TASK 2 REPORT

Task Title: SIEM-Based Incident Monitoring and Analysis
Track Code: FUTURE_CS_02
Intern Name: Sarita Sharma

Aim:

The objective is to use a SIEM tool (Splunk) to track and analyze simulated security logs, aiming to detect potential threats such as unusual login behavior, brute-force attacks, malware activity and patterns between users and IP addresses. This task replicates real-world threat detection scenarios using custom log data to derive meaningful security insights.

Tools Used:

- **SIEM Tool**: Splunk (Free Trial)
- **Environment**: Custom formatted log file
- **Log File Analyzed**: SOC_Task2_Sample_Logs.txt

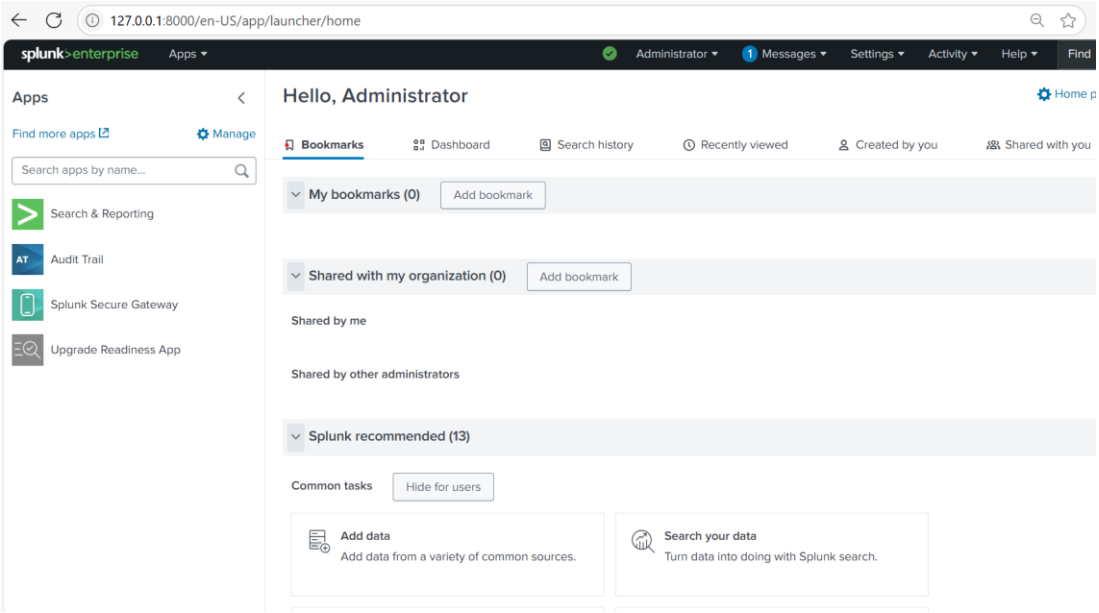
Procedure & Findings:

The log file was imported into Splunk using the upload feature. Several searches were performed uncover:

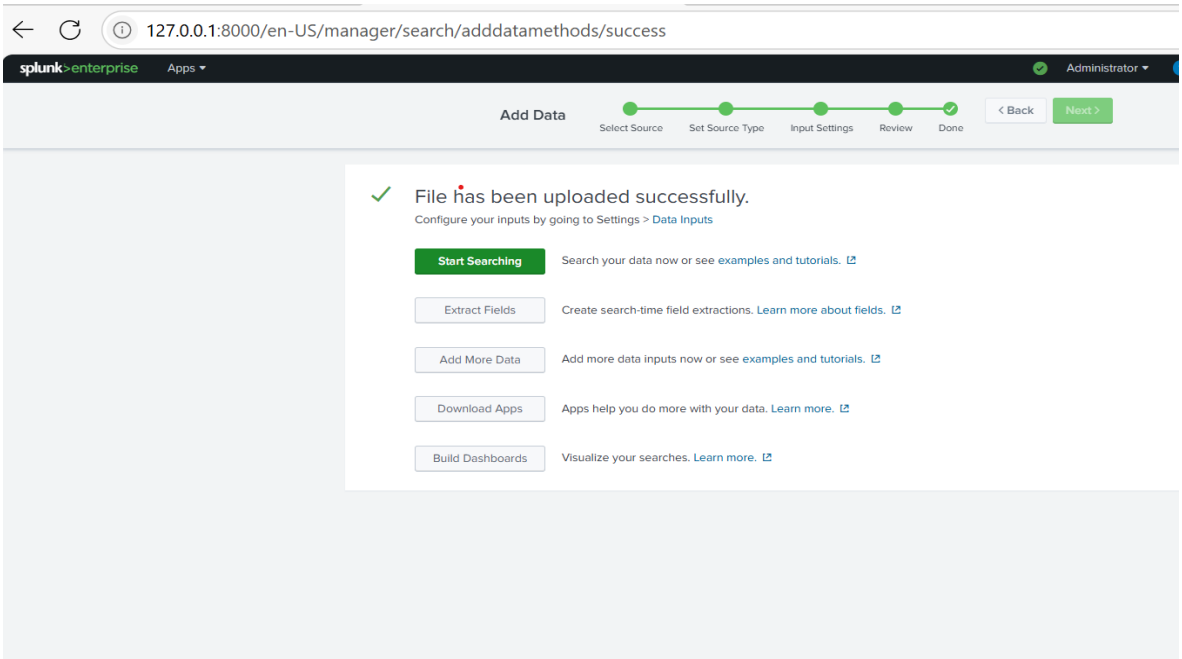
- Unusual login patterns, such as multiple failed attempts
- Successful logins following repeated failures, indicating possible account compromise
- Malware detections linked to specific users or IP addresses

