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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.

Questions:

What is the **CVE Program**?

Answer

A community-driven program that identifies, defines, and catalogs publicly disclosed cybersecurity vulnerabilities and exposures

What is a CVE Numbering Authority (CNA)?

Answer

An organization authorized to assign CVE IDs to vulnerabilities affecting products within their scope.

What is an Authorized Data Publisher (ADP)?

Answer

An organization authorized to publish CVE Records on behalf of CNAs

What is the **CVE List**?

Answer

A comprehensive list of publicly known cybersecurity vulnerabilities and exposures.

What is a **CVE Record**?

Answer

A standardized description of a vulnerability, including CVE ID, description, references, and date.

What is a **CVE ID**?

Answer

A unique identifier assigned to a specific vulnerability following the format CVE-YEAR-NNNNN.

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.

Questions:

What is the name of the advisory that you chose?

Answer

Cisco IOS XE Software Web UI Authentication Bypass Vulnerability

What is the CVE ID? You will use this ID in the next step.

Answer

CVE-2023-20198

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?

Answer

Yes, the workaround is to disable the HTTP and HTTPS server feature on affected devices.

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]**.

Question:

Briefly describe the vulnerability.

Answer

A critical authentication bypass vulnerability in the web UI of Cisco IOS XE Software that could allow an unauthenticated remote attacker to bypass authentication and gain access to the device.

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?

Answer

There are 10 techniques attributed to 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?

Answer

Threat actors use phishing emails to gather sensitive information by impersonating legitimate entities and requesting data directly from targets.

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?

Answer

The sub-techniques include Spearphishing Service, Spearphishing Attachment, and Spearphishing Link.

What steps could you take to mitigate these techniques?

Answer

Organizations should implement email filtering, user training, and multi-factor authentication to prevent phishing 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.

Questions:

How many techniques are attributed to the **Command and Control** tactic?

Answer

There are 16 techniques attributed to the Command and Control tactic.

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?

Answer

Threat actors encode command and control data to avoid detection and bypass security controls.

What could you do to mitigate this technique?

Answer

Organizations should implement network monitoring and filtering to detect and block encoded command and control traffic.

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.

Questions:

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

Answer

There are 13 techniques attributed to the Impact tactic.

Under **Impact**, click **Disk Wipe** and read the description. Briefly describe the impact if a threat actor does a disk wipe?

Answer

A disk wipe attack destroys data and renders systems inoperable by deleting or corrupting critical system files.

What could you do to mitigate this technique?

Answer

Organizations should maintain regular backups and implement strict access controls to prevent unauthorized disk wiping.

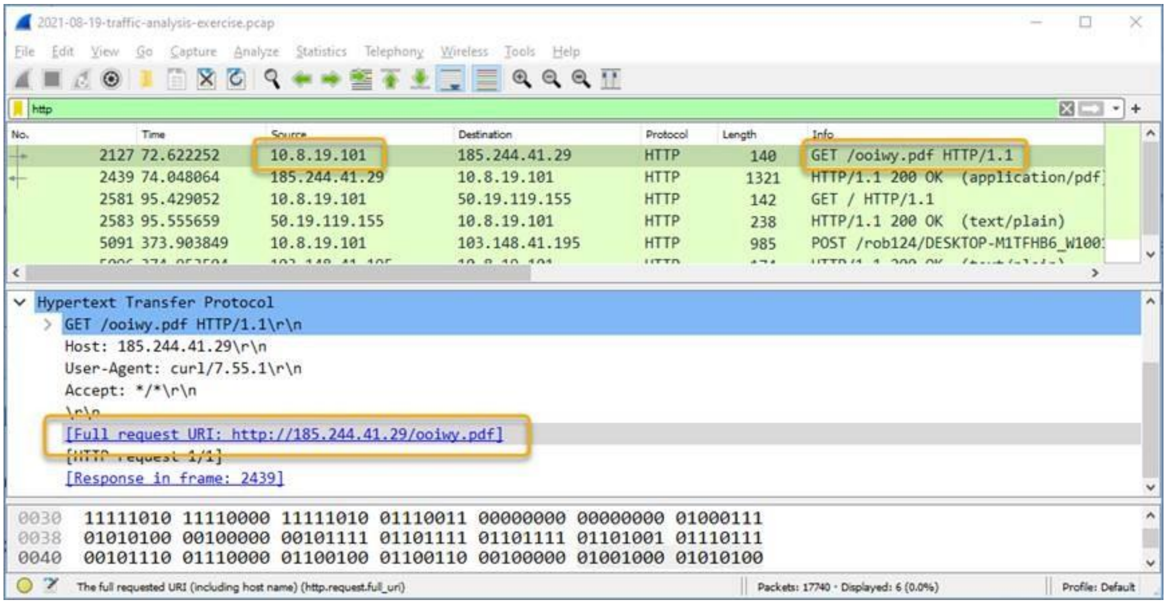
Part 3: Investigate Potential Malware

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

Blank Line, No additional information

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?

Answer

The file score is 100 which identifies this file as highly dangerous.

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?

Answer

2021-07-06 13:28:40

What other names is the file known by other than **ooiwy.pdf**?

Answer

RegistryDemo, RegistryDemo.EXE, cdnupdaterapi.png, and ooiwy.pdf.exe

What is the target machine?

Answer

Intel 386 or later processors and compatible processors