FUTURE INTERNS

INTERNSHIP PROJECT

TASK 2

INCIDENT RESPONSE REPORT

Title: Security Alert Monitoring & Incident Response using Splunk (DNS Analysis)

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Date: 22 August 2025

About the Task

As part of my cybersecurity internship with Future Interns, this task focused on monitoring and analyzing DNS logs using **Splunk**, a SIEM (Security Information and Event Management) tool. The objective was to identify suspicious DNS activities, such as unusual query patterns, spikes in requests, and potential command-and-control (C2) communications.

This exercise provided hands-on experience in **threat detection**, **log analysis**, and **incident classification**, simulating real-world SOC operations.

Objective

The primary objectives of this task were to:

- Set up and explore **Splunk Cloud** for DNS log analysis.
- Ingest and analyze simulated DNS logs.
- Identify anomalies (e.g., unusual domains, spikes in queries, suspicious source IPs).
- Classify incidents based on severity (High, Medium, Low).
- Document findings in a structured **Incident Response Report**.

What I Did?

- Here is a summary of my workflow:
- Logged into **Splunk Cloud** and uploaded DNS log data (or used preexisting datasets).
- Ran search queries to analyze DNS events, focusing on anomalies.
- Identified key patterns (e.g., top destination IPs, unusual query diversity).
- Classified incidents based on observed threats.
- Compiled findings into this report with screenshots and mitigation recommendations.

Tools & Environment

- **Splunk Cloud (Free Trial)** – SIEM tool for log analysis.
- **Sample DNS Logs** – Simulated DNS query data.
- **Edge Browser** – For accessing Splunk dashboards.
- **Snipping Tool** – To capture screenshots.
- **MS Word** – Used to compile this report.

Methodology

The following steps were taken to complete the task:

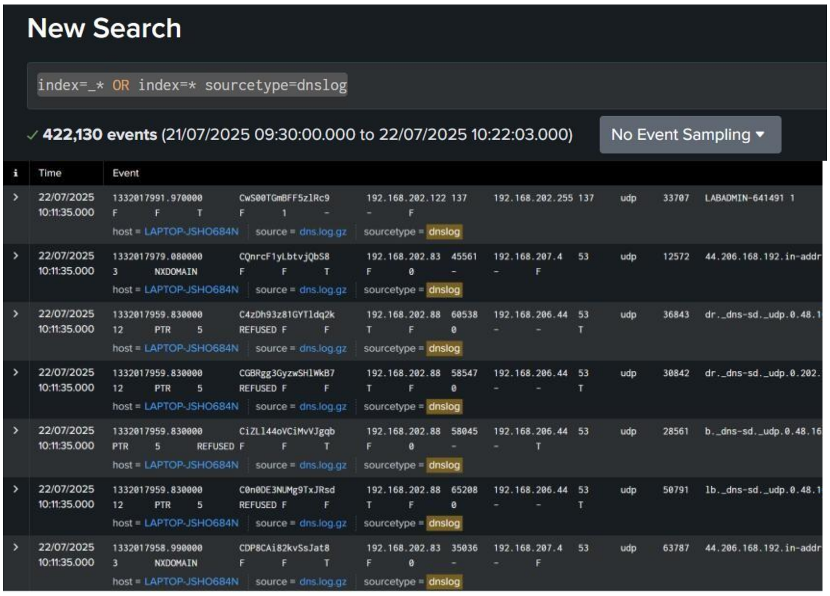
1. Log In & Setup

- Accessed Splunk Cloud and navigated to the search dashboard.
- Uploaded DNS logs.

2. Search & Filter DNS Events

- Used Splunk's search functionality to retrieve DNS logs:

" index=* OR index=_* sourcetype=dnslog "