Each search result was examined visually and analyzed using statistical tools to gain deeper insights.

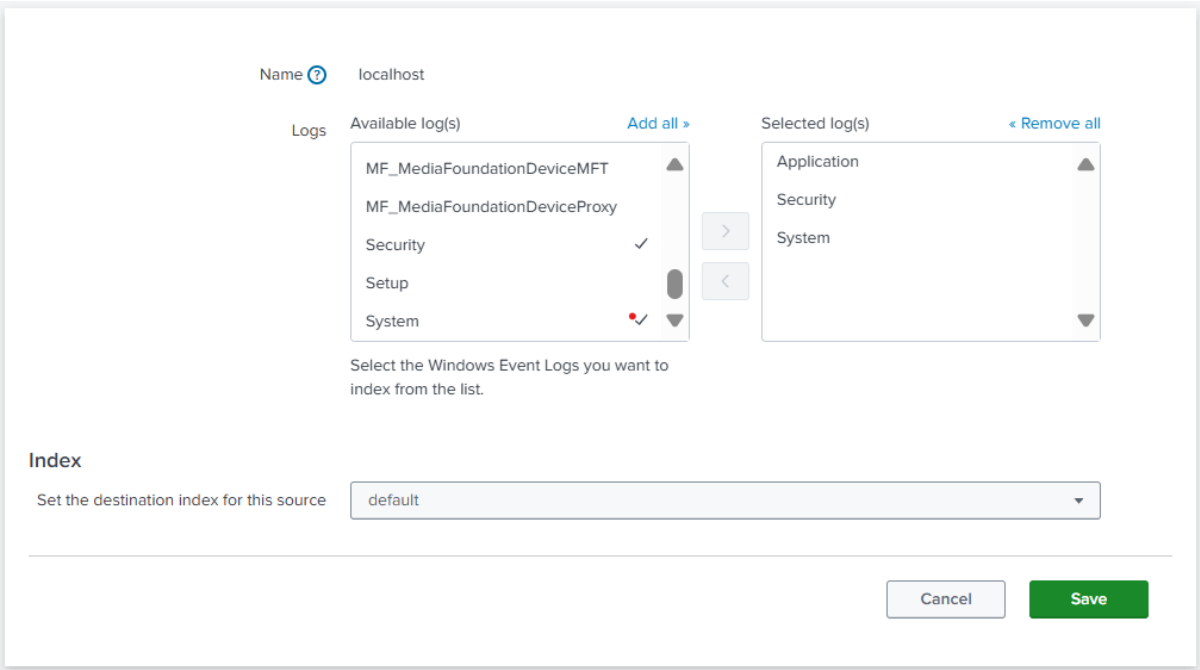
I created a Splunk account and navigated to the dashboard interface.



