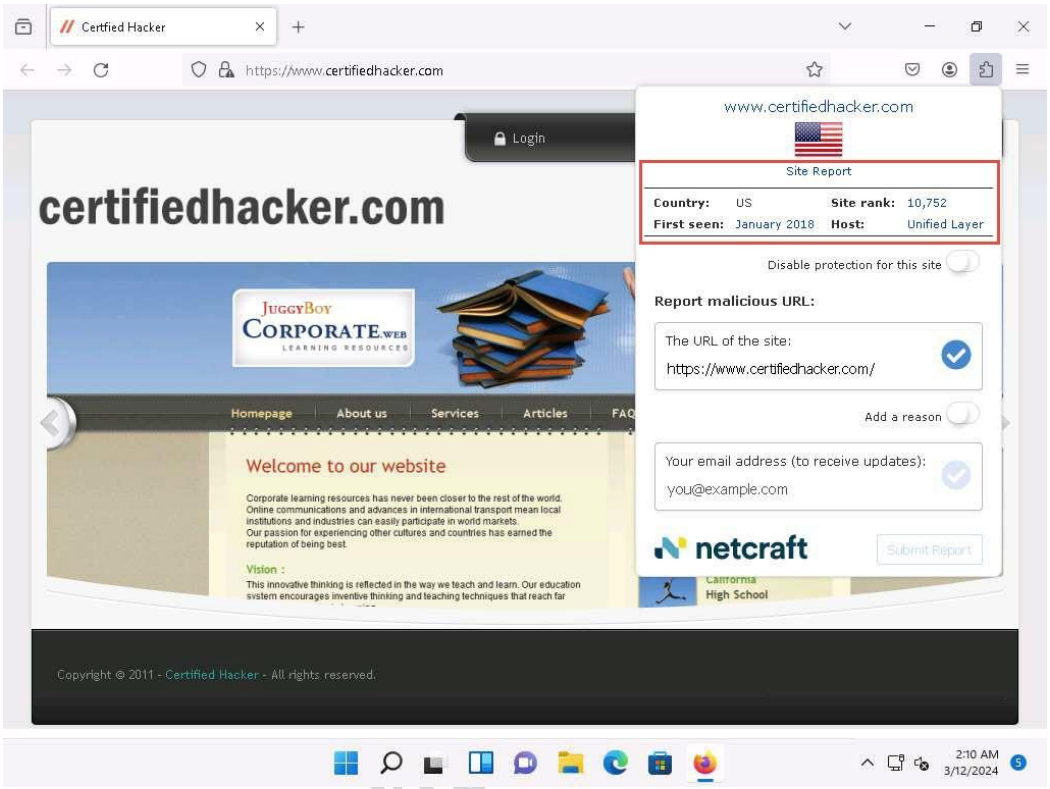
7. If One step left to protect yourself webpage appears, click on Grant Permission to provide permissions to the extension.
8. Click on Extensions button the top-right corner of the browser to view the Netcraft Extension icon, as shown in the screenshot.

Screenshots may differ with newer versions of Firefox.



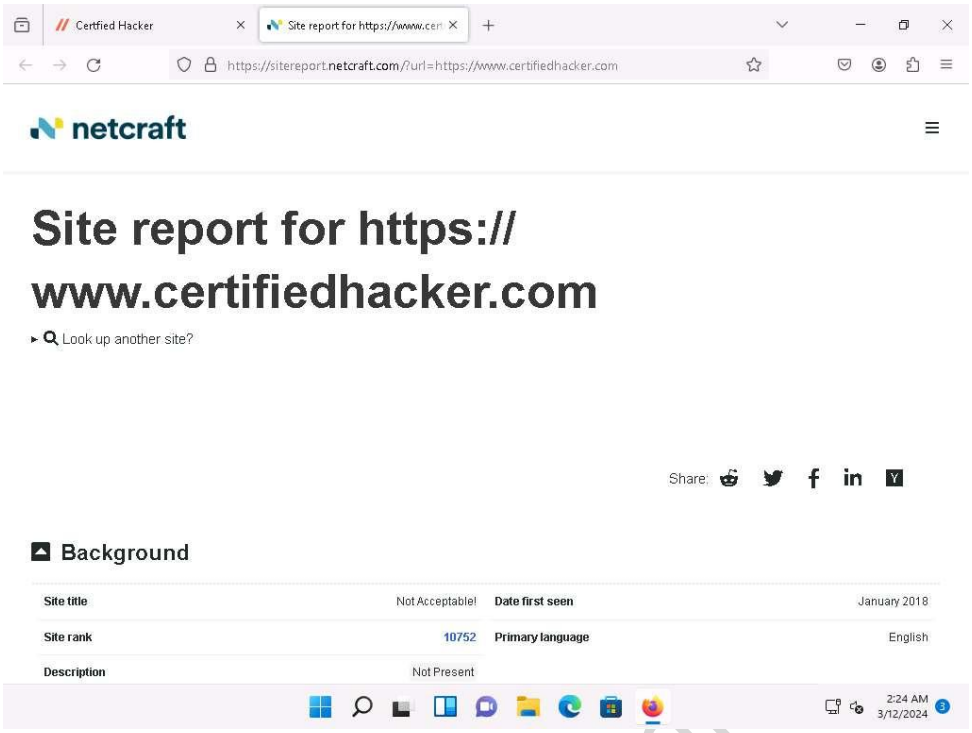
9. Now, navigate to https://www.certifiedhacker.com and click the Extension icon in the top-right corner of the browser and open Netcraft extension. A dialog box appears, displaying a summary of information such as Site Report, Country, Site rank, First seen, and Host about the searched website.

