Learn the following:

- Splunk components
- Navigating Splunk Interface
- Uploading data (adding data) to Splunk (VPN logs)
- Basic search commands

Splunk: The Basics

Understand how SOC analysts use Splunk for log investigations.

Task 1 Introduction

Splunk is one of the leading SIEM solutions in the market. It allows users to collect, analyze, and correlate network and machine logs in real time. In this room, we will explore the basics of Splunk and its functionalities, and how it provides better visibility of network activities and helps speed up detection.

Learning Objectives

This room covers the following learning objectives:

- Understanding the components of Splunk
- Exploring some available options in Splunk
- Understanding log ingestion in Splunk
- Practically ingesting some Logs in Splunk and analyzing them

Room Prerequisites

If you are new to SIEM, please complete the Introduction to SIEM room.

Answer the questions below

No answer needed

Task 2 Connect with the Lab

Before proceeding with the following tasks, start the attached virtual machine by clicking the **Start Machine** below.

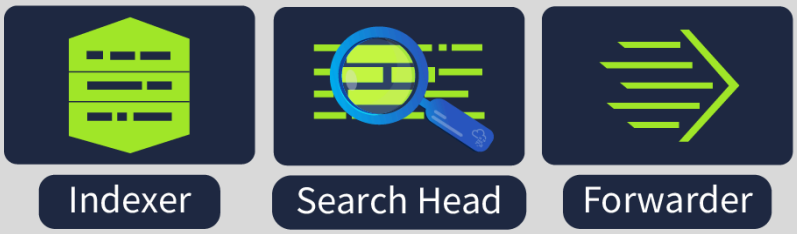
The machine may take up to 3-5 minutes to start. After the machine starts, the Splunk Instance can be accessed at `http://10.66.171.93` either directly on the AttackBox or via the TryHackMe VPN.

Answer the questions below

No answer needed

Task 3 Splunk Components

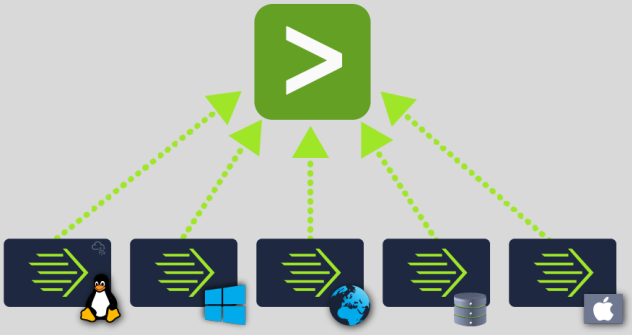
Splunk has three main components: Forwarder, Indexer, and Search Head. These components work together to help us search and analyze the data. These components are explained below:



Splunk Forwarder

Splunk Forwarder is a lightweight agent installed on the endpoint intended to be monitored, and its main task is to collect the data and send it to the Splunk instance. It does not affect the endpoint's performance as it takes a few resources to process. Some of the key data sources are:

- Web server generating web traffic.
- Windows machine generating Windows Event Logs, PowerShell, and Sysmon data.
- Linux host generating host-centric logs.
- Database generating DB connection requests, responses, and errors.



The forwarder collects the data from the log sources and sends it to the Splunk Indexer.

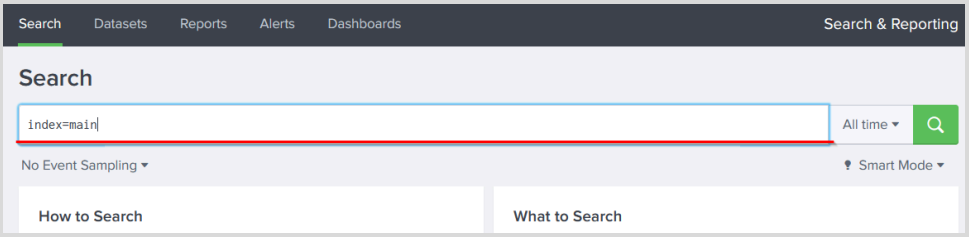
Splunk Indexer

Splunk Indexer plays the main role in processing the data it receives from forwarders. It parses and normalizes the data into field-value pairs, categorizes it, and stores the results as events, making the processed data easy to search and analyze.