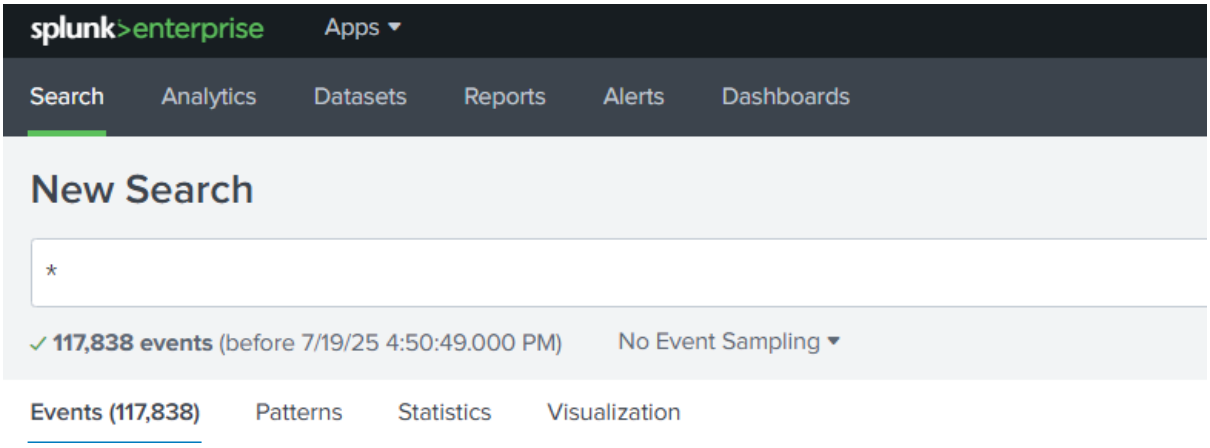
After that, I uploaded the provided sample log file (“SOC_Task2_Sample_Logs”) to begin the analysis.



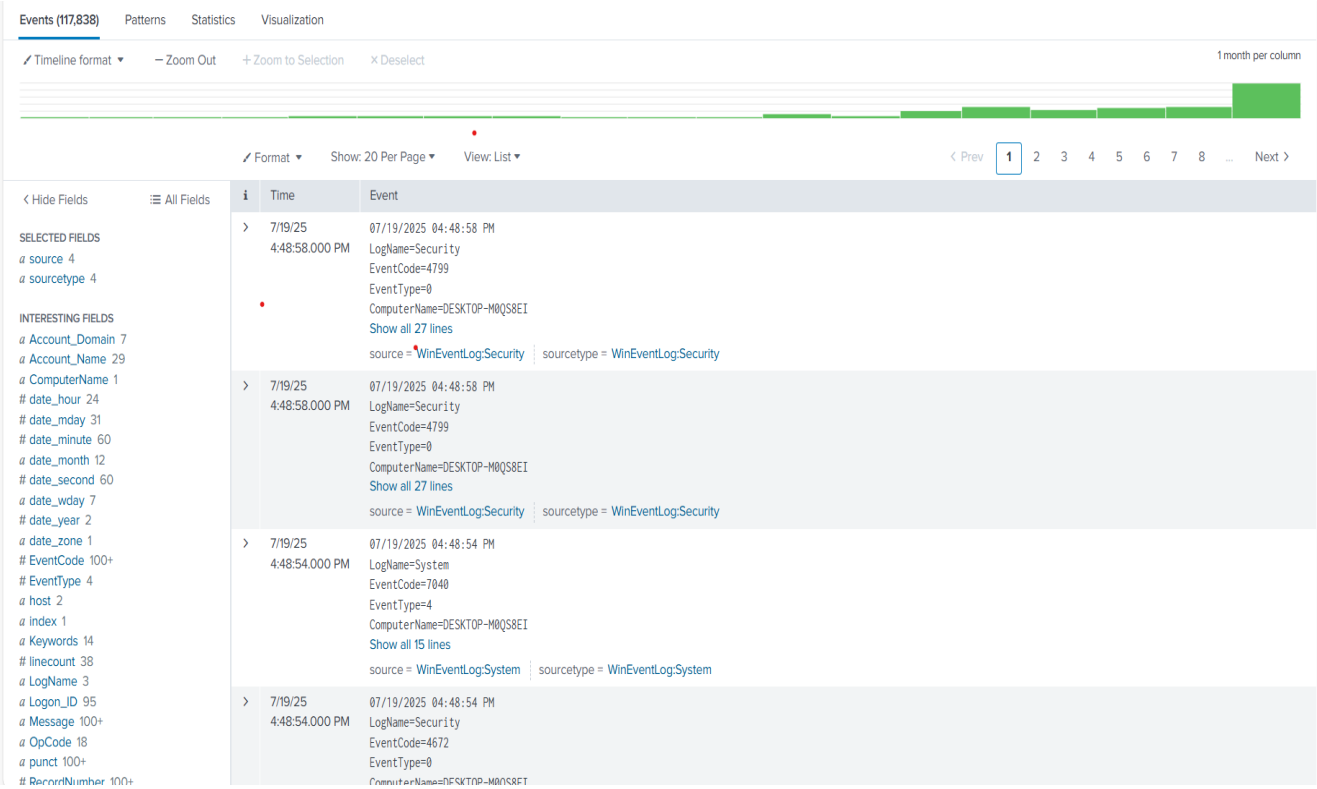
Next, I set up the Splunk data input by choosing the necessary event log types: Application, Security, and System—and assigned a default index to monitor Windows event logs.



