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.

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.

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.

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.

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?

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.

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.
Question:
Is there a **workaround** for the advisory you chose?

No, not from my observation.

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	A vulnerability in the Universal Plug-and-Play (UPnP) service of Cisco Small Business RV110W, RV130, RV130W, and RV215W Routers could allow an unauthenticated, remote attacker to execute arbitrary code or cause an affected device to restart unexpectedly, resulting in a denial of service (DoS) condition. This vulnerability is due to improper validation of incoming UPnP traffic. An attacker could exploit this vulnerability by sending a crafted UPnP request to an affected device. A successful exploit could allow the attacker to execute arbitrary code as the root user on the underlying operating system or cause the device to reload, resulting in a DoS condition. Cisco has not released software updates that address this vulnerability.

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.

Questions:

How many techniques are attributed to the **Reconnaissance** tactic?

10 techniques

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

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 that move across a network by leveraging additional techniques.

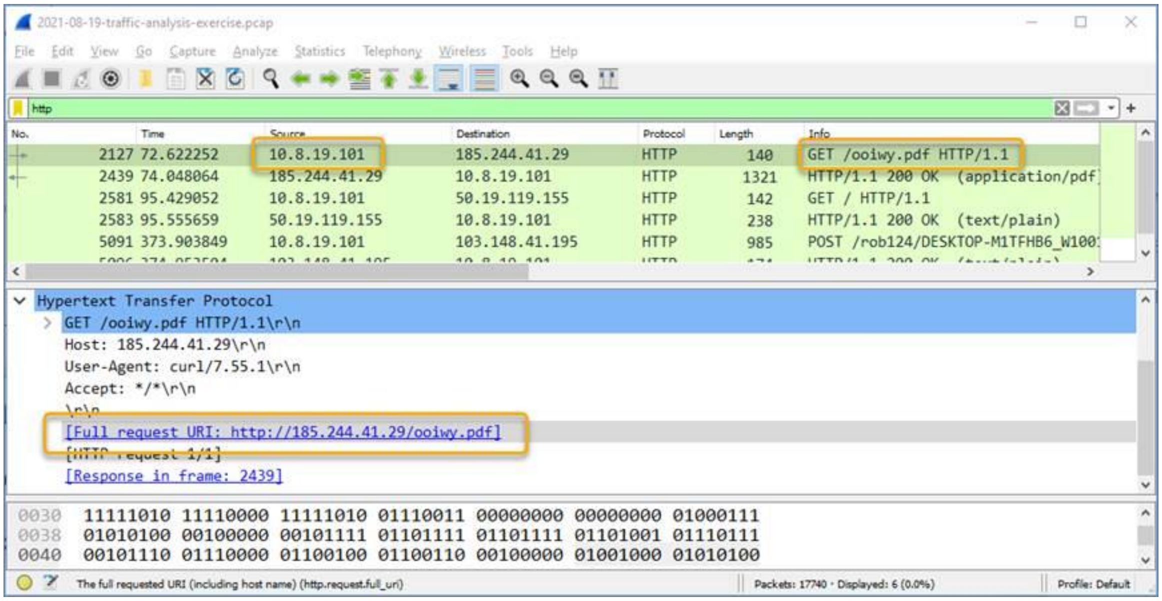
Part 3: Investigate Potential Malware

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


2021-08-19-traffic-analysis-exercise.pcap
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
http

No.	Time	Source	Destination	Protocol	Length	Info
2127	72.622252	10.8.19.101	185.244.41.29	HTTP	140	GET /ooiwy.pdf HTTP/1.1
2439	74.048064	185.244.41.29	10.8.19.101	HTTP	1321	HTTP/1.1 200 OK (application/pdf
2581	95.429052	10.8.19.101	50.19.119.155	HTTP	142	GET / HTTP/1.1
2583	95.555659	50.19.119.155	10.8.19.101	HTTP	238	HTTP/1.1 200 OK (text/plain)
5091	373.903849	10.8.19.101	103.148.41.195	HTTP	985	POST /rob124/DESKTOP-M1TFHB6_W100

```
Hypertext Transfer Protocol
  GET /ooiwy.pdf HTTP/1.1\r\n
  Host: 185.244.41.29\r\n
  User-Agent: curl/7.55.1\r\n
  Accept: */*\r\n
  \r\n
  [Full request URI: http://185.244.41.29/ooiwy.pdf]
  [HTTP request 1/1]
  [Response in frame: 2439]
```

```
0030  11111010 11110000 11111010 01110011 00000000 00000000 01000111
0038  01010100 00100000 00101111 01101111 01101111 01101001 01110111
0040  00101110 01110000 01100100 01100110 00100000 01001000 01010100
```

The full requested URI (including host name) (http.request.full_uri) | Packets: 17740 · Displayed: 6 (0.0%) | Profile: Default

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.

Questions:

What is the Talos Weighted File Reputation Score? Is that good or bad?

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.
Questions:

When was this file created?

Creation Time 2021-07-06 13:28:40

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