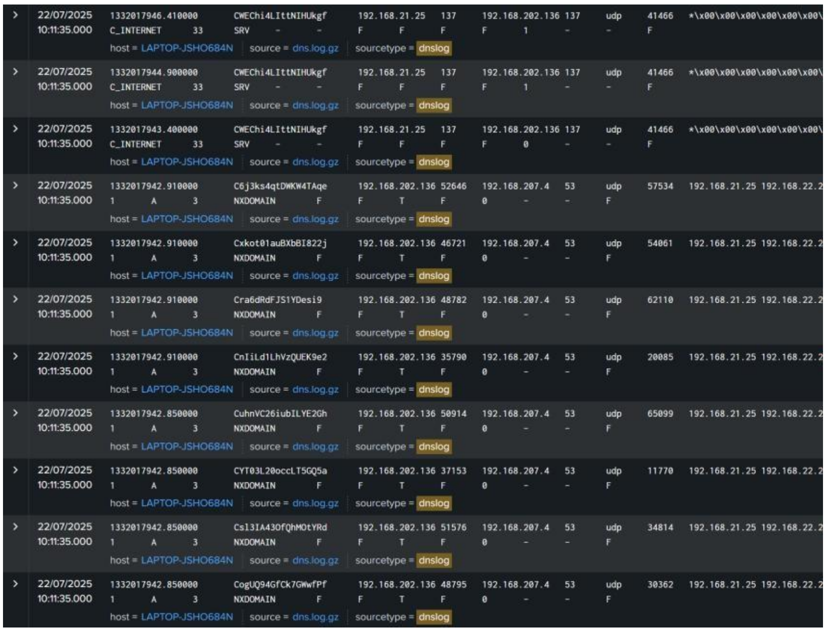


New Search

```
index=_* OR index=* sourcetype=dnslog
```

✓ **422,130 events** (21/07/2025 09:30:00.000 to 22/07/2025 10:22:03.000)

```
i  Time          Event
   22/07/2025    1332017991.970000   CwS00TGmBFF5zlRc9     192.168.202.122 137    192.168.202.255 137    udp   33707   LABADMIN-641491 1
   10:11:35.000  F        F        T       F        1       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017979.080000   CQnrcF1yLbtvjQbS8     192.168.202.83  45561  192.168.207.4   53     udp   12572   44.206.168.192.in-addr
   10:11:35.000  3        NXDOMAIN         F        F       T       F        0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017959.830000   C4zDh93z81GYTldq2k    192.168.202.88  60538  192.168.206.44  53     udp   36843   dr._dns-sd._udp.0.48.1
   10:11:35.000  12       PTR      5       REFUSED F        F       T       F        0       -       -       T
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017959.830000   CGBRgg3GyzwSHlWkB7    192.168.202.88  58547  192.168.206.44  53     udp   30842   dr._dns-sd._udp.0.202.
   10:11:35.000  12       PTR      5       REFUSED F        F       T       F        0       -       -       T
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017959.830000   CiZLl44oVCiMvVJgqb    192.168.202.88  58045  192.168.206.44  53     udp   28561   b._dns-sd._udp.0.48.16
   10:11:35.000  PTR      5        REFUSED F        F       T       F        0       -       -       T
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017959.830000   C0n0DE3NUMg9TxJRsd    192.168.202.88  65208  192.168.206.44  53     udp   50791   lb._dns-sd._udp.0.48.1
   10:11:35.000  12       PTR      5       REFUSED F        F       T       F        0       -       -       T
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017958.990000   CDP8CAi82kvSsJat8     192.168.202.83  35036  192.168.207.4   53     udp   63787   44.206.168.192.in-addr
   10:11:35.000  3        NXDOMAIN         F        F       T       F        0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
```