I then ran a wildcard search (*) in Splunk to confirm that the logs were ingested correctly, which returned over 117,838 events for detailed analysis.



After doing that, the logs appeared as follows:



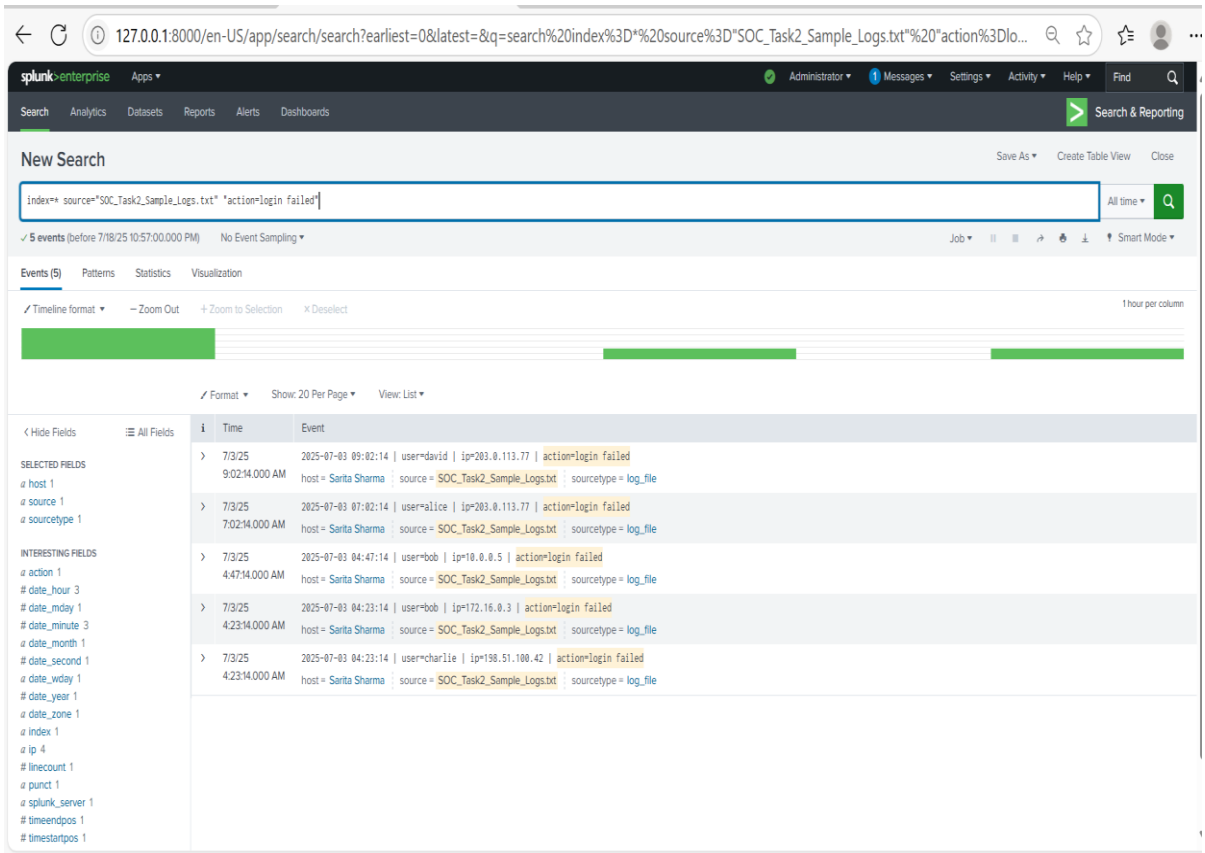
Tasks Performed:

Splunk Queries Used

1. **Search for Failed Logins:**

```
Index =* source="SOC_Task2_Sample_Logs.txt" "action=login failed"
```