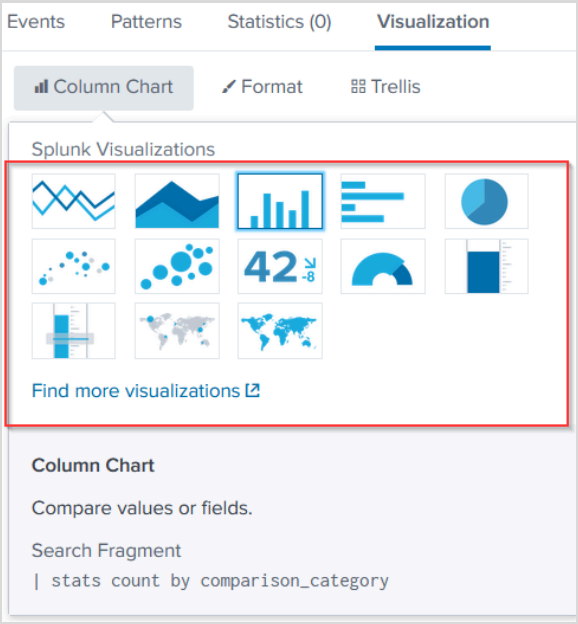
Now, the data, which is normalized and stored by the indexer, can be searched by the Search Head, as explained below.

Search Head

Splunk Search Head is the place within the Search & Reporting App where users can search the indexed logs, as shown below. The searches are done using the SPL (Search Processing Language), a powerful query language for searching indexed data. When the user performs a search, the request is sent to the indexer, and the relevant events are returned as field-value pairs.



The Search Head also allows you to transform results into presentable tables and visualizations such as pie, bar, and column charts, as shown below:



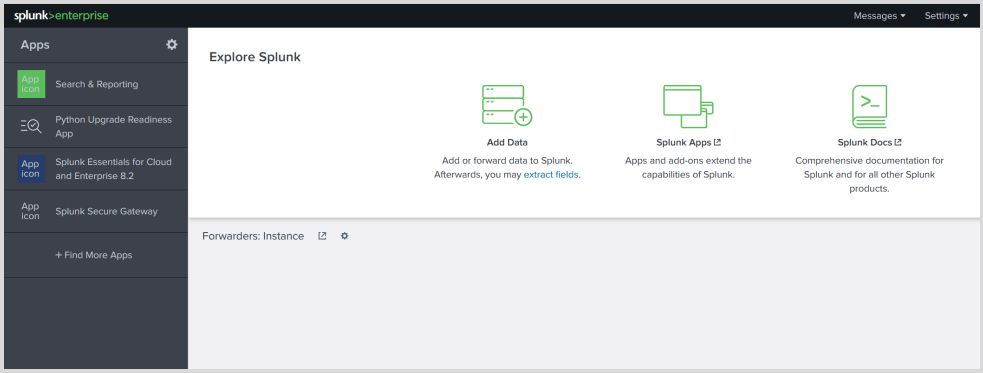
Answer the questions below

Which component is used to collect and send data over the Splunk instance?

Forwarder

Task 4 Navigating Splunk

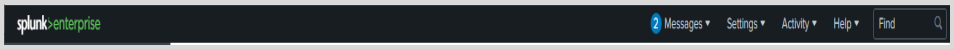
When you access Splunk, you will see the default **home screen** as shown below:



Let's look at each section of this home screen.

Splunk Bar

The top panel is the **Splunk Bar** as shown below:



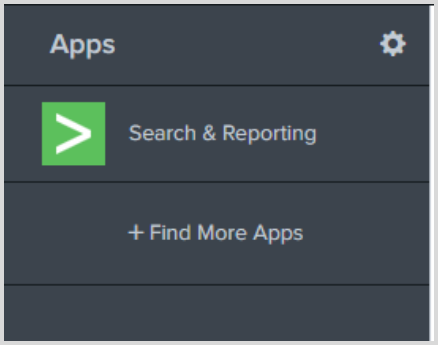
In the Splunk Bar, we have the following options available:

- **Messages:** View system-level notifications and messages.
- **Settings:** Configure Splunk instance settings.
- **Activity:** Review the progress of search jobs and processes.
- **Help:** View tutorials and documentation.
- **Find:** Search across the App.

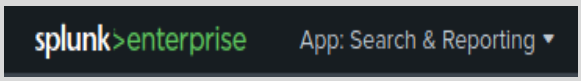
The Splunk Bar, allows users to switch between installed Splunk apps instead of using the Apps panel.

Apps Panel

Next is the **Apps Panel**. This panel shows the apps installed for the Splunk instance. The default app for every Splunk installation is **Search & Reporting**.

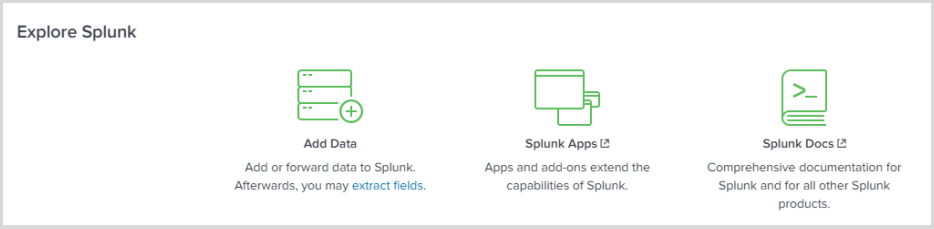


You can also switch between the Splunk Apps directly from the Splunk Bar, as shown below, without using the Apps Panel.