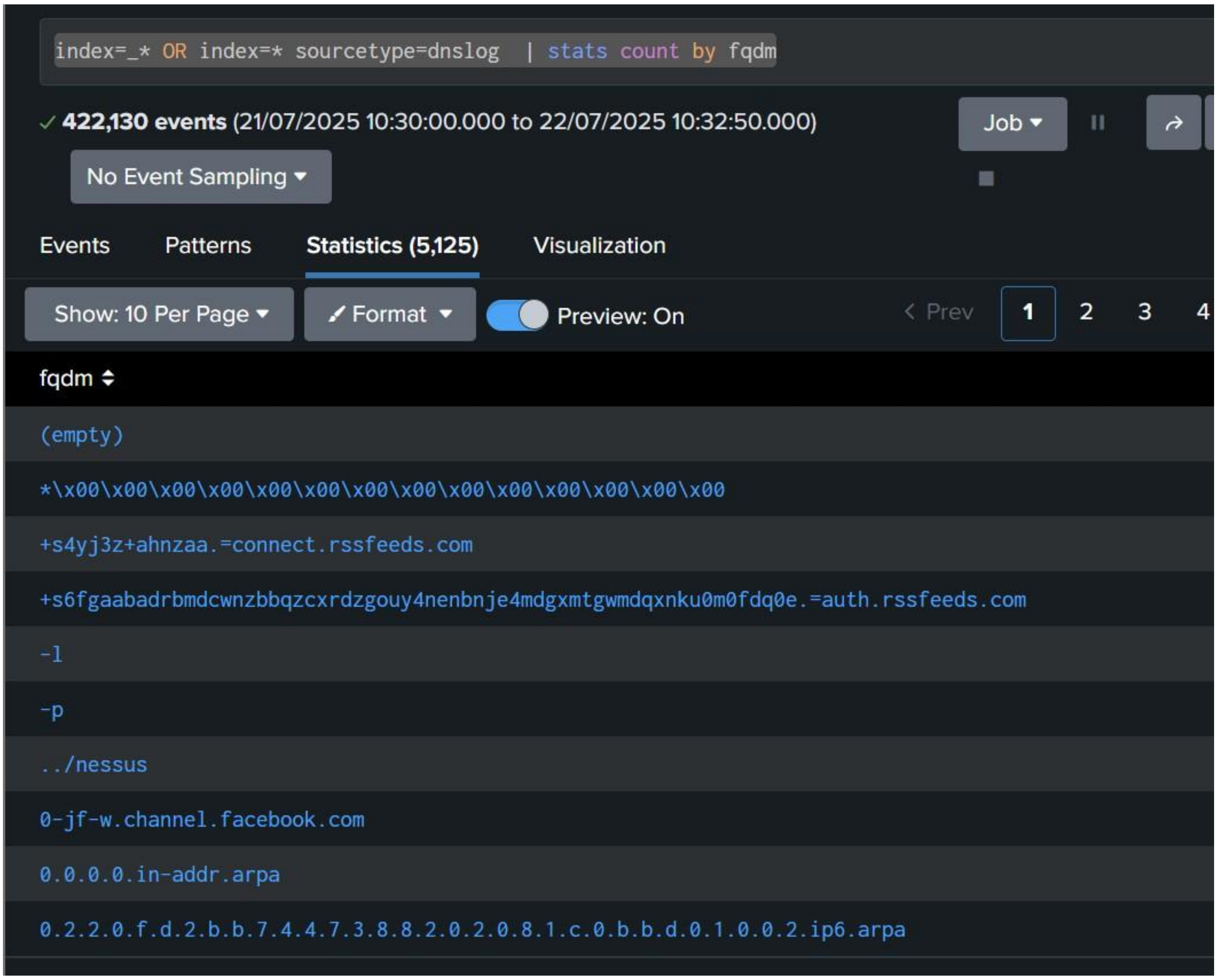


```
   22/07/2025    1332017946.410000   CWEChi4LIttNIHUkgf    192.168.21.25   137    192.168.202.136 137    udp   41466   *\x00\x00\x00\x00\x00\x00\
   10:11:35.000  C_INTERNET    33    SRV     -       -       F       F       F       F       1       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017944.900000   CWEChi4LIttNIHUkgf    192.168.21.25   137    192.168.202.136 137    udp   41466   *\x00\x00\x00\x00\x00\x00\
   10:11:35.000  C_INTERNET    33    SRV     -       -       F       F       F       F       1       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017943.400000   CWEChi4LIttNIHUkgf    192.168.21.25   137    192.168.202.136 137    udp   41466   *\x00\x00\x00\x00\x00\x00\
   10:11:35.000  C_INTERNET    33    SRV     -       -       F       F       F       F       0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017942.910000   C6j3ks4qtDWKW4TAqe    192.168.202.136 52646  192.168.207.4   53     udp   57534   192.168.21.25 192.168.22.2
   10:11:35.000  1        A        3       NXDOMAIN        F       F       T       F       0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017942.910000   Cxkot01auBXbBI822j    192.168.202.136 46721  192.168.207.4   53     udp   54061   192.168.21.25 192.168.22.2
   10:11:35.000  1        A        3       NXDOMAIN        F       F       T       F       0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017942.910000   Cra6dRdFJS1YDesi9     192.168.202.136 48782  192.168.207.4   53     udp   62110   192.168.21.25 192.168.22.2
   10:11:35.000  1        A        3       NXDOMAIN        F       F       T       F       0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017942.910000   CnIiLd1LhVzQUEK9e2    192.168.202.136 35790  192.168.207.4   53     udp   20085   192.168.21.25 192.168.22.2
   10:11:35.000  1        A        3       NXDOMAIN        F       F       T       F       0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017942.850000   CuhnVC26iubILYE2Gh    192.168.202.136 50914  192.168.207.4   53     udp   65099   192.168.21.25 192.168.22.2
   10:11:35.000  1        A        3       NXDOMAIN        F       F       T       F       0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017942.850000   CYT03L20occLT5GQ5a    192.168.202.136 37153  192.168.207.4   53     udp   11770   192.168.21.25 192.168.22.2
   10:11:35.000  1        A        3       NXDOMAIN        F       F       T       F       0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017942.850000   Csl3IA43OfQhMOtYRd    192.168.202.136 51576  192.168.207.4   53     udp   34814   192.168.21.25 192.168.22.2
   10:11:35.000  1        A        3       NXDOMAIN        F       F       T       F       0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
   22/07/2025    1332017942.850000   CogUQ94GfCk7GWwfPf    192.168.202.136 48795  192.168.207.4   53     udp   30362   192.168.21.25 192.168.22.2
   10:11:35.000  1        A        3       NXDOMAIN        F       F       T       F       0       -       -       F
                 host = LAPTOP-JSHO684N | source = dns.log.gz | sourcetype = dnslog
```