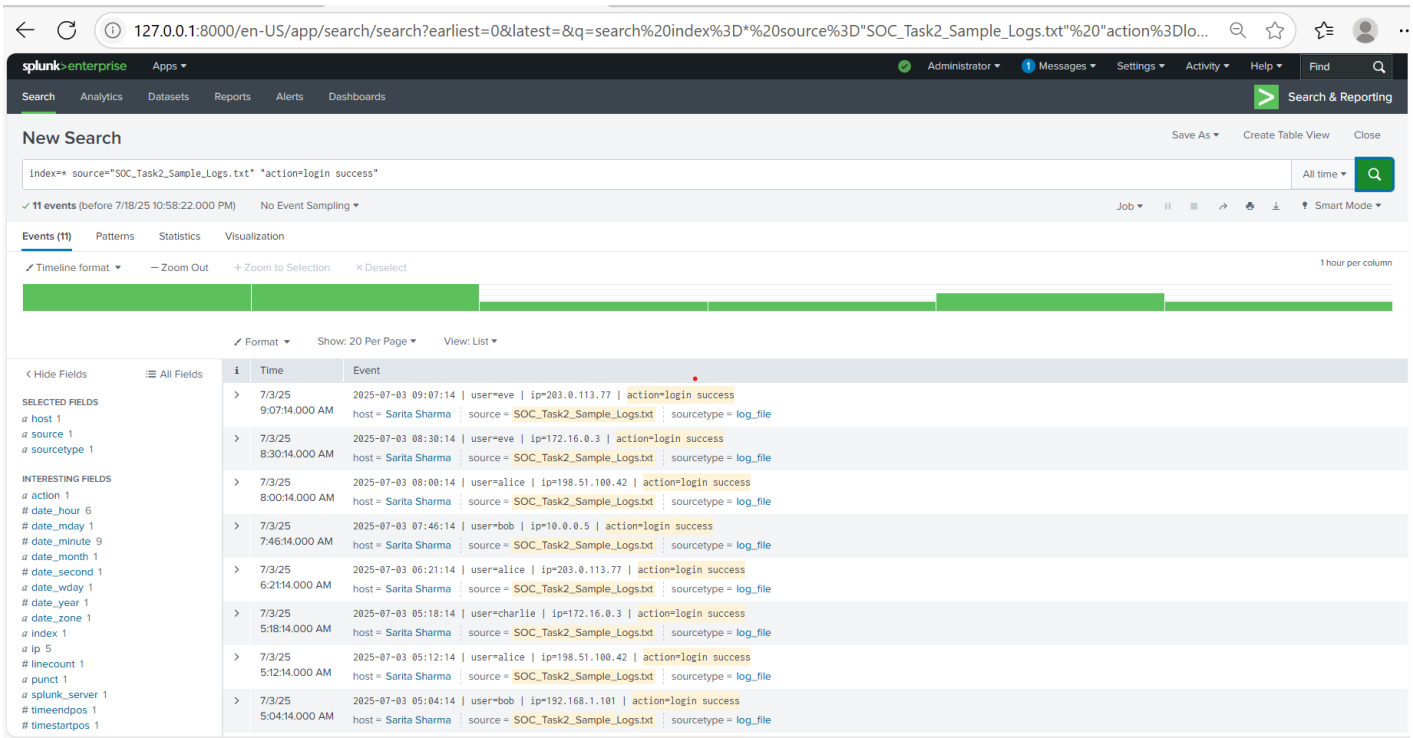
It retrieved a list of users and their corresponding IPs involved in failed login events.

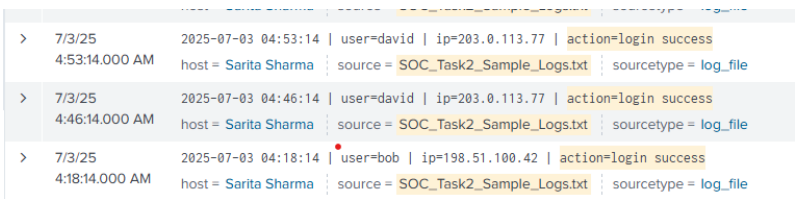


2. **Search for Successful Logins**:

```
Index =* source="SOC_Task2_Sample_Logs.txt" "action=login success"
```

This query returned a list of IP addresses and users with successful logins for comparison with the above results.





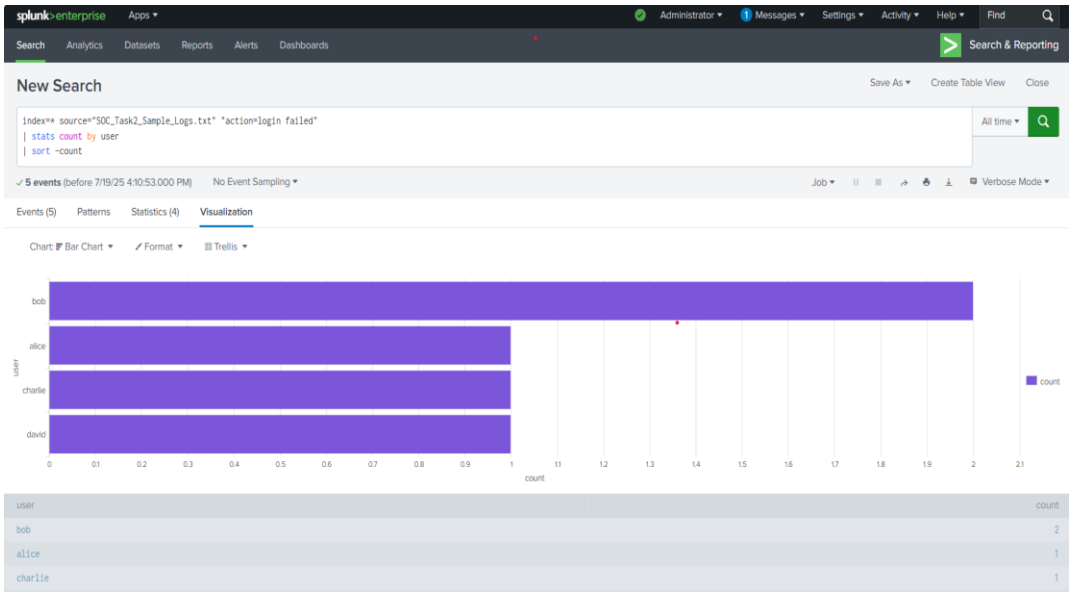
3. **Failed Logins by User**

```
Index =* source="SOC_Task2_Sample_Logs.txt" "action=login failed"
```

```
| stats count by user
```

```
| sort -count
```

