

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.

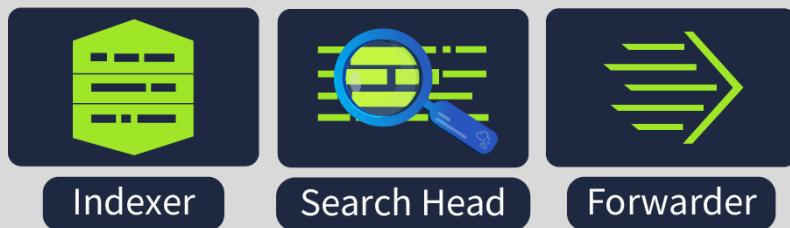
#### Answer the questions below

*No answer needed*

---

### Task 3 Splunk Components

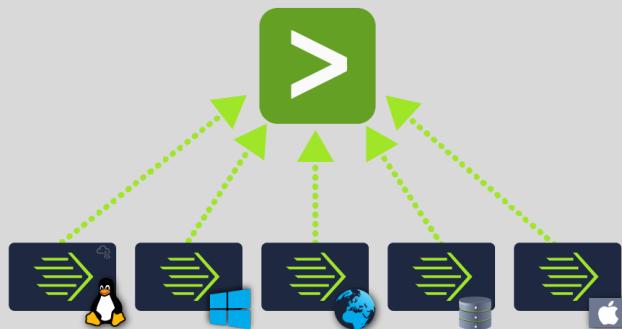
Splunk has three main components: Forwarder, Indexer, and Search Head. These components work together to help us search and analyze the data. These components are explained below:



#### 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 screenshot shows the Splunk Search & Reporting interface. The top navigation bar includes 'Search', 'Datasets', 'Reports', 'Alerts', and 'Dashboards'. The main area is titled 'Search' with a search bar containing 'index=main'. Below the search bar are filters for 'All time' and 'Smart Mode'. At the bottom, there are two tabs: 'How to Search' and 'What to Search'.

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

The screenshot shows the Splunk Visualization interface. The top navigation bar includes 'Events', 'Patterns', 'Statistics (0)', and 'Visualization'. The 'Visualization' tab is selected, showing sub-options for 'Column Chart', 'Format', and 'Trellis'. Below this is a section titled 'Splunk Visualizations' containing a grid of icons for various visualizations like line charts, bar charts, and pie charts. A red box highlights this grid. Below the grid is a link 'Find more visualizations'. To the right, a detailed view of a 'Column Chart' search fragment is shown with the SPL command: '| stats count by comparison\_category'.

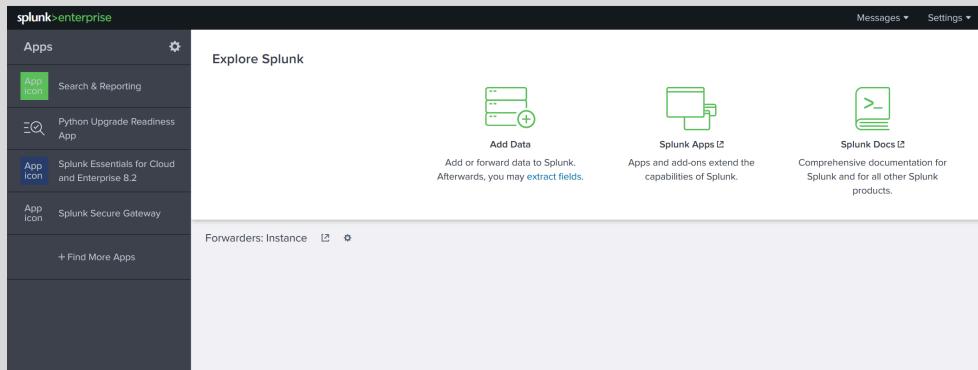
## Answer the questions below

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:



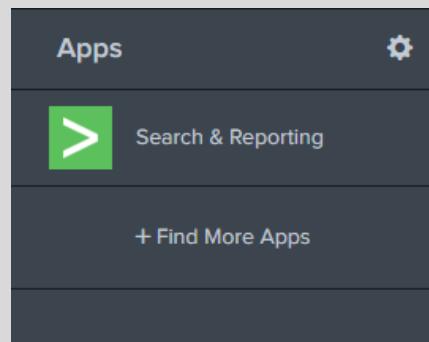
In the Splunk Bar, we have the following options available:

- **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.