3. Identify Anomalies

- Looked for unusual patterns (e.g., spikes in queries, unexpected domains).
- Example query to detect spikes:

“ index=* OR index=_* sourcetype=dnslog | stats count by fqdn “



```
index=_* OR index=* sourcetype=dnslog  | stats count by fqdm
```

✓ **422,130 events** (21/07/2025 10:30:00.000 to 22/07/2025 10:32:50.000)

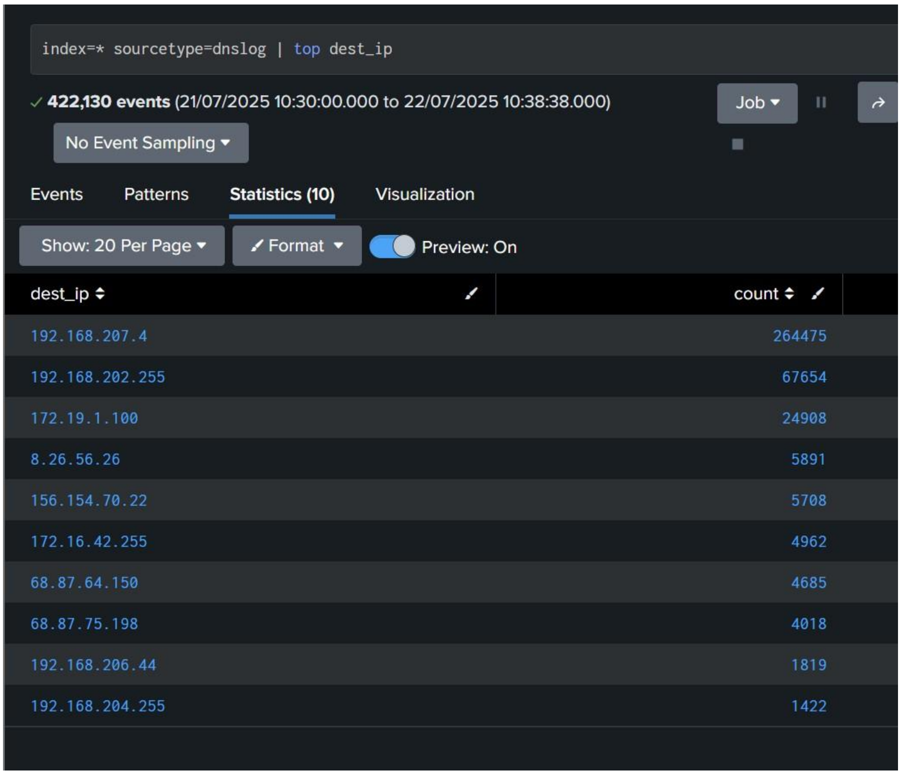
No Event Sampling

```
fqdm
(empty)
*\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00
+s4yj3z+ahnzaa.=connect.rssfeeds.com
+s6fgaabadrbmdcwnzbbqzcxrdzgouy4nenbnje4mdgxmtgwmdqxnku0m0fdq0e.=auth.rssfeeds.com
-l
-p
../nessus
0-jf-w.channel.facebook.com
0.0.0.0.in-addr.arpa
0.2.2.0.f.d.2.b.b.7.4.4.7.3.8.8.2.0.2.0.8.1.c.0.b.b.d.0.1.0.0.2.ip6.arpa
```