It returned a list of users most frequently targeted by attacks.



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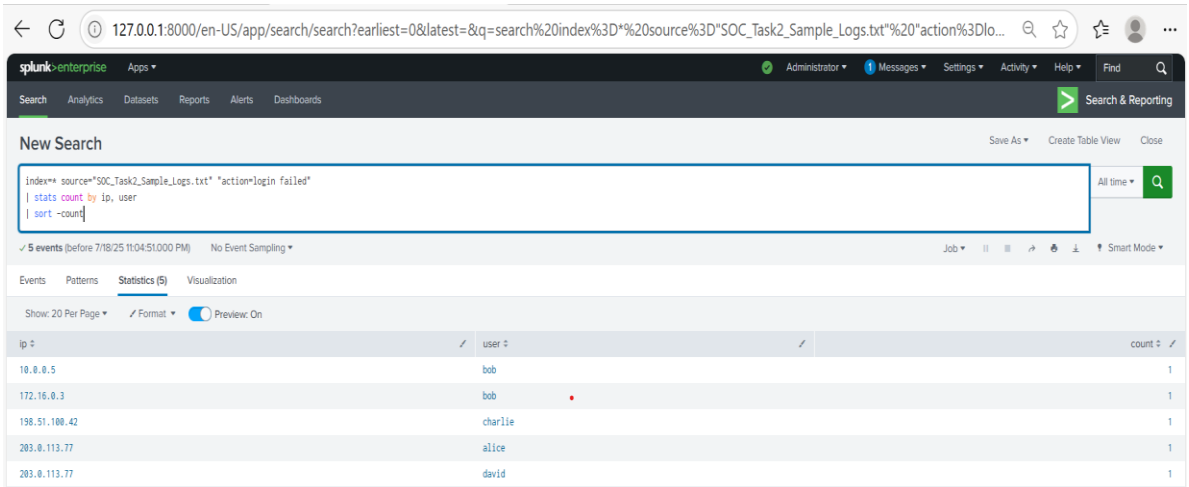
4. **Frequent Login Failures from IPs**

```
Index =* source="SOC_Task2_Sample_Logs.txt" "action=login failed"
```

```
| stats count by ip, user
```

```
| sort -count
```

This query returned a list of IP addresses with the highest number of login failures, aiding in the analysis of potential malware activity or recurring attack patterns.



5. **Accounts with Both Failures and Success (Brute-force Indication)**

Index =* source="SOC_Task2_Sample_Logs.txt" ("action=login failed" OR "action=login success")
| stats values(action) as actions by user, ip
| where mvcount(actions)=2 AND "login failed" IN actions AND "login success" IN actions

6. Brute Force / Compromise Analysis

Manual correlation of login, connection, and malware events uncovered suspicious patterns across several users, even without traditional brute-force sequences. The following user-IP combinations suggest possible account compromise or lateral movement:

Bob:

10.0.0.5: login + malware

172.16.0.3: login + malware

192.168.1.101: login + connection
→ Indicates credential compromise and internal spread.

Charlie:

172.16.0.3: login + malware + connection

10.0.0.5 & 192.168.1.101: multiple connection attempts

→ Suggests reconnaissance followed by unauthorized access.

Alice:

Malware from: 172.16.0.3, 192.168.1.101, 198.51.100.42

Login from: 203.0.113.77
→ Multiple infections suggest repeated endpoint compromise.

Eve:

Login: 172.16.0.3

Malware: 10.0.0.5
→ Possible shared infected device or user-level breach.