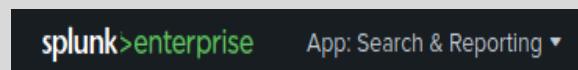
The Splunk Bar, allows users to switch between installed Splunk apps instead of using the Apps panel.

## 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**.

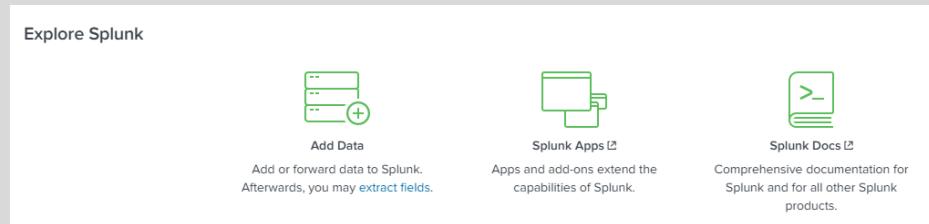


You can also switch between the Splunk Apps directly from the Splunk Bar, as shown below, without using the Apps panel.



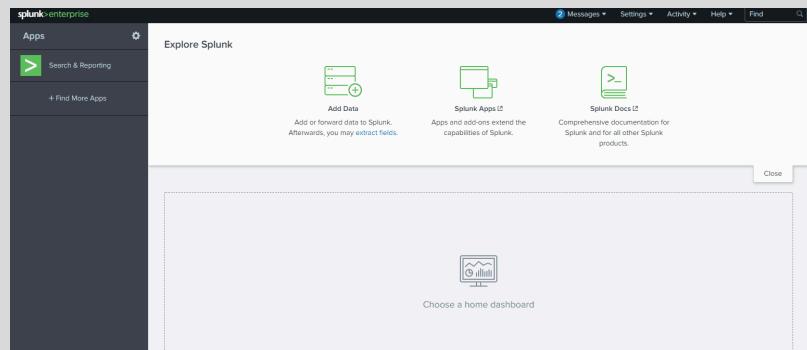
## Explore Splunk

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
<b>Files and directories</b>	Most data that you might be interested in comes directly from files and directories.
<b>Network events</b>	The Splunk software can index remote data from any network port and SNMP events from remote devices.
<b>IT Operations</b>	Data from IT Ops, such as Nagios, NetApp, and Cisco.
<b>Cloud services</b>	Data from Cloud services, such as AWS and Kinesis.
<b>Database services</b>	Data from databases such as Oracle, MySQL, and Microsoft SQL Server.
<b>Security services</b>	Data from security services such as McAfee, Microsoft Active Directory, and Symantec Endpoint Protection.
<b>Virtualization services</b>	Data from virtualization services such as VMWare and XenApp.
<b>Application servers</b>	Data from application servers such as JMX & JMS, WebLogic, and WebSphere.
<b>Windows sources</b>	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.
<b>Other sources</b>	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.

What data do you want to send to the Splunk platform?

Follow guides for onboarding popular data sources

Cloud computing (10 data sources)

Networking (2 data sources)

Operating System (1 data source)

Security (3 data sources)

4 data sources in total

Or get data in with the following methods

Upload (files from my computer, local log files, local structured files (e.g. CSV))

Monitor (files and ports on this Splunk platform instance, modular inputs for external data sources)

Forward (data from a Splunk forwarder, files - TCP/UDP - Scripts)

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:

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

## Select Source File:

### 1. Click: Add Data

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/Roos/SplunkBasic/** directory.

**ds. Download Task File**

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.

**Answer the questions below**

**Explore Splunk**

Add or forward data to Splunk. Afterwards, you may extract fields.

**Splunk Apps**

Apps and add-ons extend the capabilities of Splunk.

**Forwarders Instance**

Forwarder Monitoring is disabled. Please go to the [setup](#) page to enable it.

**THM AttackBox**

### 2. Click: Upload

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/Roos/SplunkBasic/** directory.

**ds. Download Task File**

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.

**Follow guides for onboarding popular data sources**

**Cloud computing**: Get your cloud computing data in to the Splunk platform. 10 data sources

**Networking**: Get your networking data in to the Splunk platform. 2 data sources

**OS**: Get your operating system data in to the Splunk platform. 1 data source

**Security**: Get your security data in to the Splunk platform. 3 data sources

4 data sources in total

**Or get data in with the following methods**

**Upload files from my computer**: Local log files, Local machine log files as CSV, Tutorial for adding data! (highlighted)

**Monitor**: files and ports on this Splunk platform instance, Files - HTTP - WMI - TCP/UDP - Scripts, Monitor inputs to external data sources

**Forward**: data from a Splunk forwarder, Files - TCP/UDP - Scripts

### 3. Navigate file to be uploaded: /root/Roos/SplunkBasic/VPNlogs.json

### 4. Double Click: VPNlogs.json

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/Roos/SplunkBasic/** directory.

