IK-RARS'JATI PRAMESTI
2141762003
SIB-4C

Lab - Identify Relevant Threat Intelligence

Objectives

Part 1: Research MITRE CVEs

Part 2: Access the MITRE ATT&CK

Knowledge Base Part 3: Investigate

Potential Malware

Background / Scenario

You have been hired as a Tier 1 Cybersecurity Analyst by XYZ, Inc. Tier 1 analysts typically are responsible for responding to incoming tickets and security alerts. In this lab, you will conduct threat intelligence research for several scenarios that have impacted XYZ, Inc. Each scenario will require you to access threat intelligence websites and answer questions regarding the threat encountered in the scenario.

Required Resources

- 1 PC with internet access

Instructions

Part 1: Research MITRE CVEs

The MITRE organization created the Common Vulnerabilities and Exposures (CVE) database in 1999 to identify, define, and catalog publicly disclosed cybersecurity vulnerabilities. It was endorsed by the National Institute of Standards and Technology (NIST) in 2002. The CVE database is now the standard method of registering and identifying vulnerabilities.

In this part, you will research the CVE program and use the CVE list to identify threats.

Step 1: Research the CVE website.

Go to **https://cve.mitre.org** and navigate to the **About** > **Terminology** page to answer the following questions.

What is the **CVE Program**?
The CVE program is an international, community-driven effort to catalog vulnerabilities in accordance with the effort's rules and guidelines.

What is a CVE Numbering Authority (CNA)?
A CNA is an organization responsible for the regular assignment of CVE IDs to vulnerabilities, and for creating and publishing information about the vulnerability in the associated CVE Record. Each CNA has a specific scope of responsibility for vulnerability identification and publishing.

What is an Authorized Data Publisher (ADP)?
An ADP is an organization authorized within the CVE Program to enrich a CVE Record previously published by a CNA with additional, related information including risk scores (e.g., Common Vulnerability Scoring System (CVSS), affected product lists, and versions.

What is the **CVE List**?
The CVE List is a searchable catalog of all CVE Records identified by, or reported to, the CVE Program.

What is a **CVE Record**?
The CVE Record is the descriptive data about a vulnerability associated with a CVE ID, provided by a CNA, and enriched by ADPs. This data is provided in multiple human and machine-readable formats. A CVE

Record is associated with one of the following states: Reserved, Published, and Rejected.

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A unique, alphanumeric identifier assigned by the CVE Program. Each identifier references a specific vulnerability. A CVE ID enables automation and multiple parties to discuss, share, and correlate information about a specific vulnerability, knowing they are referring to the same thing.

Step 2: Research CVEs at the Cisco Security Advisories website.

Many security sites and software refer to CVEs. For example, the cisco.com website provides Cisco Security Advisories identifying vulnerabilities associated with Cisco products. In this step, you will refer to this website to identify a CVE ID.

a. Leave the cve.mitre.org website open. In another browser tab, do an internet search for **Cisco Security Advisories** and click the link to go to the tools.cisco.com web page.

b. This page lists all the currently known CVEs. For the **Impact** column, click the down arrow and uncheck everything except **Critical**, and then click **Done**.

c. Choose one of the advisories and answer the following questions about your selected advisory.

What is the name of the advisory that you chose?
The name is listed in the first column. For example, "Cisco Small Business RV110W, RV130, RV130W, and RV215W Routers Remote Command Execution and Denial of Service Vulnerability"

What is the CVE ID? You will use this ID in the next step.
The CVE ID is listed in the third column. For example, the CVE ID for " Cisco Small Business RV110W, RV130, RV130W, and RV215W Routers Remote Command Execution and Denial of Service Vulnerability" is CVE-2021-34730.

d. You can either click the advisory to go to a details page or click the down arrow next to the advisory name to get more information.

Is there a **workaround** for the advisory you chose?
No

Step 3: Return to the CVE website and research more about your chosen Cisco CVE.

a. Navigate back to the website cve.mitre.org website, which should still be open in a browser tab.

b. Click **Search CVE List** to open up a search box.

c. In the search field, enter the CVE ID for the critical advisory you documented in the previous step. The CVE ID is in the following format: **CVE-[year]-[id_number]**.

Briefly describe the vulnerability.
CVE-2021-34730 describes a vulnerability in the Universal Plug-and-Play (UPnP) service of Cisco Small Business Routers that could allow an unauthenticated, remote attacker to create a denial of service (DoS) condition. Notice that this is the same information you can find in the details for this advisory on the Cisco Security Advisories website.

