

PHISHING ATTACK SIMULATION AND TRAINING

The background features several bright, curved light trails in shades of blue and green, resembling fiber optic cables or data paths. A large, white rectangular frame is superimposed on the right side of the image, partially overlapping the light trails. The text is positioned on the left side, within the frame's area.

TEAM MEMBERS

Mostafa Helal Atia Mohamed

Mohamed Yasser Rabie

Mostafa Ahmed Abbas

Nofir Nasr Atta Qandil

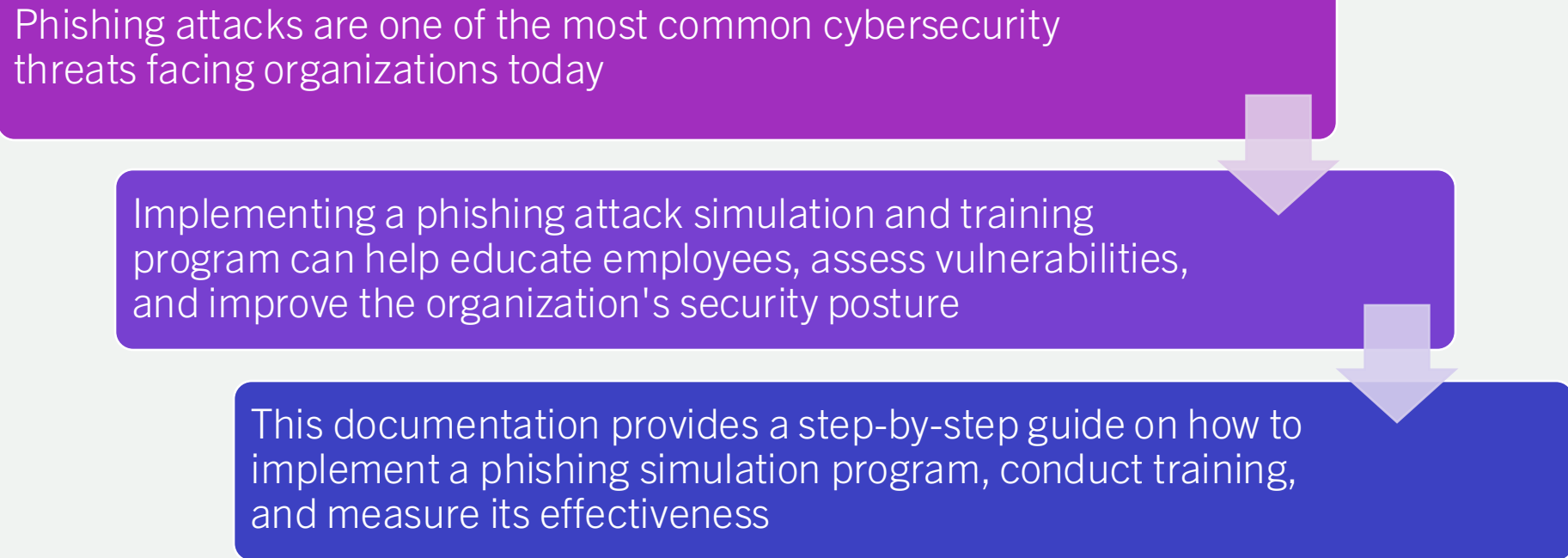
Mahmoud Walid Rajab Askar

PHISHING ATTACK SIMULATION AND TRAINING

The background of the slide is a dark, moody image. In the foreground, a metallic combination lock is visible, with its dial showing numbers. Below the lock, a circuit board with various electronic components is partially visible. The overall aesthetic is technical and security-oriented.

1. INTRODUCTION

Phishing attacks are one of the most common cybersecurity threats facing organizations today



```
graph TD; A[Phishing attacks are one of the most common cybersecurity threats facing organizations today] --> B[Implementing a phishing attack simulation and training program can help educate employees, assess vulnerabilities, and improve the organization's security posture]; B --> C[This documentation provides a step-by-step guide on how to implement a phishing simulation program, conduct training, and measure its effectiveness];
```

Implementing a phishing attack simulation and training program can help educate employees, assess vulnerabilities, and improve the organization's security posture

This documentation provides a step-by-step guide on how to implement a phishing simulation program, conduct training, and measure its effectiveness

1.1 PURPOSE

The purpose of this document is to outline the procedures and best practices for conducting a phishing attack simulation and training within the organization

This simulation is intended to improve employee awareness and prepare the incident response team to handle phishing attacks effectively

1.2 GOALS AND OBJECTIVES



To test and evaluate the organization's incident response capabilities against phishing threats



To identify gaps in security awareness among employees



To enhance the organization's ability to detect and respond to phishing attacks



To strengthen the overall security posture by integrating the findings into the security awareness program

1.2 SCOPE



Develop phishing email templates



Conduct simulated phishing campaigns



Provide training based on the results



Measure success and generate reports

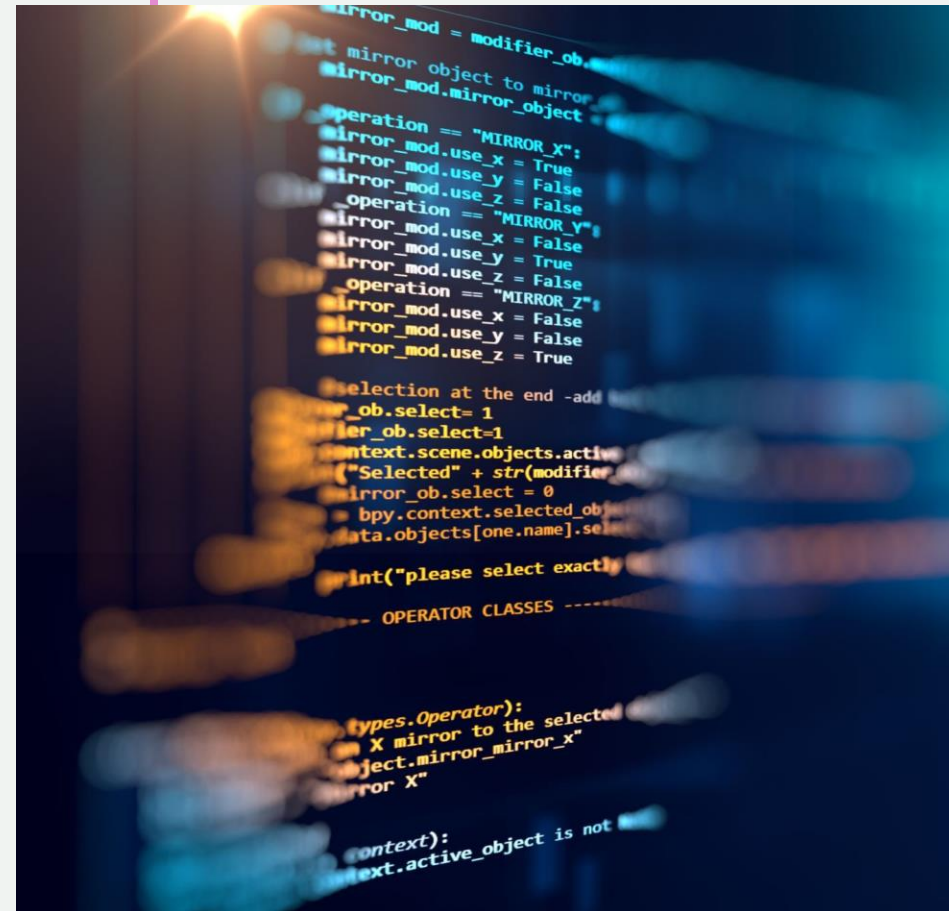
1.2 SCENARIO

Your email address has been leaked and you receive an email from Paypal in German