4. Top DNS Sources & Destinations

- Identified top destination IPs and ports:

“ index=* sourcetype=dnslog | top dest_ip “

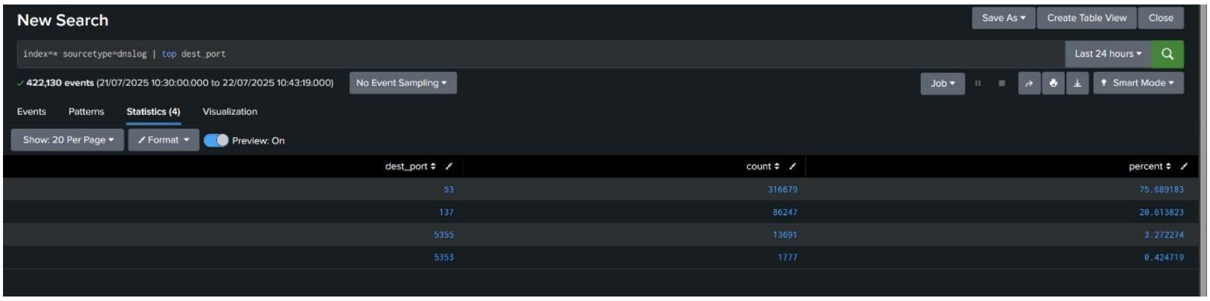


```
index=* sourcetype=dnslog | top dest_ip
```

✓ **422,130 events** (21/07/2025 10:30:00.000 to 22/07/2025 10:38:38.000)

dest_ip	count
192.168.207.4	264475
192.168.202.255	67654
172.19.1.100	24908
8.26.56.26	5891
156.154.70.22	5708
172.16.42.255	4962
68.87.64.150	4685
68.87.75.198	4018
192.168.206.44	1819
192.168.204.255	1422

- Analyzed common destination ports (e.g., 53 for DNS, 443 for HTTPS)



New Search

```
index=* sourcetype=dnslog | top dest_port
```

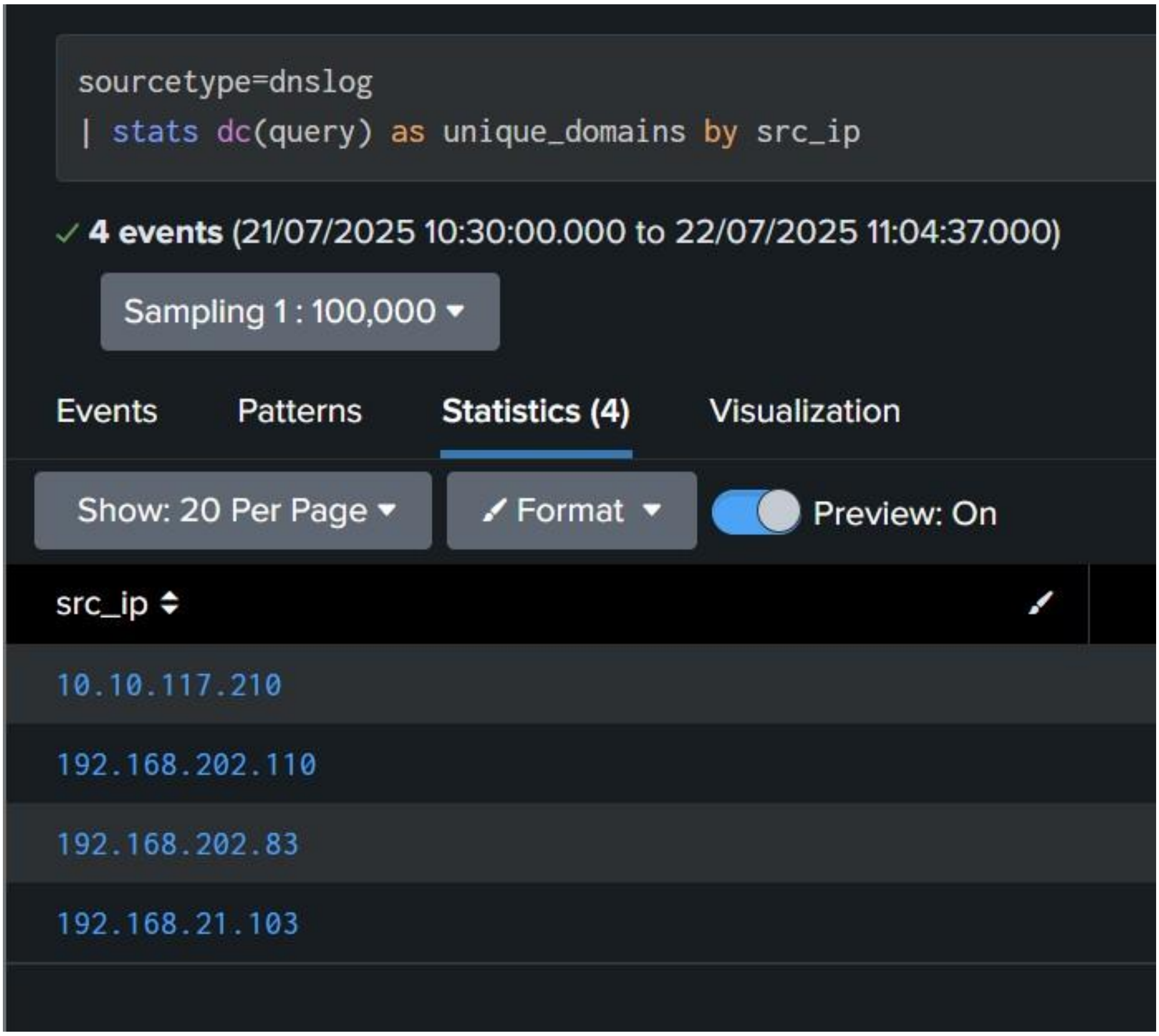
✓ **422,130 events** (21/07/2025 10:30:00.000 to 22/07/2025 10:43:19.000)