Part 2: Access the MITRE ATT&CK Knowledge Base

The MITRE Adversarial Tactics, Techniques & Common Knowledge (ATT&CK) Framework enables the ability to detect attacker tactics, techniques, and procedures (TTP) as part of threat defense and attack attribution. In this part, you will investigate the MITRE ATT&CK website to answer questions.

Step 1: Go to the MITRE ATT&CK website.

Navigate to the **https://attack.mitre.org** website.

The page displays an attack matrix for enterprises which identifies various tactics and the techniques used by threat actors. **Tactics** are the header column titles (e.g., **Reconnaissance**, **Resource Developments**, etc.) with **Techniques** listed below. A short phrase for each technique summarizes what a threat actor could do to execute an attack. Clicking the linked phrase will take you to a page for detailed information about the techniques and methods for mitigation.

Note: You may need to expand the width of your browser window to see all 14 tactics. Alternatively, you can hold down the **Shift** key and scroll your mouse wheel to shift the window left and right.

This matrix is an excellent place to come to learn more about different tactics and techniques threat actors use to compromise systems. Cybersecurity analysts regularly visit this site to research specific attacks and possible mitigations.

Step 2: Investigate the Reconnaissance tactic and the Phishing for Information tactic.

Use the MITRE ATT&CK page to answer the following questions.

How many techniques are attributed to the **Reconnaissance** tactic?
At the time of this writing there were 10 techniques under the Reconnaissance tactic.

Under **Reconnaissance**, click **Phishing for Information** and read the description. Briefly describe how a threat actor could gather reconnaissance information using phishing techniques?
Adversaries may send phishing messages to elicit sensitive information that can be used during targeting. All forms of phishing are electronically delivered social engineering. Phishing can be targeted, known as spearphishing where a specific individual, company, or industry will be targeted by the adversary.

Expand the dropdown menu under the **Phishing for Information** header or refer to the menu on the left. What are sub-techniques used when phishing for information?
Spearphishing Service, Spearphishing Attachment, and Spearphishing Link.

What steps could you take to mitigate these techniques?
Software configuration using anti-spoofing and email authentication to filter messages and user training to identify social engineering attacks

Step 3: Investigate the Command and Control tactic and Data Encoding technique.

Use the MITRE ATT&CK page to answer the following questions.

Note: **Command and Control** is the 12th tactic in the matrix. You may need to expand the width of your browser window to see it. Alternatively, you can hold down

the **Shift** key and scroll your mouse wheel to shift the window left and right.

How many techniques are attributed to the **Command and Control** tactic?
There were 16 techniques available.

Under **Command and Control**, click **Data Encoding** and read the description. Briefly describe how a threat actor could use data encoding for command and control?
Threat actors may encode data to make the content of command and control traffic more difficult to detect. Command and control (C2) information can be encoded using a standard data encoding system (e.g., ASCII, Unicode, Base64, MIME) and in data compression, (e.g., gzip).

What could you do to mitigate this technique?
Network intrusion detection and prevention systems (IDS/IPS) using network signatures / rules to identify traffic for specific adversary malware can be used to mitigate activity at the network level.

Step 4: Investigate the Impact Tactic

Use the MITRE ATT&CK page to answer the following questions.

Note: The **Impact** tactic is the last tactic on the far right of the matrix.

How many techniques are attributed to the **Impact** tactic?
There were 13 techniques available.

Under **Impact**, click **Disk Wipe** and read the description. Briefly describe the impact if a threat actor does a disk wipe?
Adversaries may wipe or corrupt raw disk data on specific systems to interrupt availability to system and network resources Malware used for wiping disks may have worm-like features to propagate across a network by leveraging additional techniques.

What could you do to mitigate this technique?
Implement an IT disaster recovery plan that contain procedures for taking regular data backups that can be used to restore organizational data. Ensure backups are stored off system and is protected from common methods adversaries may use to gain access and destroy the backups to prevent recovery.