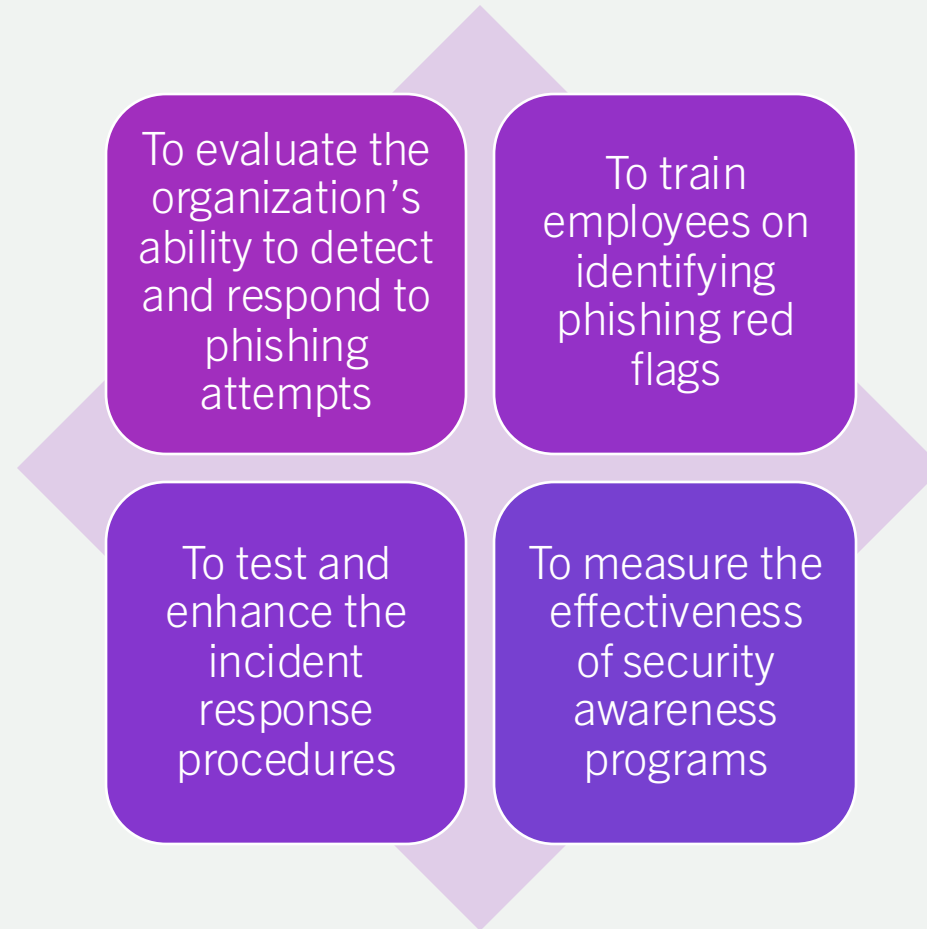


2.1 DEFINITION OF PHISHING ATTACK

- A phishing attack is a form of social engineering in which an attacker sends a fraudulent message to trick individuals into revealing sensitive information or installing malicious software



2.2 GOALS AND OBJECTIVES OF THE SIMULATION



2.3 STAKEHOLDERS

Incident Response Team: Responsible for detecting, analyzing, and responding to the simulated phishing attack

IT Security Team: Manages infrastructure and provides technical support

Training and Awareness Team: Conducts training sessions post-simulation

Employees: Serve as test subjects for the simulation

2.3 TOOLS AND MACHINES USED

KALI LINUX Machine

```
graph TD; A[KALI LINUX Machine] --> B[Window Victim Machine]; B --> C[Software Phishing tool such as: ZPHISHER];
```

Window Victim Machine

Software Phishing tool such as:
ZPHISHER

2.3 TOOLS AND MACHINES USED

- Zphisher
 - is an open-source phishing tool designed for creating and hosting fake web pages that mimic legitimate sites to capture sensitive user credentials
 - It is written in Bash and Python and comes preconfigured with various phishing page templates
 - Features of Zphisher
 - Multiple Phishing Templates: Zphisher includes ready-to-use phishing templates for platforms like social media sites, e-commerce, and financial services
 - No Setup Required: It automatically sets up the server, configures tunneling services, and initiates the phishing page
 - Support for Custom Pages: Users can create their own custom phishing pages
 - Tunneling Options: Supports various tunneling methods (Ngrok, Localhost, Cloudflared, LocalXpose)

Timeline of Events



```
graph TD; A[Timeline of Events] --> B[Preparation Phase]; B --> C[Day 1: Identify target group and create the phishing simulation emails]; C --> D[Day 2: Configure email templates with realistic content mimicking common phishing attacks]; D --> E[Day 2: Set up necessary tracking mechanisms to monitor user interaction];
```

Preparation Phase

Day 1: Identify target group and create the phishing simulation emails

Day 2: Configure email templates with realistic content mimicking common phishing attacks

Day 2: Set up necessary tracking mechanisms to monitor user interaction

TIMELINE OF EVENTS

Execution Phase

- Day 3
 - Launch the phishing simulation and send emails to the selected users
 - Monitor user responses, including clicks on phishing links, data entry attempts, and emails reported