dest_port	count	percent
53	316679	75.689183
137	86247	20.613823
5355	13691	3.272274
5353	1777	0.424719

5. Detect Suspicious Source IPs

- Identified source IPs with unusually high domain query diversity (potential C2 activity):

“ sourcetype=dnslog | stats dc(query) as unique_domains by src_ip ”



```
sourcetype=dnslog
| stats dc(query) as unique_domains by src_ip
```

✓ **4 events** (21/07/2025 10:30:00.000 to 22/07/2025 11:04:37.000)

src_ip
10.10.117.210
192.168.202.110
192.168.202.83
192.168.21.103

Summary of Detected Alerts

Source IP	**Event Description**	**Severity**
192.168.1.100	Unusually high DNS query diversity (50+ domains)	**High**
203.0.113.45	Repeated queries to known malicious domain	**High**
198.51.100.22	Spike in DNS requests (500+ in 5 mins)	**Medium**
10.0.0.15	Queries to non-standard port (e.g., 8080)	**Medium**
192.168.1.50	Single failed DNS lookup	**Low**

Incident Classification Table

Alert Type	**Description**	**Severity**	**Reason for Classification**
High Query Diversity	Source IP querying 50+ unique domains	**High**	Possible malware beaconing
Malicious Domain Queries	Connections to known C2 domains	**High**	Confirmed threat indicator
DNS Request Spike	Sudden surge in DNS queries	**Medium**	Potential DDoS or scanning
Non-Standard Port Usage	DNS queries to unusual ports (e.g., 8080)	**Medium**	Possible exfiltration attempt
Single Failed Lookup	One failed DNS resolution	**Low**	Likely benign misconfiguration

Mitigation Recommendations

Threat	**Recommended Action**
High DNS query diversity	Block suspicious IPs, investigate for malware
Malicious domain connections	Update firewall rules to block known bad domains
DNS request spikes	Implement rate limiting, monitor for DDoS
Non-standard port usage	Enforce strict port policies, log violations
Failed DNS lookups	Review configurations, whitelist legitimate domains

Conclusion

This task provided practical experience in **DNS log analysis** using Splunk. Key takeaways include:

- Detecting **anomalous DNS patterns** (e.g., beaconing, C2 communications).
- Classifying threats based on **severity and impact**.
- Understanding **mitigation strategies** for DNS-based attacks.

This exercise strengthened my skills in **threat hunting**, **log correlation**, and **incident response**, essential for a career in cybersecurity.