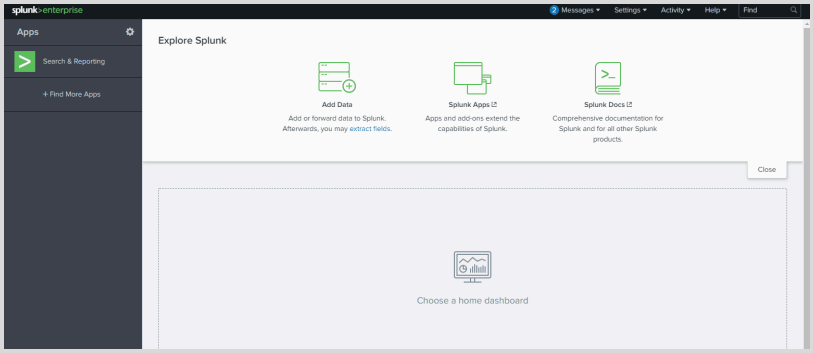
Explore Splunk

The next section is **Explore Splunk** . This panel contains quick links to add data to the Splunk instance, add new Splunk apps, and access the Splunk documentation.



Splunk Dashboard

The last section is the **Home Dashboard**. By default, no dashboards are displayed. You can choose from a range of dashboards readily available within your Splunk instance. You can select a dashboard from the dropdown menu or by visiting the **dashboards listing page**.



You can also create dashboards and add them to the Home Dashboard. The dashboards you create can be viewed separately from the other dashboards by clicking on the **Yours** tab.

Please review the Splunk documentation on Navigating Splunk here.

Answer the questions below

In the Add Data tab, which option is used to collect data from files and ports?

Monitor

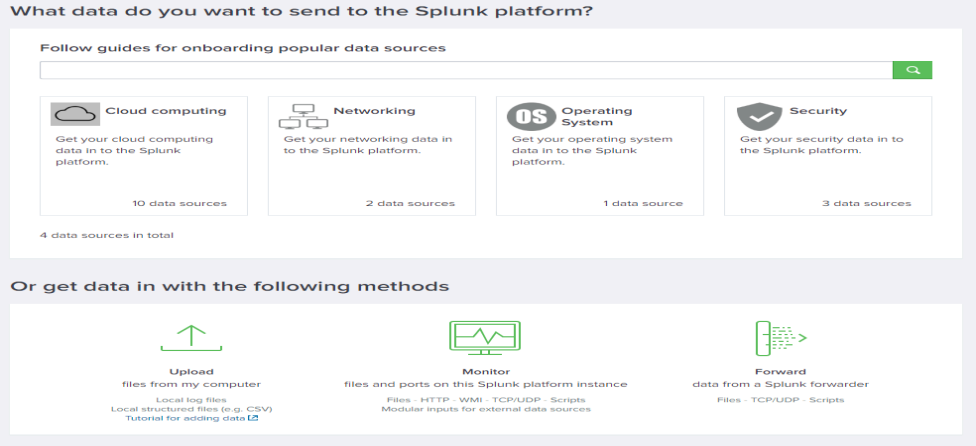
Task 5 Adding Data

Splunk can ingest any data. According to the Splunk documentation, when data is added to Splunk, the data is processed and transformed into a series of individual events. The data sources can be event logs, website logs, firewall logs, etc. The data sources are grouped into categories.

Below is a chart listing from the Splunk documentation detailing each data source category.

Data source	Description
Files and directories	Most data that you might be interested in comes directly from files and directories.
Network events	The Splunk software can index remote data from any network port and SNMP events from remote devices.
IT Operations	Data from IT Ops, such as Nagios, NetApp, and Cisco.
Cloud services	Data from Cloud services, such as AWS and Kinesis.
Database services	Data from databases such as Oracle, MySQL, and Microsoft SQL Server.
Security services	Data from security services such as McAfee, Microsoft Active Directory, and Symantec Endpoint Protection.
Virtualization services	Data from virtualization services such as VMWare and XenApp.
Application servers	Data from application servers such as JMX & JMS, WebLogic, and WebSphere.
Windows sources	The Windows version of Splunk software accepts a wide range of Windows-specific inputs, including Windows Event Log, Windows Registry, WMI, Active Directory, and Performance monitoring.
Other sources	Other input sources are supported, such as FIFO queues and scripted inputs for getting data from APIs, and other remote data interfaces.

In this task, we're going to focus on **VPN logs**. We're presented with the following screen when we click on the `Add Data` link on the Splunk home screen.



We will use the `Upload` Option to upload the data from our local machine.

Practical

Download the log file `VPN_logs` from the `Download Task Files` button below and upload it to the Splunk instance we started in Task #2. If you are using the AttackBox, the log file is available in the `/root/Rooms/SplunkBasic/`directory.