**ds. Download Task File**

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.

**Recent** (highlighted)

Recent: Home, Desktop, Tools, Additional Tools, Wordlists, Documents, Music, Videos, Downloads, Other Locations

Name: **VPNlogs.json**, Size: 763.4kb, Type: Program, Modified: 1 Nov 2022

All Files

Cancel Open

**Answer the questions below**

### Select Source Type:

## 1. Click: Next

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

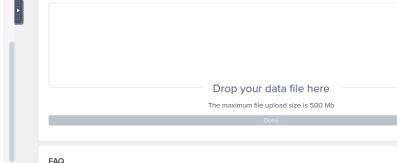
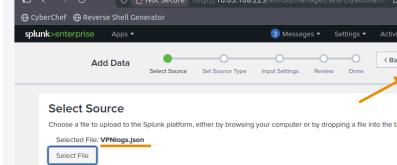
## Practical

Download the log file **VMLogs** 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/Roos/SplunkBasic` directory.

[Download Task Files](#)

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

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



Answer the questions below

## Input Settings::

1. Enter in Host Field Value: "VPN\_Connections"
  2. Click: Create a new index (for the log dump)

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/Roses/SplunkBasic/` directory.

[Download Task Files](#)

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

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

The Splunk platform stores incoming data as events in the selected index. Consider using a "sandbox" index as a destination if you are not sure about what source types your data contains. A sandbox index lets you troubleshoot your configuration without impacting production indexes. You can always change this setting later. Learn More [\[12\]](#)

**FAQ**

› How do indexes work?  
› How do I know when to create or use multiple indexes?

3. Enter in Index Name field: VPN\_logs
  4. Click: Save

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

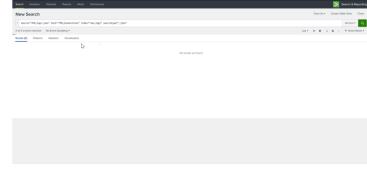
**Practical**

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/Roots/SplunkBasic/** directory.

**Download Task Files**

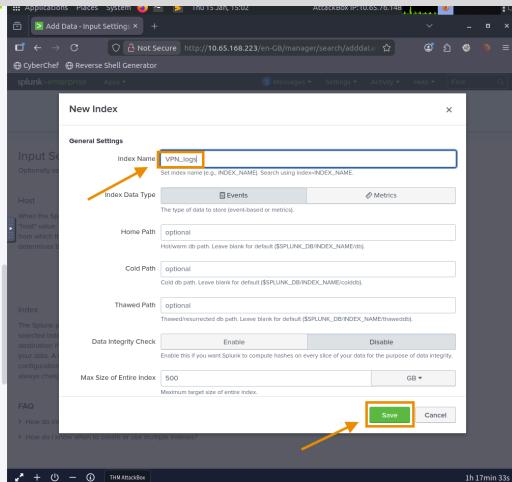
To upload the data successfully, you must follow five steps, which are explained below:

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



**Answer**  **questions below**

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



New Index

General Settings

Index Name: **VPN\_Logs**

Index Data Type:  Events  Metrics

Home Path: optional

Cold Path: optional

Thawed Path: optional

Data Integrity Check:  Enable  Disable

Max Size of Entire Index: 500 GB

FAQ

How do I...  
How do I know when to create or use multiple indexes?

**Save** **Cancel**

1h 17min 33s

- Click: Index
- Select: vpn\_logs
- Click: Review

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/Roots/SplunkBasic/** directory.

**Download Task Files**

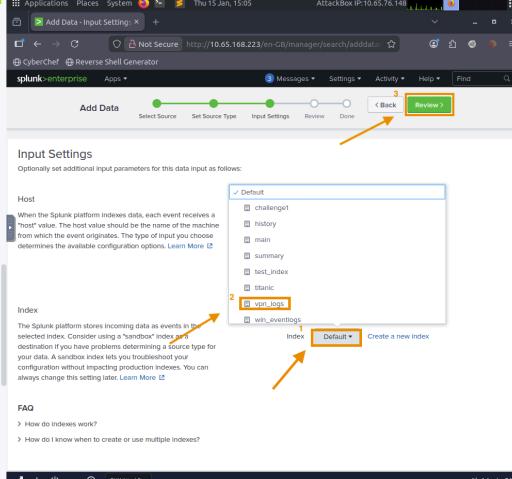
To upload the data successfully, you must follow five steps, which are explained below:

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



**Answer**  **questions below**

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



Add Data

Input Settings

When the Splunk platform indexes data, each event receives a "host" value. The host value should be the name of the machine from which the event originates. The type of input you choose determines the available configuration options. Learn More 

Host:  challenged  history  main  summary  test\_index  static  vpn\_logs  win\_eventlogs

Index: **Default** **vpn\_logs** Create a new Index

FAQ

How do indexes work?  
How do I know when to create or use multiple indexes?

1h 17min 33s

## Review:

- Review settings.
- Click: Submit

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

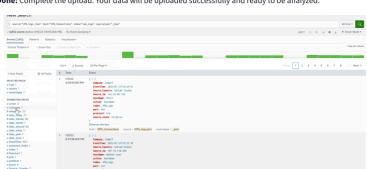
**Practical**

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/Roots/SplunkBasic/** directory.

**Download Task Files**

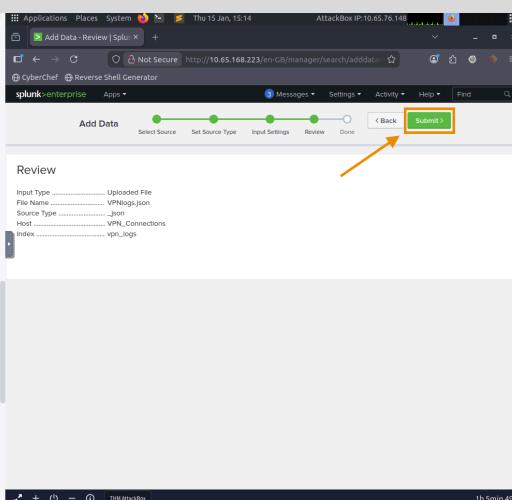
To upload the data successfully, you must follow five steps, which are explained below:

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



**Answer**  **questions below**

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



Add Data

Review

Input Type: **Uploaded File** File Name: **VPNLogs.json** File Type: **JSON**

File Host: **VPN\_Connections** Index: **vpn\_logs**

**Submit**

1h 5min 49s

### 3. Click: Start Searching

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/Roos/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.

**Set Source Type**

The Set Source Type screen allows you to define how the data will be ingested. You can choose the Log file and the data source type, and set input settings like the index and host.

Answer the questions below

**✓ File has been uploaded successfully.**

Configure your inputs by going to [Settings > Data Inputs](#)

**Start Searching** Search your data now or see examples and tutorials.

**Extract Fields** Create search-time field extractions. Learn more about fields.

**Add More Data** Add more data inputs now or see examples and tutorials.

**Download Apps** Apps help you do more with your data. Learn more.

**Build Dashboards** Visualize your searches. Learn more.

### 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

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.

Answer the questions below

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

2862

**Correct Answer**

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

60

**Correct Answer**

What is the username associated with IP 107.14.182.38?

**Search** **Analytics** **Datasets** **Reports** **Alerts** **Dashboards** **Search & Reporting**

**New Search**

1 source="VPNLogs.json" host="VPN\_Connections" index="vpn\_log2" sourcetype="json"

✓ 2,862 events (before 15/01/2026 15:27:58.000) No Event Sampling Job Verbose Mode

**Events (2,862)** Patterns Statistics Visualization

Format Timeline • Zoom Out Zoom to Selection × Detach 1 day per column

List Format 50 Per Page

◀ Hide Fields ▶ All Fields **i** Time Event

**SELECTED FIELDS**

- # host 1
- # source 1
- # sourceType 1

**INVESTIGATING FIELDS**

- # action 1
- # Company 1
- # date\_hour 23
- # date\_mday 27
- # date\_min 00
- # date\_month 09
- # date\_second 60

31/01/2022 18:29:41:000

Event ( - )

username: Cyber\*

EventTime: 2022-01-31T18:29:41

SourceCountry: United States

SourceIp: 143.23.45.18

SourcePort: 443

Action: taurweb

Index: VPN\_Logs

Type: taurweb

Protocol: tcp

SourceState: Virginia

Show as raw text

host = VPN\_Connections | source = VPNLogs.json | sourcetype = json

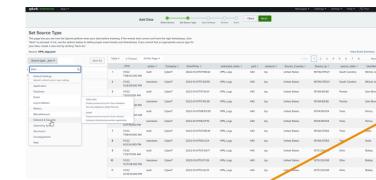
http://10.65.168.223/en-GB/app/search/search?q=search source="VPNLogs.json" -page search mode=verbose&dispatch sample \_afile=1&workload\_pool=a

50min 31s

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

Answer: 60

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.