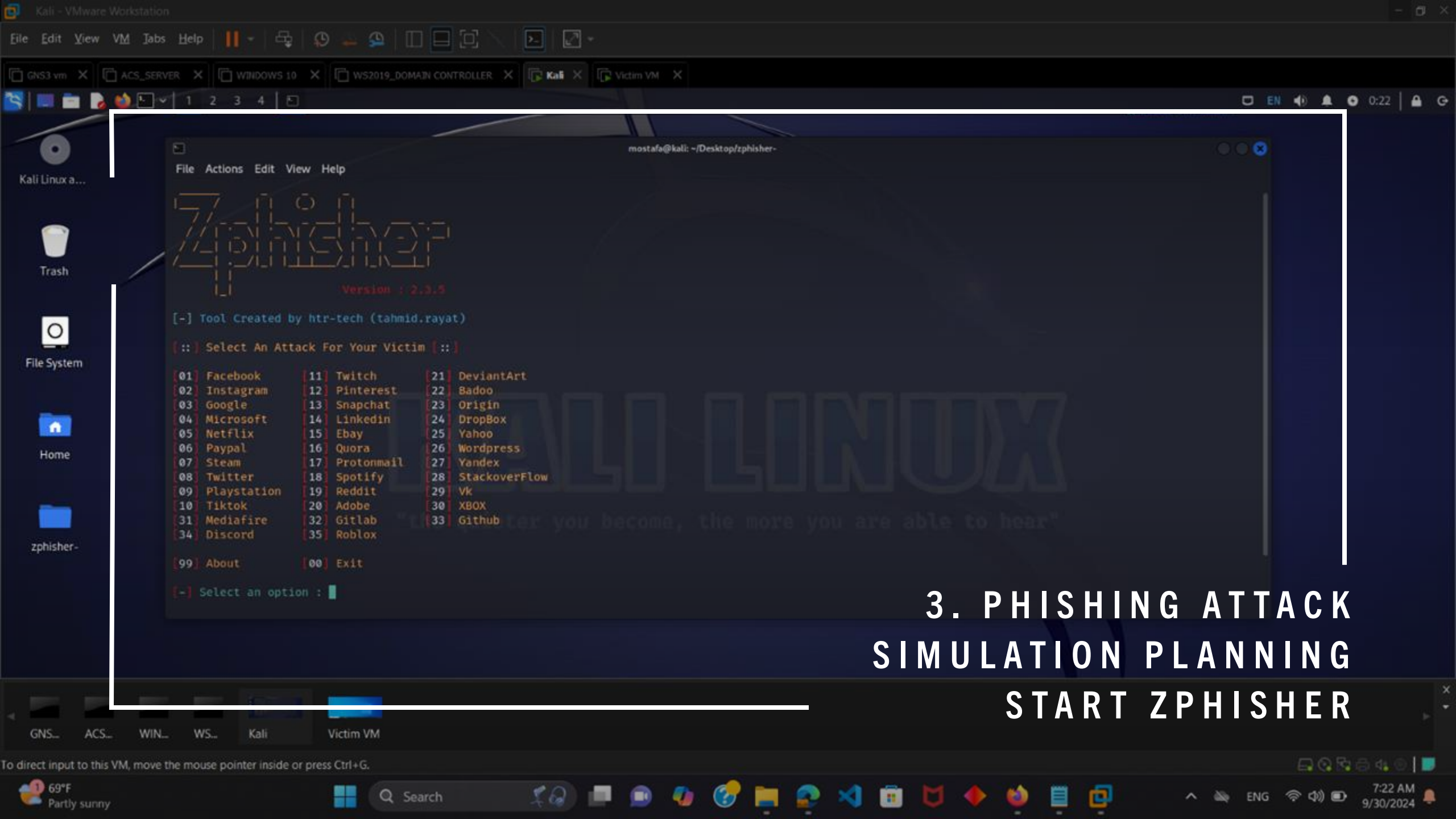
Analysis and Training Phase

- Day 4: Analyze the results, document which users fell for the phishing attempt, and identify common weak points
- Day 5: Conduct a detailed awareness training session for employees covering phishing indicators and safe practices
- Day 6: Follow-up with users who fell for the phishing test and provide additional training

TIMELINE OF EVENTS

3. PHISHING ATTACK SIMULATION PLANNING

- Create phishing scenarios using ZPhisher:
- Steps
 - Start Zphisher
 - When you run the script, you will see a menu displaying various phishing templates for different platforms
 - Choose the desired platform by entering its corresponding number



3. PHISHING ATTACK SIMULATION PLANNING START ZPHISHER

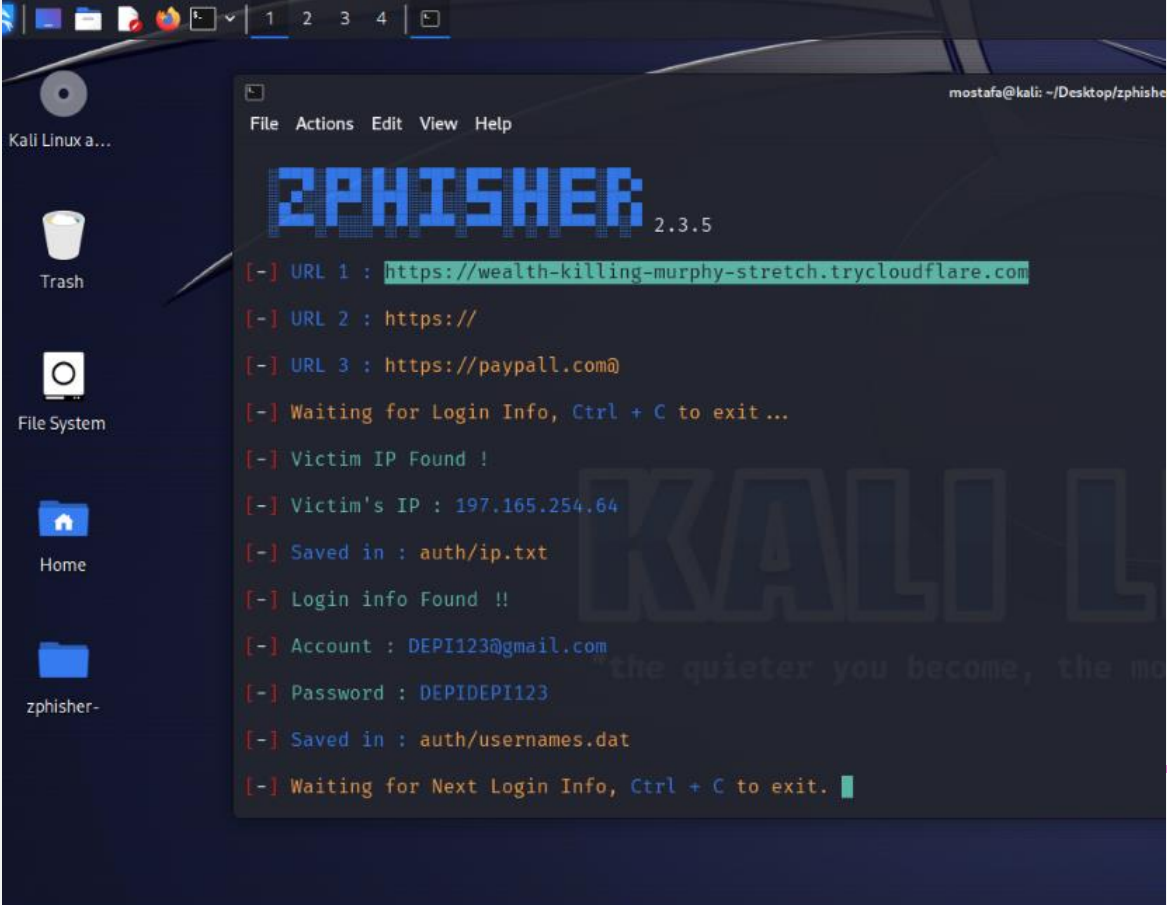
CHOOSE THE TUNNELING SERVICE

- After selecting the platform, Zphisher will present you with multiple methods, such as
 - Localhost
 - Cloudflared
 - LocalXpose
 - Ngrok