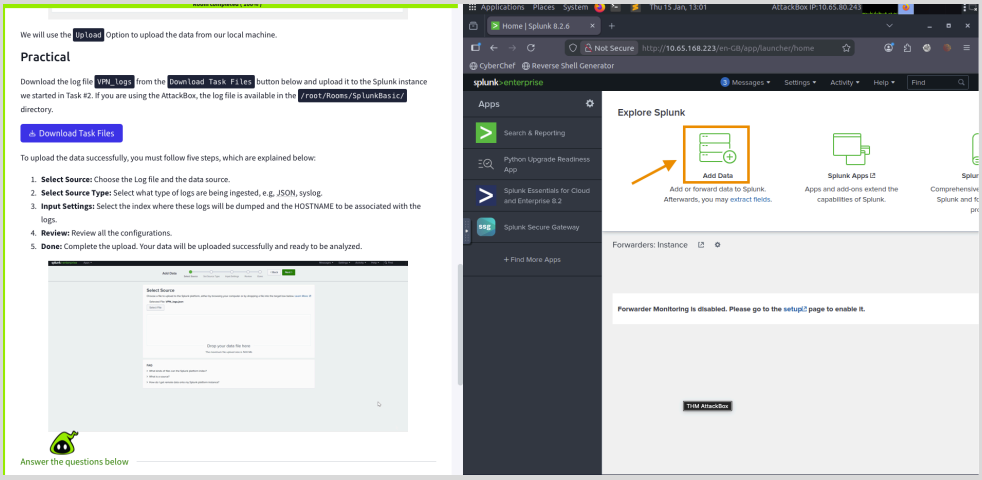
Download Task Files

To upload the data successfully, you must follow five steps, which are explained below:

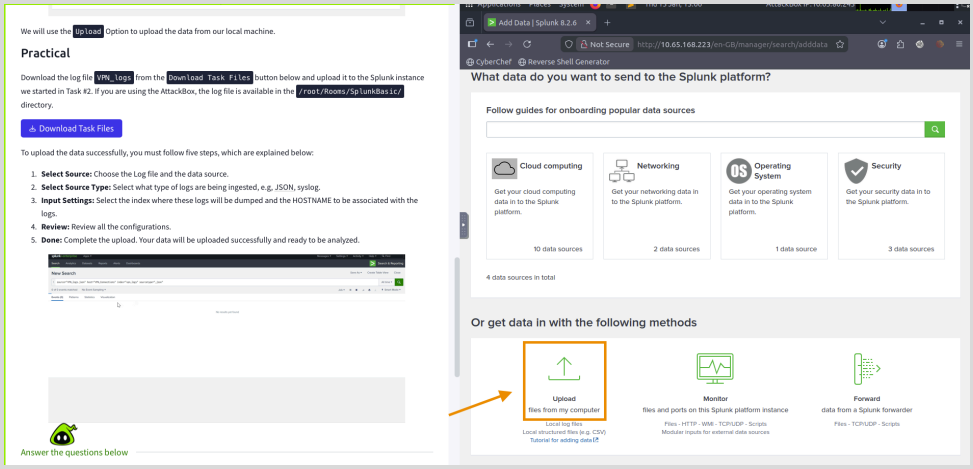
1. **Select Source:** Choose the Log file and the data source.
2. **Select Source Type:** Select what type of logs are being ingested, e.g, JSON, syslog.
3. **Input Settings:** Select the index where these logs will be dumped and the HOSTNAME to be associated with the logs.
4. **Review:** Review all the configurations.
5. **Done:** Complete the upload. Your data will be uploaded successfully and ready to be analyzed.

Select Source File:

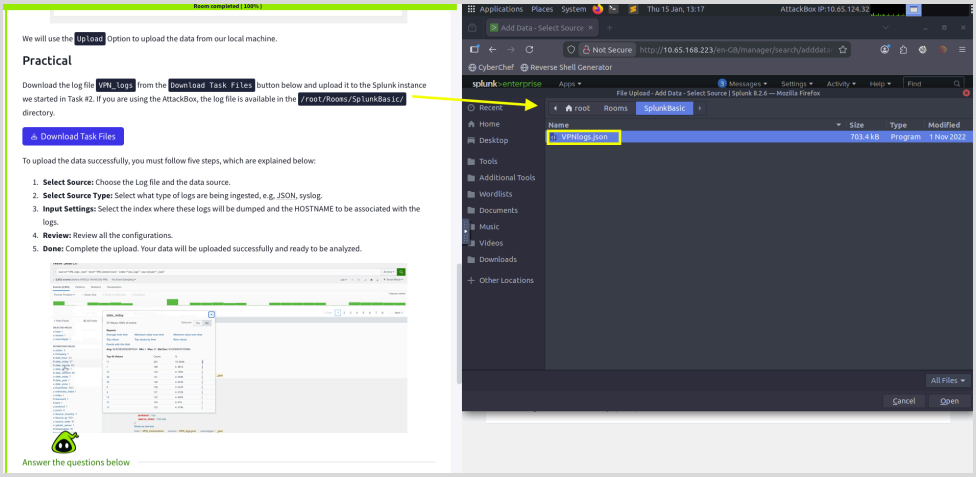
1. Click: Add Data



2. Click: Upload

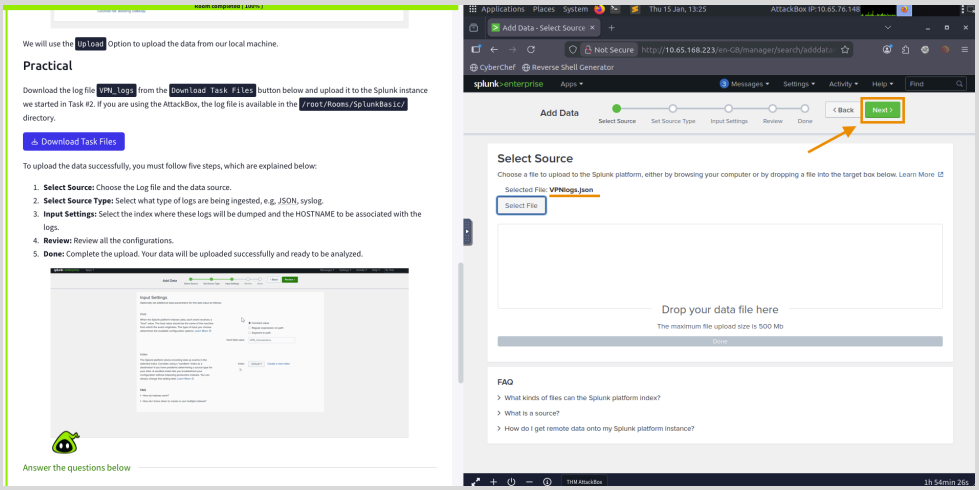


3. Navigate file to be uploaded: /root/Rooms/SplunkBasic/VPNlogs.json
4. Double Click: VPNlogs.json



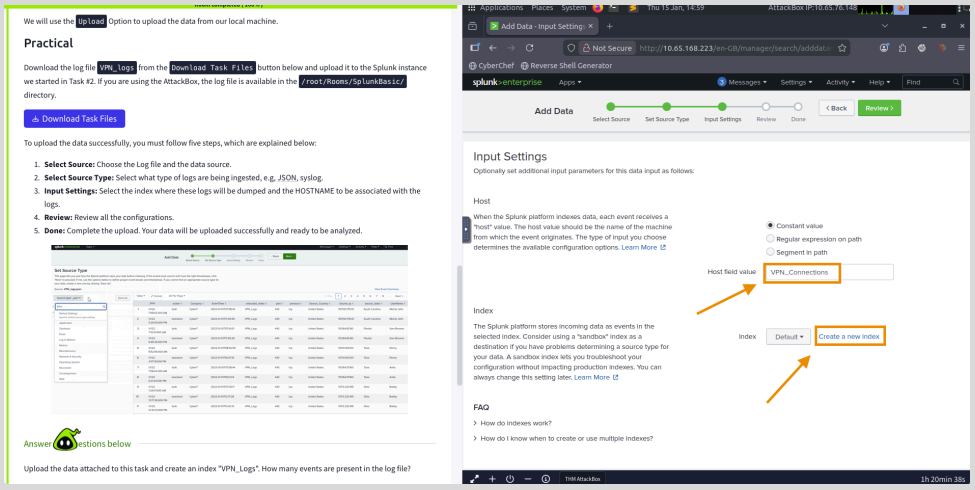
Select Source Type:

1. Click: Next

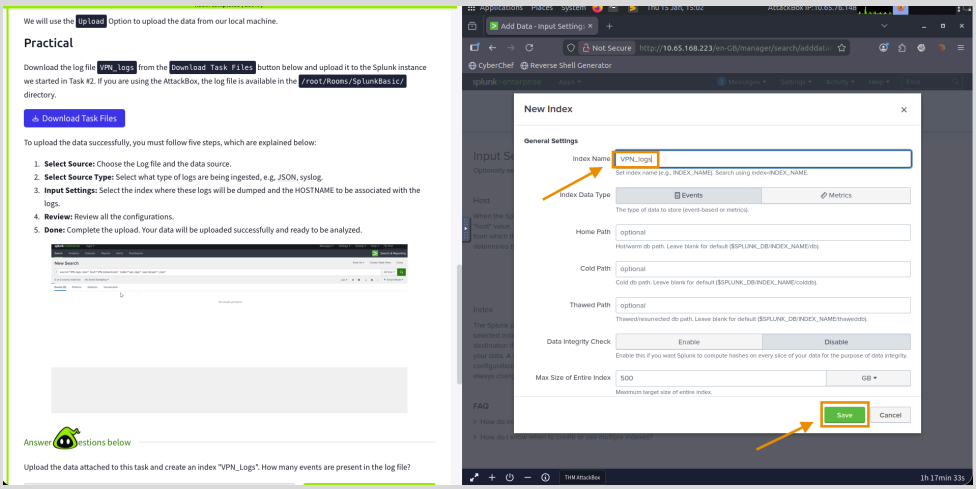


Input Settings::