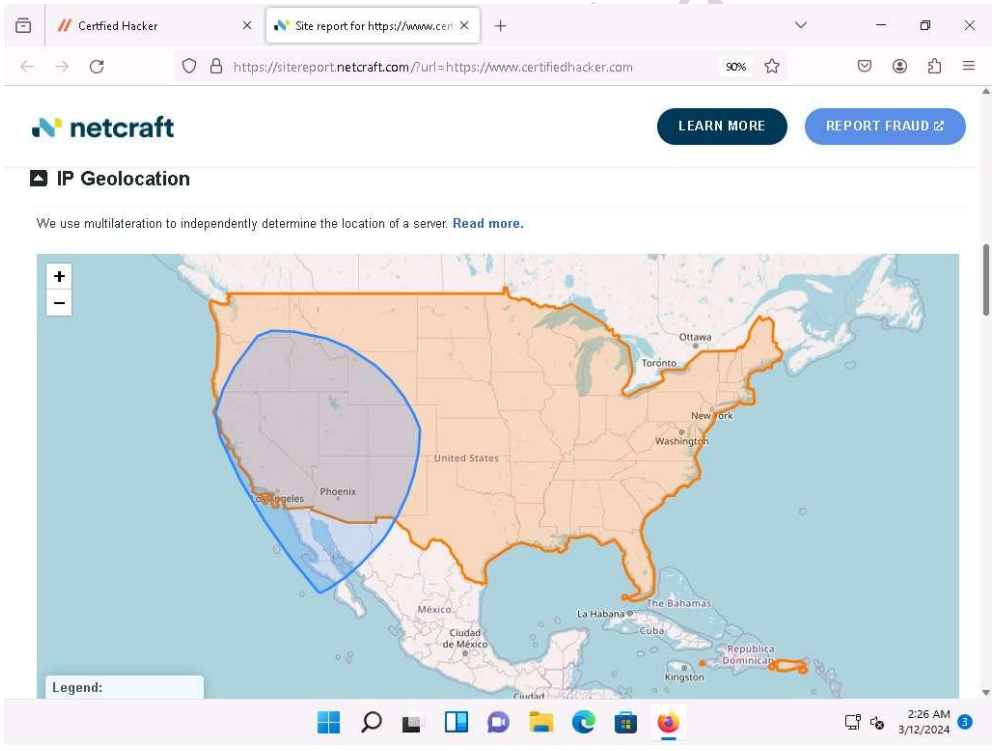
10. Now, click the Site Report link from the dialog-box to view a report of the site.

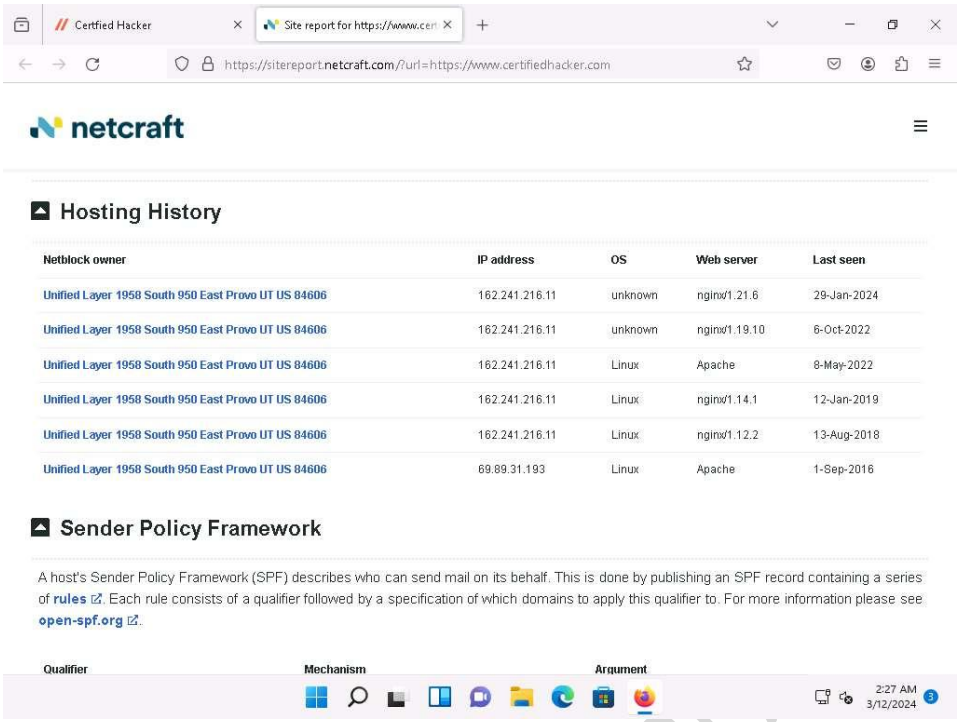


11. The Site report for https://www.certifiedhacker.com page appears, displaying detailed information about the site such as Background, Network, IP Geolocation, and SSL/TLS.