GENERATE THE PHISHING LINK

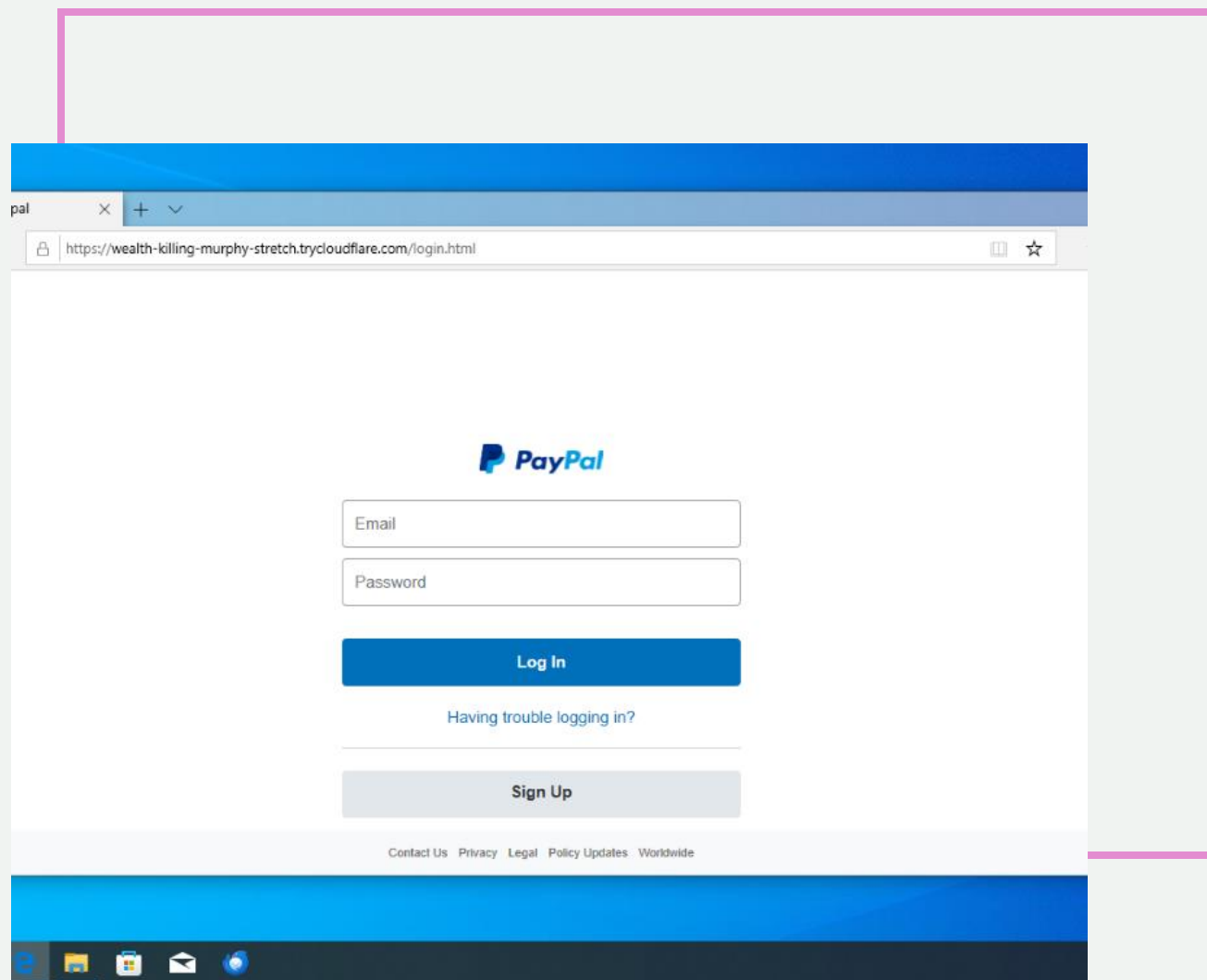
- Once the server is started, Zphisher will generate a phishing link that you can use
- Copy this link and send it to your target victim in an email or in an attachment



```
mostafa@kali: ~/Desktop/zphisher
File Actions Edit View Help
ZPHISHER 2.3.5
[-] URL 1 : https://wealth-killing-murphy-stretch.trycloudflare.com
[-] URL 2 : https://
[-] URL 3 : https://paypal.com@
[-] Waiting for Login Info, Ctrl + C to exit ...
[-] Victim IP Found !
[-] Victim's IP : 197.165.254.64
[-] Saved in : auth/ip.txt
[-] Login info Found !!
[-] Account : DEPI123@gmail.com
[-] Password : DEPIDDEPI123
[-] Saved in : auth/usernames.dat
[-] Waiting for Next Login Info, Ctrl + C to exit.
```

WAIT FOR THE TARGET TO INTERACT

- When the target clicks on the link on an email and inputs their credentials, Zphisher will capture the information and display it in your terminal



WAIT FOR THE TARGET TO INTERACT



WHEN THE TARGET CLICKS
ON THE LINK ON AN EMAIL



WHEN THE TARGET INPUTS
THEIR CREDENTIALS

WHEN THE TARGET
INPUTS THEIR
CREDENTIALS



DEPI123@gmail.com

DEPIDEP1123

Log In

[Having trouble logging in?](#)

Sign Up

[Contact Us](#) [Privacy](#) [Legal](#) [Policy Updates](#) [Worldwide](#)

ANALYZE THE CREDENTIALS

The credentials will be stored in the Zphisher directory



The captured information will include

Ip address of the victim
target

Username/Email

Password

Kali Linux a...



Trash



File System



Home



zphisher-

mostafa@kali: ~/Desktop/zphisher-

File Actions Edit View Help

ZPHISHER 2.3.5

```
[ - ] URL 1 : https://wealth-killing-murphy-stretch.trycloudflare.com
[ - ] URL 2 : https://
[ - ] URL 3 : https://paypall.com@
[ - ] Waiting for Login Info, Ctrl + C to exit ...
[ - ] Victim IP Found !
[ - ] Victim's IP : 197.165.254.64
[ - ] Saved in : auth/ip.txt
[ - ] Login info Found !!
[ - ] Account : DEPI123@gmail.com
[ - ] Password : DEPIDDEPI123
[ - ] Saved in : auth/usernames.dat
[ - ] Waiting for Next Login Info, Ctrl + C to exit.
```

**ZPHISHER CAPTURE
VICTIM CREDENTIALS**

3.2 SCHEDULING AND EXECUTION

1

Determine a schedule for the simulation without notifying employees to maintain authenticity

2

Use a secure and reputable phishing simulation platform

3

Design emails to resemble typical company communication to test user vigilance

3.4 TRAINING SETUP

Develop materials such as guides, quizzes, and video training sessions



Schedule a post-simulation training session to review the results

4. PHISHING EMAIL ANALYSIS

What is phishing email analysis?

- Phishing email analysis involves studying the content of phishing emails to ascertain the techniques the attacker used

What is a common indicator of a phishing email?