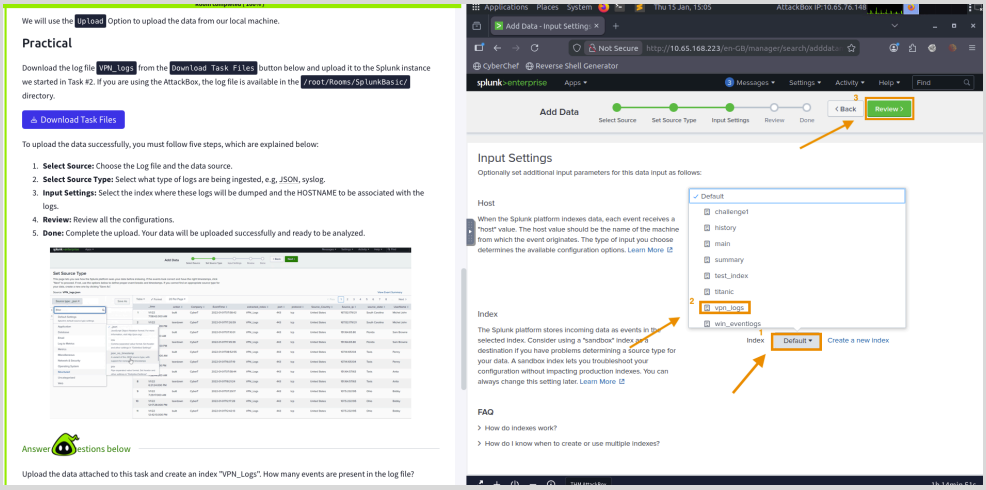
1. Enter in Host Field Value: “VPN_Connections”
2. Click: Create a new index (for the log dump)