David:

Login: 203.0.113.77

Malware: 172.16.0.3
→ Actions point to potential data exfiltration or compromised endpoint.

These findings show how correlating user actions with IP-based indicators (login, malware, connection) can reveal threats not visible through brute-force patterns alone.

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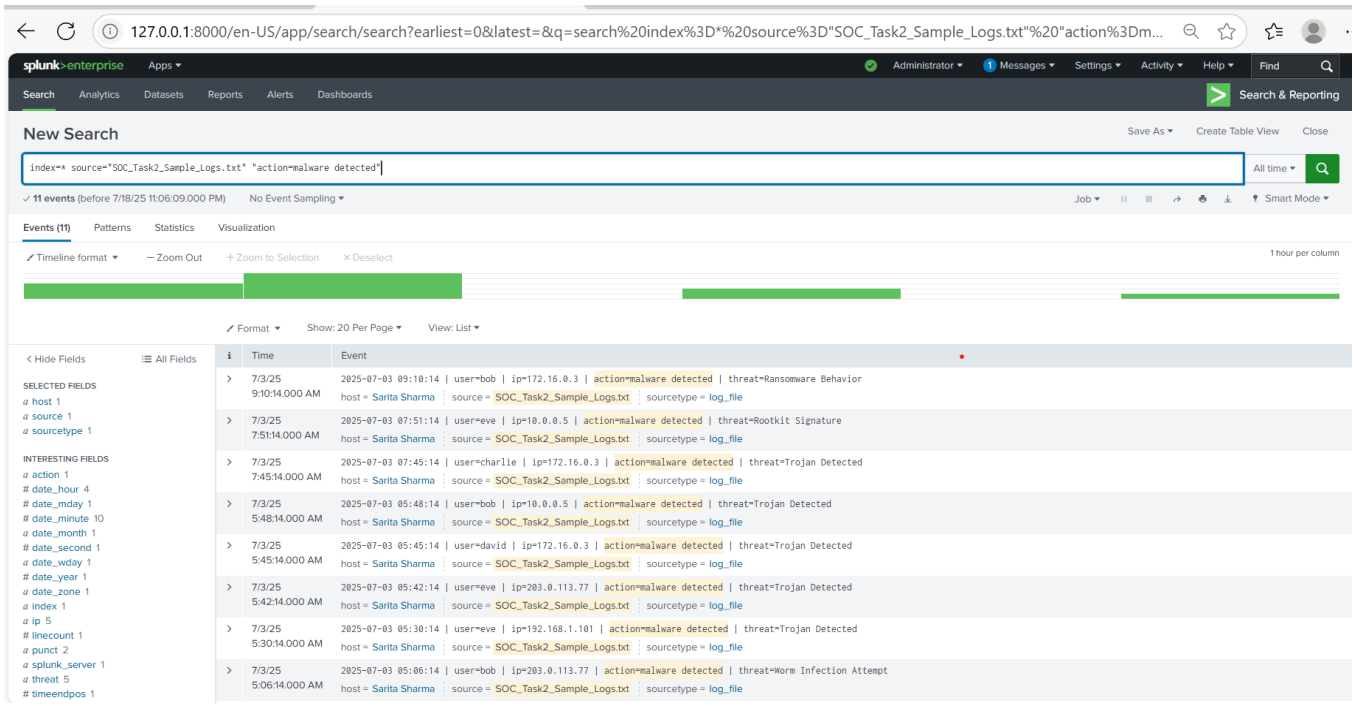
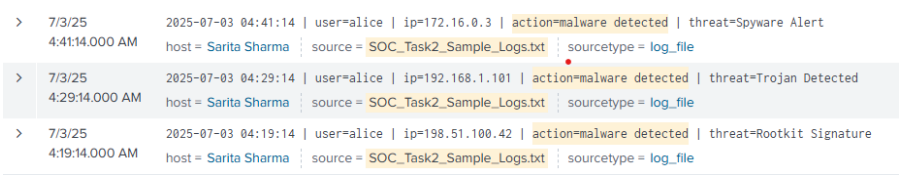
user	ip	actions
alice	198.51.100.42	login malware
alice	203.0.113.77	file login
bob	10.0.0.5	login malware
bob	172.16.0.3	file login malware
bob	192.168.1.101	connection login
bob	198.51.100.42	file login
bob	203.0.113.77	connection file malware
charlie	10.0.0.5	connection
charlie	172.16.0.3	connection login malware
charlie	192.168.1.101	connection
charlie	198.51.100.42	login
charlie	203.0.113.77	file
david	10.0.0.5	connection file
david	172.16.0.3	connection malware
david	198.51.100.42	file
david	203.0.113.77	connection file login
eve	10.0.0.5	malware
eve	172.16.0.3	file login