- Common indicators of a phishing email include suspicious addresses, links, or domain names, threatening language or a sense of urgency, errors in the email, the inclusion of suspicious attachments, and emails requesting sensitive information

Example of phishing email

5. INCIDENT RESPONSE STEPS

1. DETECTION AND ANALYSIS

Initial Analysis

- Identify and categorize the phishing email based on its nature
- Use automated tools to analyze the email's headers, sender, and content
- Check for Indicators of Compromise such as malicious links or attachments

Documenting IOCs

- Record the sender's email address, subject line, URLs, and file hashes for future reference
- Investigate if the same email was sent to multiple recipients

Employee Reporting

- Ensure that employees know the correct procedure for reporting suspicious emails
- Use phishing reporting buttons(if available in email clients) to streamline the process

Identify employees who interacted with the phishing email.

Determine if any sensitive information was submitted.

Wir haben Sie angerufen, Sie haben nicht geantwortet_____0759338487 - Mozilla Thunderbird

File Edit View Go Message Tools Help

Get Messages Write Tag

☆P.A.Y.P.A.L☆
IHKHOMFEWW@kodehexa.net

8/15/2022, 7:35 AM

To "[an18]"@itlgopt.uk

Wir haben Sie angerufen, Sie haben nicht geantwortet_____0759338487

Reply Reply All Forward Archive Junk Delete More

Paypal.com

Hallo !

Full-screen Snip

Sie sind Kunde Nr. 12819202501 von AU Paypal Rewards und wir warten seit dem 09.08.2022 auf Ihre Besttigung. Diese Lieferung ist fr Sie. Um die Lieferung zu aktivieren, [bitte besttigen..](#)

Ihre Kontoinformationen

Kunde:

Krystyalia

Email:

Krystyalia@gmail.com

Belohnen:

[PayPal-Guthabekarte 1000](#)

Setzen Sie die Lieferung fort

Windows taskbar with search bar, icons, and system tray

2. PHISHING EMAIL ANALYSIS

A phishing email designed to look like it's from PayPal

The sender address is IHKH0MFEWW@kodehexa.net, which is not a legitimate PayPal domain

The subject line is in German: "Wir haben Sie angerufen, Sie haben nicht geantwortet" , followed by a phone number. This is an example of a social engineering tactic to create a sense of urgency and prompt the recipient to respond without verifying

The message uses the **PayPal logo** to appear legitimate.

PHISHING EMAIL ANALYSIS

The button “Setzen Sie die Lieferung fort” (Continue with the delivery) leads to a suspicious link. This is likely an attempt to capture sensitive information such as login credentials.



Delivered-To: krystalia@gmail.com Indicates the recipient's email address



Received Fields

Purpose: Each Received entry records a step in the email's journey, from the original sender to the final recipient

This line shows that the email was processed by Google's server ip with a timestamp indicating it was handled on August 15th, 2022, at 7:35 AM



Return-Path: <bounce@rjtzntyzzjjzdnillquh.designclub.uk.com> The Return-Path specifies where undelivered messages should be sent back



Suspicious Indicator: The domain (designclub.uk.com) does not match PayPal's legitimate domain, suggesting that the email may be spoofed or sent from an unauthorized server.

paypal.eml x

```
1 Delivered-To: krystyاليا@gmail.com
2 Received: by 2002:a59:ce05:0:b0:2d3:3de5:67a9 with SMTP id 15csp1310935vqx;
3     Mon, 15 Aug 2022 07:35:02 -0700 (PDT)
4 X-Google-Smtp-Source: AA6agR5km6ywOzoBtEq9clYbBp8qJUgwZjl3vP3lrmy3ReGCZe7C1UBuWHBbIZLS4vvQF7qIUqB
5 X-Received: by 2002:a92:c543:0:b0:2e4:c514:4ad8 with SMTP id a3-20020a92c543000000b002e4c5144ad8mr5344852ilj.301.166
6     Mon, 15 Aug 2022 07:35:02 -0700 (PDT)
7 ARC-Seal: i=1; a=rsa-sha256; t=1660574102; cv=none;
8     d=google.com; s=arc-20160816;
9     b=v0vRI/Pfq0mG8+kEolqxZIG0U7TAEObvlwr8ILnGJSKrCr+0gwGjNTLTuLDOKuQSYL
10    +0KATfrRyeS+S4J4EaV+9n/ctMKNKFGu4213iyMaCSuzaF7XBEwFe0scYp4r6QbeFKjp
11    DVgAnm8CQubLm9+DokljlnLmoqfDRIUB+tC3QS8VWVOOtNoljF71PhJTV5WoSW3uHDhL
12    cNHj70daaMitn5LQwqY3u3h/XhQR9f0pLWGPqeaM/8OSAyaU8aIlxpNMVL7EiltQgsew
13    6o7lgKjzOkn+g+5jEWGPRjWFjwJTmudTN4yTHOQhB5hFRGbrvv0m0FNN/1R9HugpeKH3
14    7f8g==
15 ARC-Message-Signature: i=1; a=rsa-sha256; c=relaxed/relaxed; d=google.com; s=arc-20160816;
16     h=feedback-id:message-id:to:subject:envelope-to:list-unsubscribe:from
17     :date;
18     bh=RBOWoaMMpae2XSW5fIY8AMWesjkkUGv9NVPbU5akMiw=;
19     b=qEx4Dby+KeEbwFfEkyTOLalZdP2Bi/lx++tzAp15zqJPEO+/yhr49+kFUAOLs6YejZ
20     5GVU8PA4yOTHHBDuLmYr6tGRNNdbohZIT7G6rz+hVluU8bNmoUTzVXoTzWUSZKUappHH
21     WnfmvEJzQv1PvdPPgWA2/5a4HKxeCLX+Pa/YJ0wUfeXrDwHBDiHmG2hpG2h2n07BkWYk
22     CVhDnFFhQ8tDO6dS37lkOBeYBcseystA3+lSoBs6M6qZbEPPXzNXkyFqN6NuoeCmNn3d
23     moGUHjeXaGD3WlkY+qjvUywVULouHPSK0F578CTggl/DSdm7UGYnJyMYlyrbA9EBXa5H
24     MmlQ==
25 ARC-Authentication-Results: i=1; mx.google.com;
26     spf=pass (google.com: domain of bounce@rjttznzjzjzdnillquh.designclub.uk.com designates 134.195.196.43 as pe
27 Return-Path: <bounce@rjttznzjzjzdnillquh.designclub.uk.com>
28 Received: from foresthillrestaurant.com (capchrist.org. [134.195.196.43])
29     by mx.google.com with ESMTP id v19-20020a056638251300b00343383b93clsi6702219jat.13.2022.08.15.07.35.01
30     for <krystyاليا@gmail.com>;
31     Mon, 15 Aug 2022 07:35:02 -0700 (PDT)
32 Received-SPF: pass (google.com: domain of bounce@rjttznzjzjzdnillquh.designclub.uk.com designates 134.195.196.43 as
33 Authentication-Results: mx.google.com;
34     spf=pass (google.com: domain of bounce@rjttznzjzjzdnillquh.designclub.uk.com designates 134.195.196.43 as pe v
```


5. PHISHING EMAIL ANALYSIS

- By right-clicking on the button, copying the link, and upload the URL to VirusTotal to do some initial reputation checks. We can see that 6 out of 96 security vendors have flagged this URL as malicious.