3. Enter in Index Name field: VPN_logs
4. Click: Save

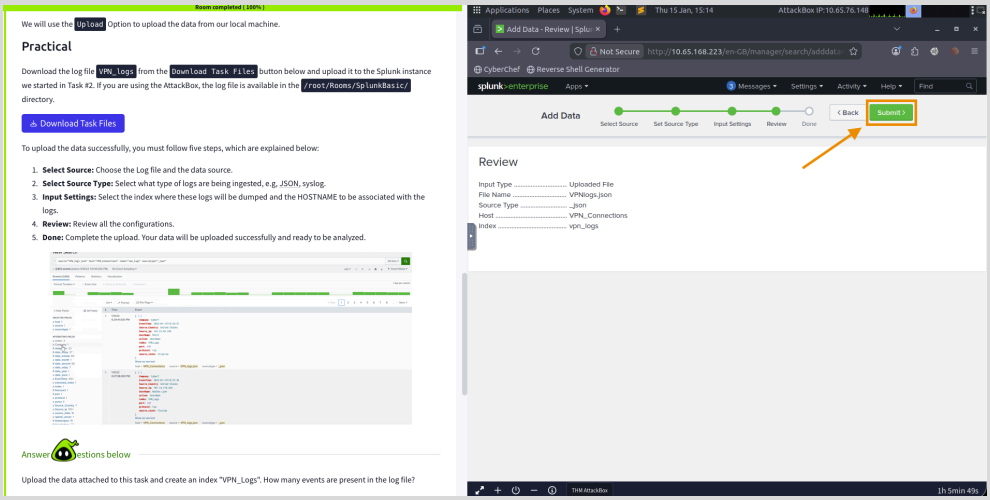


5. Click: Index
6. Select: vpn_logs
7. Click: Review

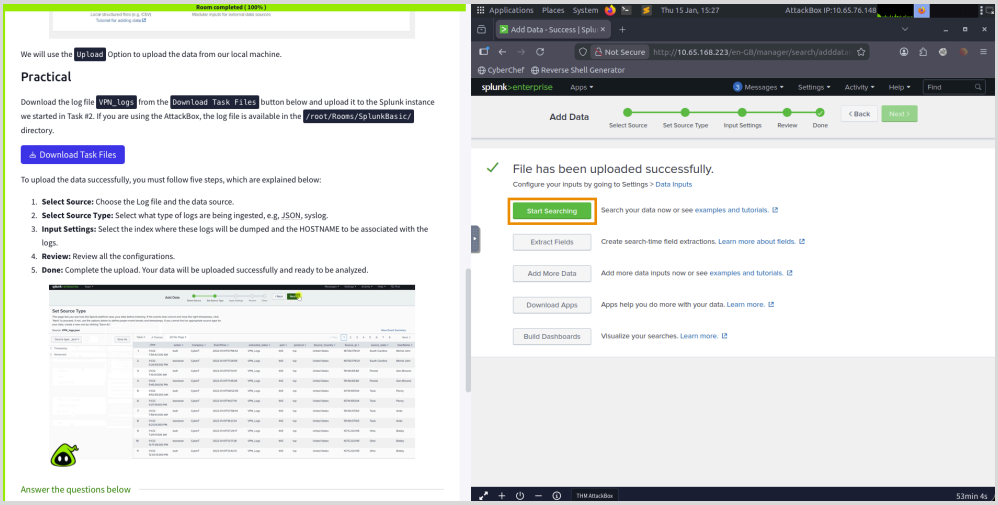


Review:

1. Review settings.
2. Click: Submit



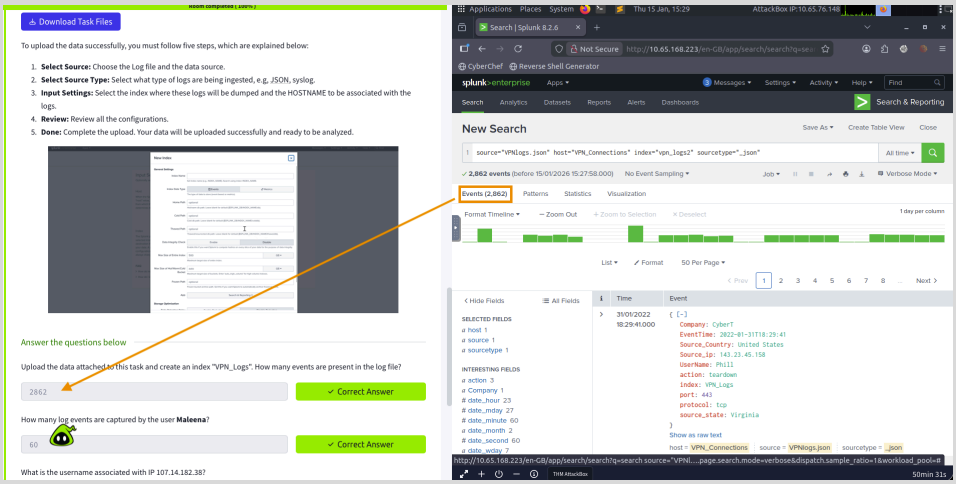
3. Click: Start Searching



Answer the questions below

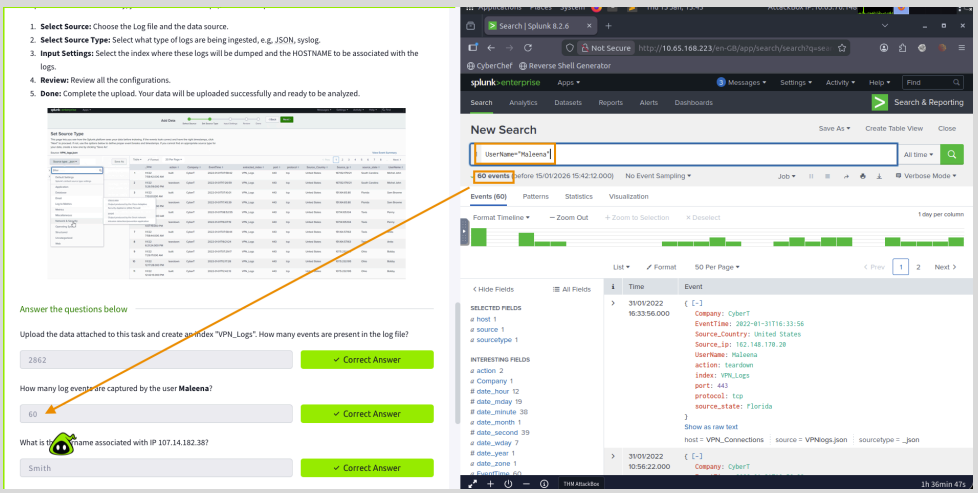
1. Upload the data attached to this task and create an index "VPN_Logs". How many events are present in the log file?