7. **Detected Malware Activity**

```
index=* source="SOC_Task2_Sample_Logs.txt" "action=malware detected"
```

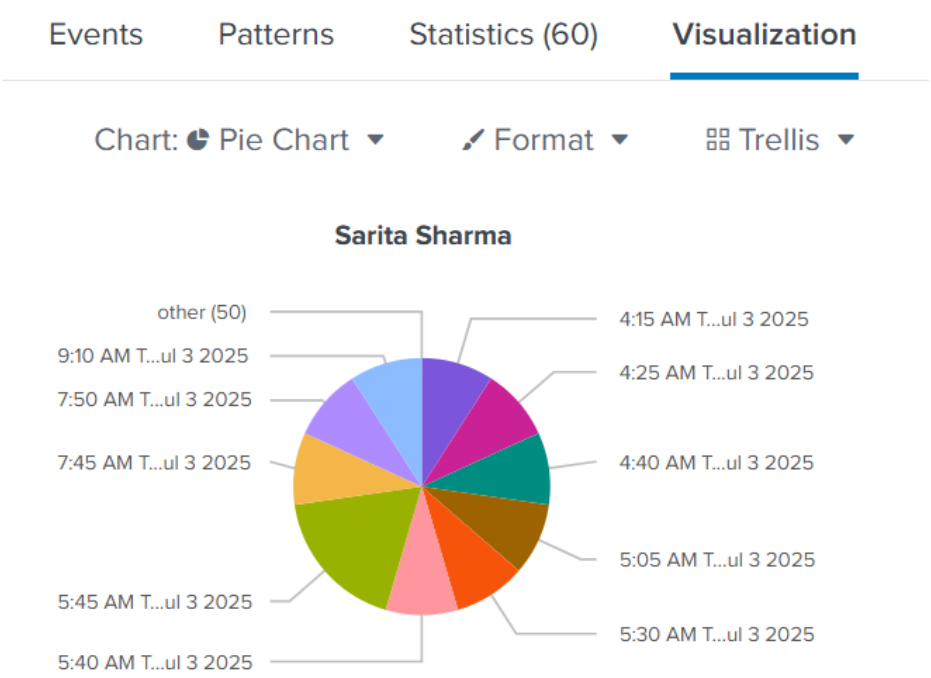
This query showed rows or charts indicating of malware, action, users and threats.





Incident Classification

Type	Description	Severity
Brute Force Attempt	Repeated failed logins for Bob and Charlie from IP 10.0.0.5	High
Account Compromise	David showed both failed and successful logins from 203.0.113.77	Critical
Malware Infection	Trojan/Rootkit activity from IPs 192.168.1.101, 198.51.100.42	Critical
Recon/Scanning	Multiple connection attempts to internal IPs	Medium



Security Response Summary

Urgent Actions

- Block/Watch IPs**:** 10.0.0.5, 203.0.113.77, 192.168.1.101 flagged for suspicious activity
- Password Resets**:** Immediate reset for users showing signs of compromise
- Quarantine Devices**:** Isolate any endpoints linked to Trojan or Rootkit detections

Preventive Steps

- Activate Multi-Factor Authentication (MFA) across all accounts
- Apply rate limiting and account lockout after multiple login failures
- Create alerts for abnormal login failure volumes

Ongoing Checks

- Regularly review privileged account logins
- Strengthen Splunk detection logic to catch brute-force attempts
- Conduct staff training on spotting phishing and suspicious behaviors

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Learning Outcomes:

- Used Splunk to analyze custom log formats effectively
- Identified login failures, brute-force behavior, and post-attack traces
- Practiced building and refining SPL queries for real-time insights
- Tracked malware sources using IP and user activity correlation

Conclusion

This hands-on lab demonstrated how Splunk can uncover threats like unauthorized access and malware activity. Targeted queries enabled quick detection and response to simulated attacks.

Ethical Note: All analysis was conducted in a safe lab using demo data—no real systems were impacted.

Incident Communication Email Demonstration:

Subject: Incident Report – Unusual Login Activity & Malware Detection

To: SOC Manager
From: Sarita Sharma
Date: 07/18/2025

Dear Sir/Madam,

This is to inform you that several suspicious activities were identified during log analysis conducted in Splunk. The findings point to multiple failed login attempts, signs of malware infections, and possible account compromise.

Summary of key findings**:**

IP 10.0.0.5 – Detected brute-force login attempt

User: David – Unusual login behavior and malware presence

IP 192.168.1.101 – Indications of Trojan activity

For detailed insights and recommended actions, please refer to the full report.

Best regards,
Sarita Sharma
SOC Intern – Future Interns