If a Site information not available pop-up appears, ignore it.


Certfied Hacker
Site report for https://www.cert
https://sitereport.netcraft.com/?url=https://www.certifiedhacker.com
netcraft
Site report for https://www.certifiedhacker.com
Look up another site?
Share:
Background
Site title
Not Acceptable!
Date first seen
January 2018
Site rank
10752
Primary language
English
Description
Not Present
2:24 AM
3/12/2024


Certfied Hacker
Site report for https://www.cert
https://sitereport.netcraft.com/?url=https://www.certifiedhacker.com
90%
netcraft
LEARN MORE
REPORT FRAUD
IP Geolocation
We use multilateration to independently determine the location of a server. Read more.
Ottawa
Toronto
New York
Washington
United States
Phoenix
México
Ciudad de México
La Habana
The Bahamas
Cuba
República Dominicana
Kingston
Legend:
2:26 AM
3/12/2024



12. If you attempt to visit a website that has been identified as a phishing site by the Netcraft Extension, you will see a pop-up alerting you to Suspected Phishing.
13. Now, in the browser window open a new tab, and navigate to https://end-authenticat.tftpd.net/.

Here, for demonstration purposes, we are using https://end-authenticat.tftpd.net/ phishing website to trigger Netcraft Extension to obtain desired results. You can use the same website or any other website to perform this task.

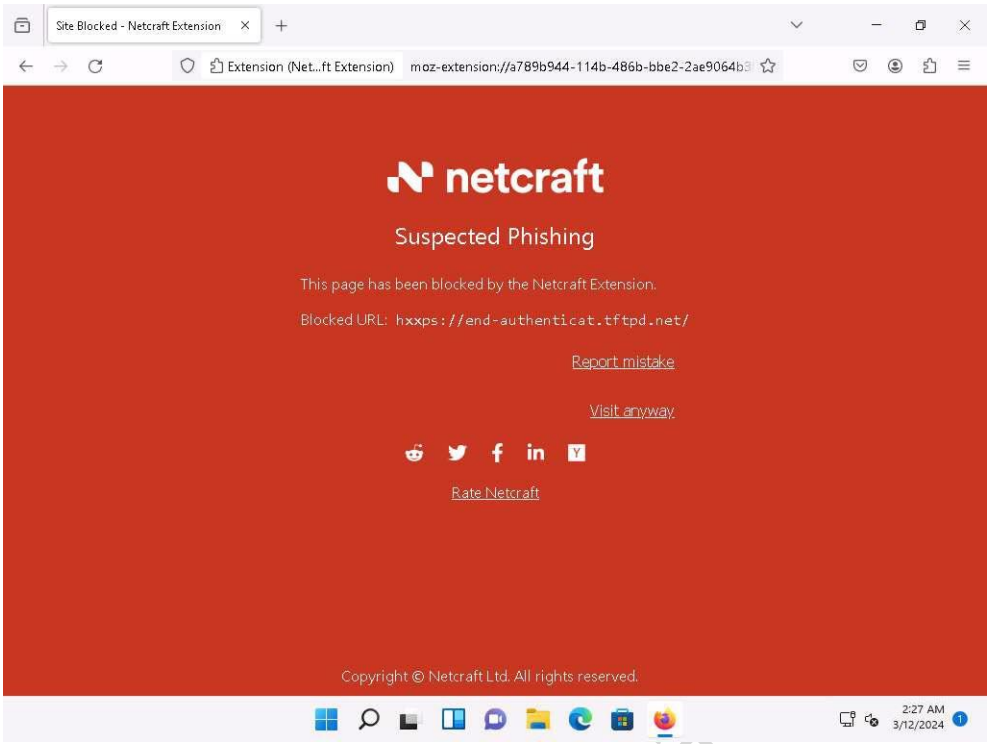
14. The Netcraft Extension automatically blocks phishing sites. However, if you trust the site, click Visit anyway to browse it; otherwise, click Report mistake to report an incorrectly blocked URL.

If you are getting an error in opening the website (https://end-authenticat.tftpd.net/), try to open other phishing website.

OR

You will get a Suspected Phishing page in the Firefox browser.

If you get Secure Connection Failed webpage, then use some other phishing website to get the result, as shown in the screenshot.



15. This concludes the demonstration of detecting phishing using Netcraft Extension.
16. Close all open windows and document all the acquired information.