Answer: *2862*



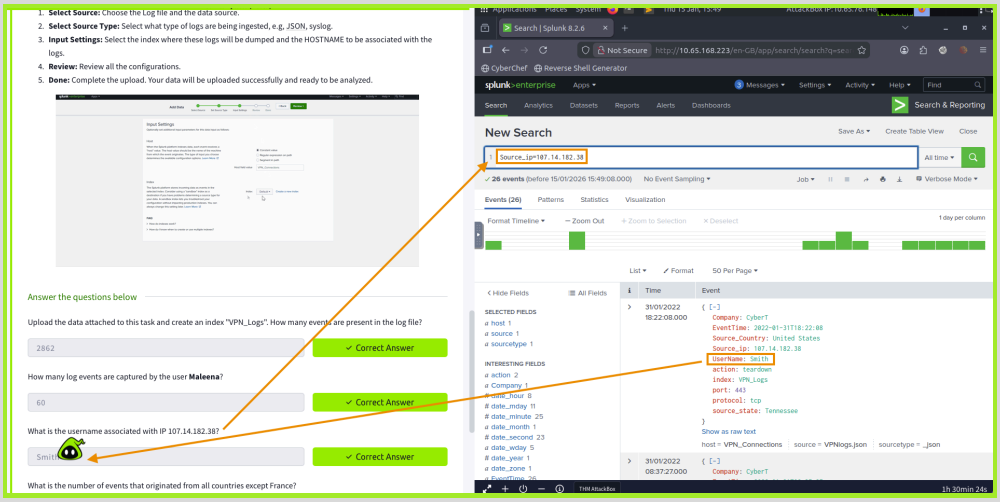
2. How many log events are captured by the user **Maleena**?

Answer: *60*



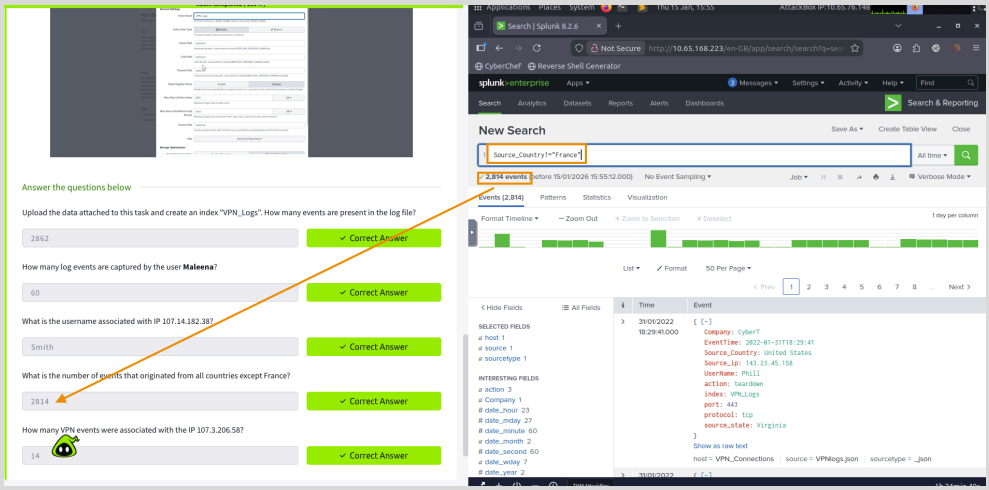
3. What is the username associated with IP 107.14.182.38?

Answer: *Smith*



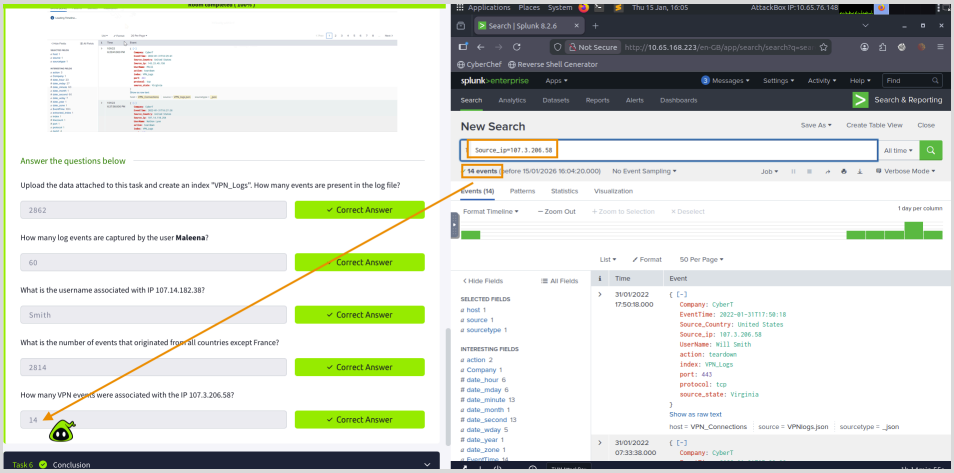
4. What is the number of events that originated from all countries except France?

Answer: *2814*



5. How many VPN events were associated with the IP 107.3.206.58?

Answer: *14*



Task 5 Conclusion

Well done! In this room, you learned about Splunk's core components, explored the Splunk interface, and practiced uploading data to Splunk. You have gained the foundational knowledge of Splunk SIEM.

If you'd like to dig deeper, you can explore the following Splunk walkthrough and challenge rooms to understand how Splunk is effectively used in investigating incidents.

- Splunk: Exploring SPL
- Incident Handling with Splunk
- Investigating With Splunk
- Benign - Challenge
- PoshEclipse - Challenge

Answer the questions below

No answer needed