The screenshot shows the VirusTotal interface for the URL `https://storage.googleapis.com/hqyoqzatqthj/aemmfcy/vxeo.html`. The URL is flagged as malicious by 6 out of 96 security vendors. The Community Score is -119. The status is 200, content type is text/html, and the last analysis date is 5 hours ago. The URL is categorized as text/html and external-resources.

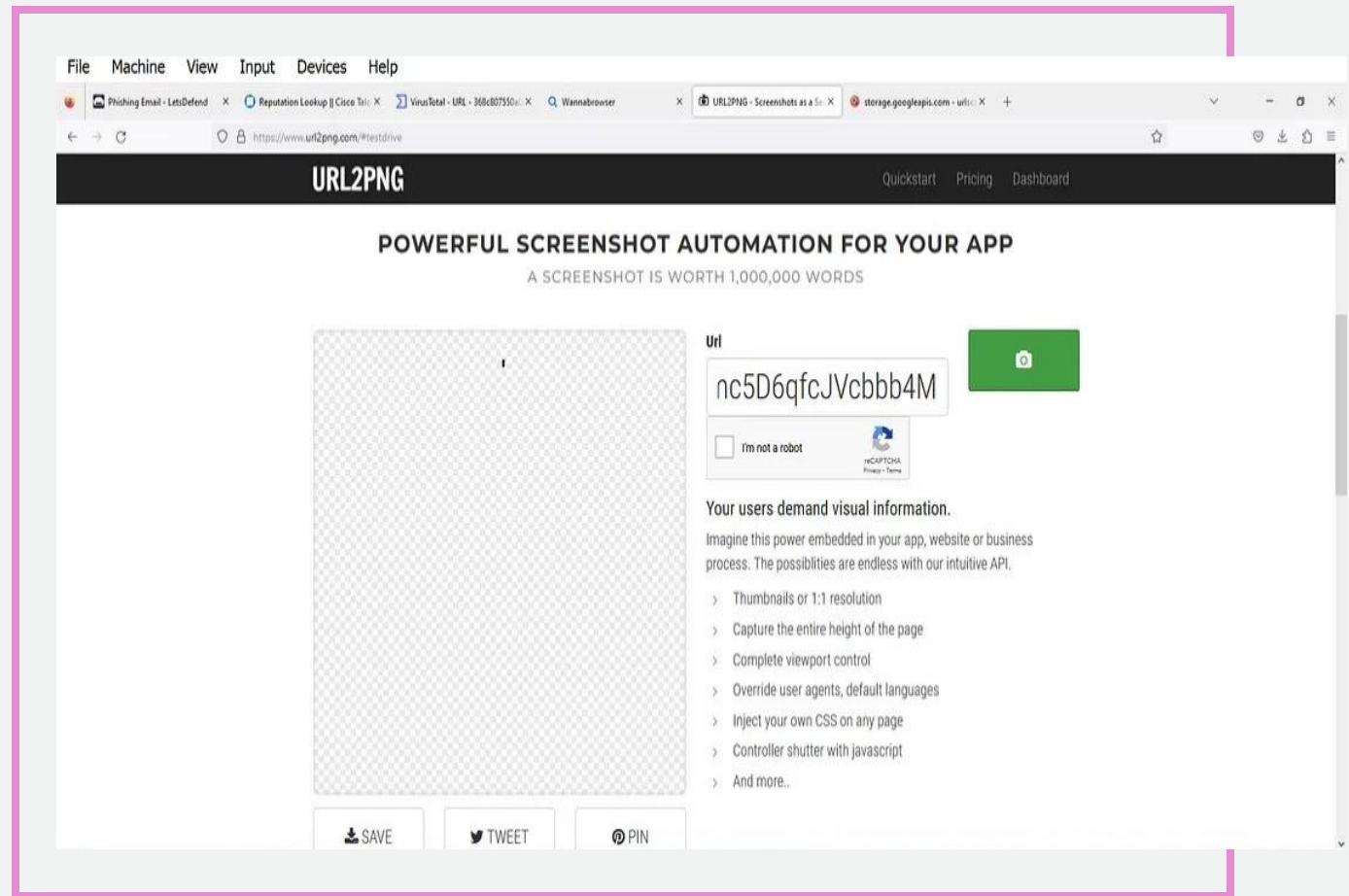
Join our Community and enjoy additional community insights and crowdsourced detections, plus an API key to [automate checks](#).

Security vendors' analysis

BitDefender	Phishing	Fortinet	Phishing
G-Dat	Phishing	Trustwave	Phishing
VIPRE	Phishing	Webroot	Malicious
ESET	Suspicious	Abusix	Clean
Acronis	Clean	ADMINUSLabs	Clean
AlLabs (MONITORAPP)	Clean	AlienVault	Clean