Answer the questions below

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

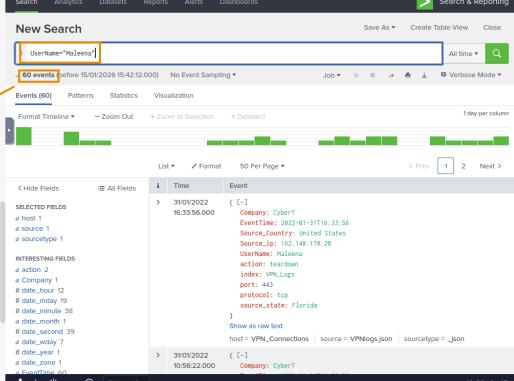
2862 ✓ Correct Answer

How many log events are captured by the user Maleena?

60 ✓ Correct Answer

What is the username associated with IP 107.14.182.38?

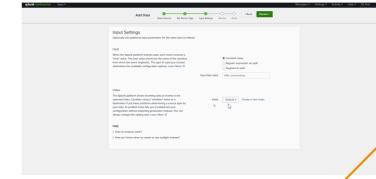
Smith ✓ Correct Answer



### 3. What is the username associated with IP 107.14.182.38?

Answer: Smith

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.



Answer the questions below

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

2862 ✓ Correct Answer

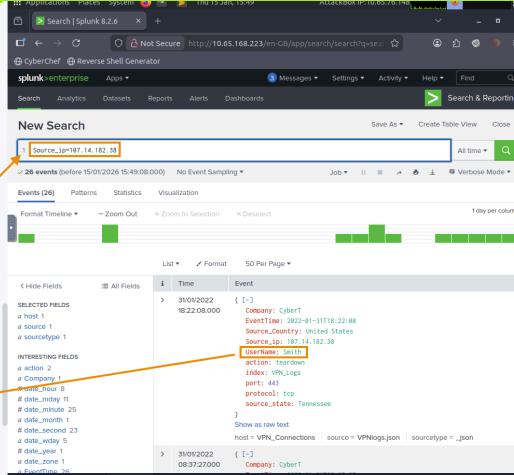
How many log events are captured by the user Maleena?

60 ✓ Correct Answer

What is the username associated with IP 107.14.182.38?

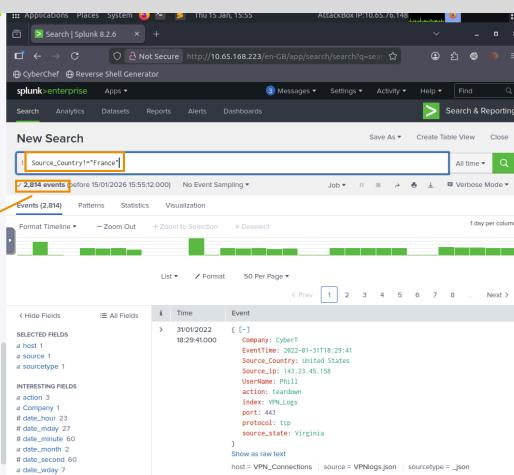
Smith ✓ Correct Answer

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



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

Answer: 2814



Answer the questions below

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

2862 ✓ Correct Answer

How many log events are captured by the user Maleena?

60 ✓ Correct Answer

What is the username associated with IP 107.14.182.38?

Smith ✓ Correct Answer

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

2814 ✓ Correct Answer

How many log events were associated with the IP 107.3.206.58?

14 ✓ Correct Answer

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

Answer: 14

The screenshot shows the CyberChef interface with a search result for VPN logs. The search bar contains "source\_ip=107.3.206.58". The results table shows two events:

Time	Event
31/01/2022 17:50:18.000	Company: CyberT EventTime: 2022-01-31T17:50:18 SourceCountry: United States SourceIp: 107.3.206.58 User: Smith Action: teardown Index: VPNLogs Port: 443 Protocol: TCP SourceState: Virginia
31/01/2022 07:33:38.000	Company: CyberT EventTime: 2022-01-31T07:33:38 SourceCountry: CyberChef SourceIp: 107.3.206.58 Action: teardown Index: VPNLogs.json Source: VPNLogs.json SourceType: _json

## 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