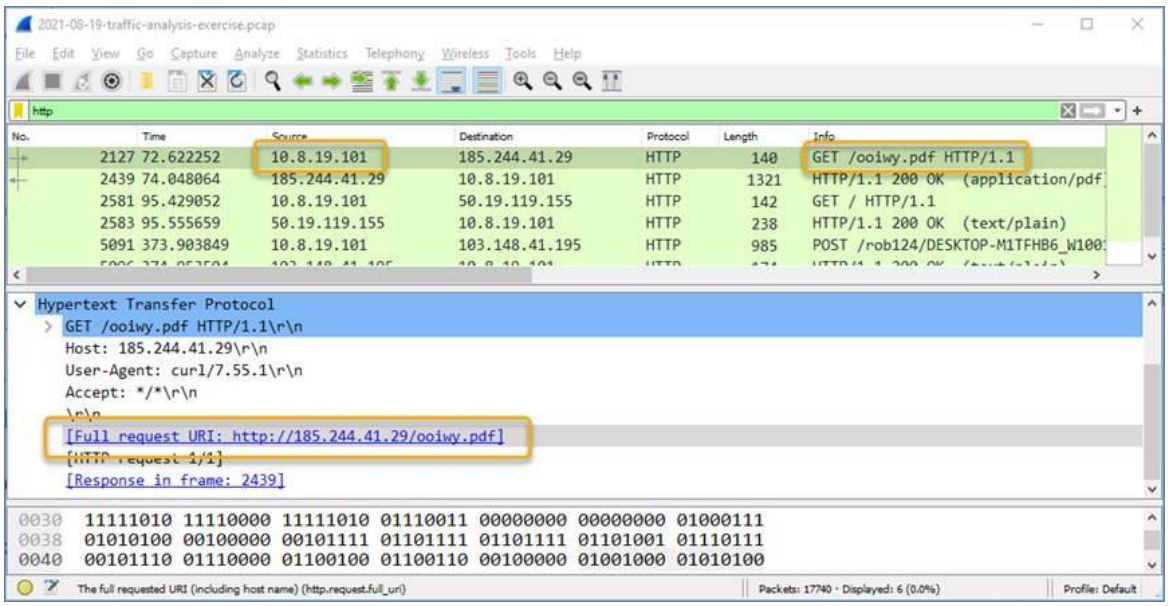
Part 3: Investigate Potential Malware

There are a number of tools that a cybersecurity analyst can use to validate malicious software. In this part, you will investigate an IPS alert to see if it is malicious software.

Step 1: Generate a SHA256 hash for a suspicious file.

As a Tier 1 Cybersecurity Analysts, you have access to a Security Information Event Management (SIEM) system on your Linux management station. The SIEM just sent you an IPS alert referencing a local IP address of 10.8.19.101. You decide to examine the actual traffic identified in the alert by pivoting to Wireshark.

a. As you scroll through the various packet captures of IP address 10.8.19.101, you notice that a file was downloaded by the host as shown in the figure.



b. You decide to export this file from Wireshark for malware analysis using the **File** > **Export Objects** > **HTTP** command and save the file with the name **ooiwy.pdf**.

c. Next you generate the SHA256 hash value of the saved file using the **sha256sum** command as shown.

```
[analyst@secOps ~]:~$ sha256sum ooiwy.pdf
f25a780095730701efac67e9d5b84bc289afea56d96d8aff8a44af69ae606404
ooiwy.pdf
```

Notice the SHA256 hash signature that was generated. This string can be validated in various file reputation sites to see if this the file is malware.

Step 2: Look up the hash at file reputation websites.

There are a number of file reputation sites that can be used to investigate this file. In this step, you will use Cisco's Talos website and virustotal.com.

a. Search for "Cisco Talos" and click the first link to access the Cisco Talos Intelligence Group website.

b. Locate the menus at the top and over the **Reputation Center** to dropdown a submenu. Click the link for the **Talos File Reputation** search page.

c. Copy the highlighted SHA hash value from the previous step and paste it into the search window. Click the "I'm not a robot" checkbox, and then click **Search**.

d. Review the information for this file.

What is the Talos Weighted File Reputation Score? Is that good or bad?
You can float your mouse over the ? to learn that the score is a scale from 1 to 100. The file score is 100 which identifies this file as extremely malicious.

e. Search for and navigate to the **VirusTotal** website.

f. Click **Search**, paste the SHA256 hash in the field, and then press **Enter**. The page displays all the security vendors that have identified this file as malicious (on the left) and the names this companies use to identify the malicious file.

g. Notice the column headings DETECTION, DETAILS, RELATIONS, BEHAVIOR, and COMMUNITY. Use the information on the DETAILs page to answer the following questions.

When was this file created?
Creation Time 2021-07-06 13:28:40

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What other names is the file known by other than **ooiwy.pdf**?
RegistryDemo, RegistryDemo.EXE, cdnupdaterapi.png, and ooiwy.pdf.exe

What is the target machine?
Intel 386 or later processors and compatible processors