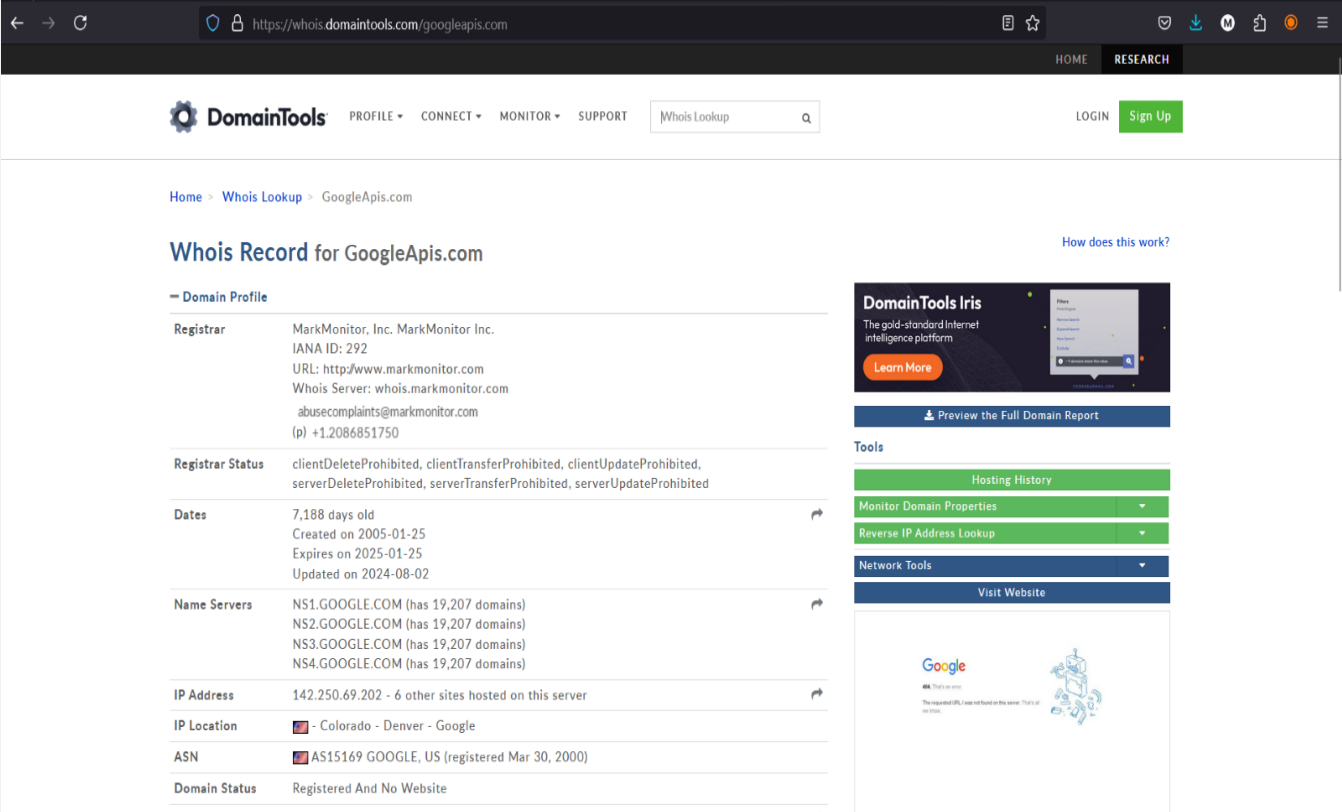
PHISHING EMAIL ANALYSIS

- **URL2PNG** is a tool that converts URLs to PNG images, allowing you to capture the visual representation of web pages quickly.
- When we put the URL into URL2PNG to see what the page looks like. It is not loading which means it is either not legitimate or there is no content and the site does not show any homepage.



PHISHING EMAIL ANALYSIS

- Check the domain
<storage.googleapis.com>
usign DomainTools whois
lookup



The screenshot shows the DomainTools website interface. The browser address bar displays the URL <https://whois.domaintools.com/googleapis.com>. The page header includes the DomainTools logo, navigation links (HOME, RESEARCH), and a search bar containing 'Whois Lookup'. A 'Sign Up' button is visible in the top right corner.

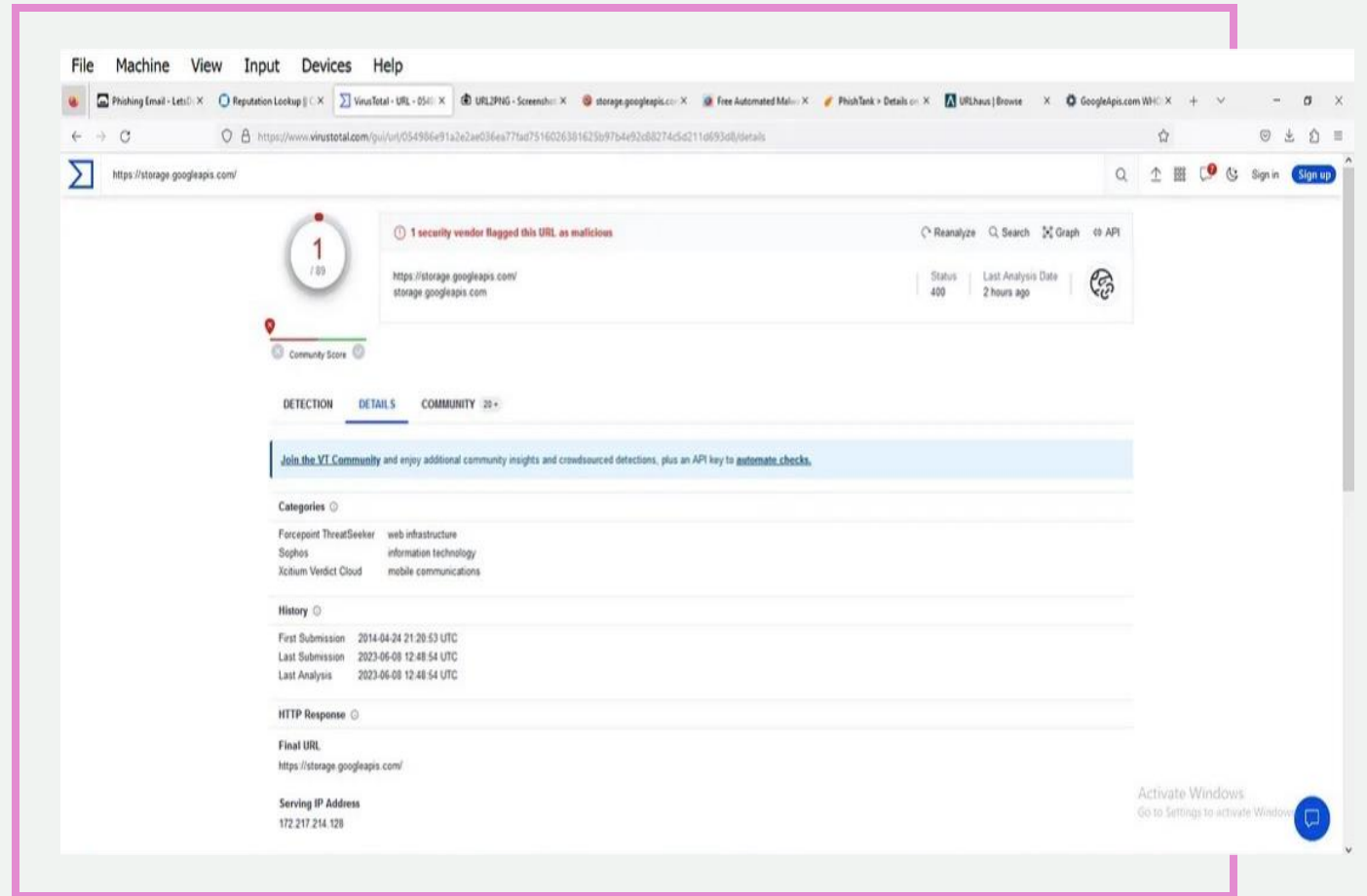
The main content area displays the 'Whois Record for GoogleApis.com'. The domain profile section lists the following information:

Domain Profile	
Registrar	MarkMonitor, Inc. MarkMonitor Inc. IANA ID: 292 URL: http://www.markmonitor.com Whois Server: whois.markmonitor.com abusecomplaints@markmonitor.com (p) +1.2086851750
Registrar Status	clientDeleteProhibited, clientTransferProhibited, clientUpdateProhibited, serverDeleteProhibited, serverTransferProhibited, serverUpdateProhibited
Dates	7,188 days old Created on 2005-01-25 Expires on 2025-01-25 Updated on 2024-08-02
Name Servers	NS1.GOOGLE.COM (has 19,207 domains) NS2.GOOGLE.COM (has 19,207 domains) NS3.GOOGLE.COM (has 19,207 domains) NS4.GOOGLE.COM (has 19,207 domains)
IP Address	142.250.69.202 - 6 other sites hosted on this server
IP Location	Colorado - Denver - Google
ASN	AS15169 GOOGLE, US (registered Mar 30, 2000)
Domain Status	Registered And No Website

On the right side of the page, there is a 'DomainTools Iris' advertisement and a 'Tools' section with links to 'Hosting History', 'Monitor Domain Properties', 'Reverse IP Address Lookup', 'Network Tools', and 'Visit Website'. A 'Preview the Full Domain Report' button is also present.

PHISHING EMAIL ANALYSIS

- **Check the domain** <storage.googleapis.com> **on virustotal** We can see that 1 out of 89 security vendors have flagged this URL as malicious.
- **Virustotal** is a tool that used to analyse suspicious files, domains, IPs and URLs to detect malware and other breaches, automatically share them with the security community.

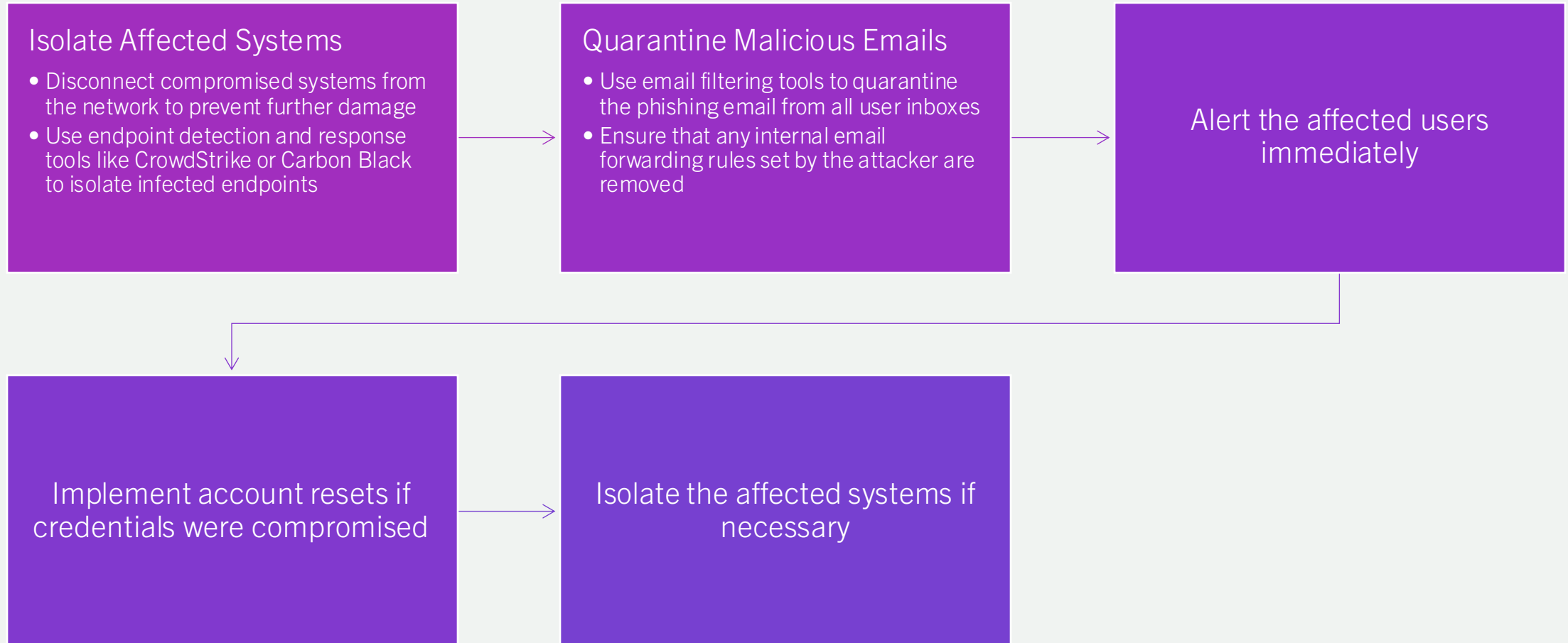




5. PHISHING EMAIL ANALYSIS

- Based on the above analysis we can see the email is actually a phishing email that has a hyperlink that is hosting a malicious URL

5.2 CONTAINMENT



5.3 ERADICATION AND RECOVERY

Remove Malicious Artifacts

- Delete phishing emails from users' inboxes
- Ensure that the phishing website and email are blocked
- Remove any malicious software installed by phishing attachments

Patch & Update

- Apply security patches if vulnerabilities were exploited
- Update security configurations, including email filters and spam detection rules
- Restore systems to a known good state

Conduct a post-incident review with the Incident Response team

Discuss what went well and areas for improvement

A blue pen with a silver tip is positioned diagonally across a document featuring a bar chart. The entire scene is enclosed within a thin pink rectangular border. The background is a blurred image of the document and pen.

6. REPORTING AND METRICS

- Percentage of employees who
 - Opened the email
 - Clicked on the phishing link
 - Submitted sensitive information

6.2 IR TEAM

PERFORMANCE METRICS

Time taken to detect the phishing simulation

Time taken to respond and mitigate the attack

Accuracy of the analysis and containment

Improvement in user awareness before and after training

Reduction in the number of phishing-related incidents post-training

THE ROOT CAUSE OF PHISHING ATTACK

Lack of Awareness

- Employees were unaware of the basic signs of phishing

Insufficient Training

- Previous training sessions did not focus enough on social engineering tactics and psychological manipulation used in phishing

Human Error

- Many users tend to trust emails that appear visually legitimate, especially if they mimic known brands

Inadequate Technical Safeguards

- Spam filters and security tools were not fully optimized, allowing simulated phishing emails to bypass safeguards

THE IMPACT OF PHISHING ATTACK

- **The Impact of Phishing attack**

- Phishing attacks can have severe and wide-ranging consequences on an organization or individual

- **Financial Losses**

- Direct monetary losses can occur due to fraudulent transactions or unauthorized access to financial accounts
 - Indirect costs include recovery expenses, legal fees, and potential fines for non-compliance with data protection regulations

- **Data Breach and Information Theft**

- Phishing can lead to unauthorized access to sensitive data such as login credentials, intellectual property, and customer information
 - Compromised information can result in identity theft, insider trading, or resale of data on the dark web



THE IMPACT OF PHISHING ATTACK

- **Reputation Damage**
 - Organizations that fall victim may experience a loss of trust and credibility among customers and stakeholders
 - Negative media coverage and the perception of poor security practices can deter future clients and impact business growth
- **Business Disruption**
 - Phishing attacks can lead to downtime in critical systems, interrupting business operations
- **Legal and Compliance Issues**
 - Organizations may face legal action or penalties for failing to protect customer data
- **Increased Security Costs**
 - After a phishing attack, companies often need to invest heavily in security upgrades, training, and recovery processes
 - Organizations may also have to hire external consultants to assess vulnerabilities and prevent future incidents

CONCLUSION

Implementing a phishing attack simulation and training program is a crucial step in strengthening an organization's cybersecurity posture



The key takeaway from this exercise is that human error is a critical factor in most successful phishing attacks, making regular training and continuous awareness essential