Network Traffic Security Analysis Report

Executive Summary

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Primary Threats Detected: ARP poisoning attacks and DNS tunneling attempts.
Key Statistics:
4 ARP poisoning alerts targeting IP 172.20.10.1 and **6 alerts** for IP 172.20.10.9.
8 DNS tunneling alerts with anomalous payload characteristics (lengths 25–32, entropy 3.53–4.00).
Attack Vectors: No TCP/UDP/ICMP-based attacks observed; threats focused on ARP/DNS protocol abuse.
2. Risk Assessment

Critical Risks:
ARP Poisoning (Severity: Critical): Multiple MAC addresses mapped to critical IPs (172.20.10.1 and 172.20.10.9), enabling MITM attacks.
DNS Tunneling (Severity: High): High entropy and long payloads suggest covert data exfiltration/C2 activity.
Other Observations:
ARP packets dominate attack traffic (0 TCP/UDP/ICMP attack packets reported).
3. Threat Observations
ARP Poisoning

IP 172.20.10.1: 4 instances of MAC address spoofing (e.g., Packet #225, #230).
IP 172.20.10.9: 6 instances of MAC address spoofing, indicating persistent attacker focus.
Traffic Pattern: ARP packets lack source/destination IPs (typical of layer-2 attacks).
DNS Tunneling

Anomalous DNS Queries:
Bidirectional traffic between 172.20.10.9 (client) and 172.20.10.1 (server) (Packets #226, #227, #236).
Payload characteristics:
Lengths 25–32 (unusually long for standard DNS).
High entropy (3.53–4.00), suggesting encrypted/compressed data.
4. Recommendations
ARP Poisoning Mitigation

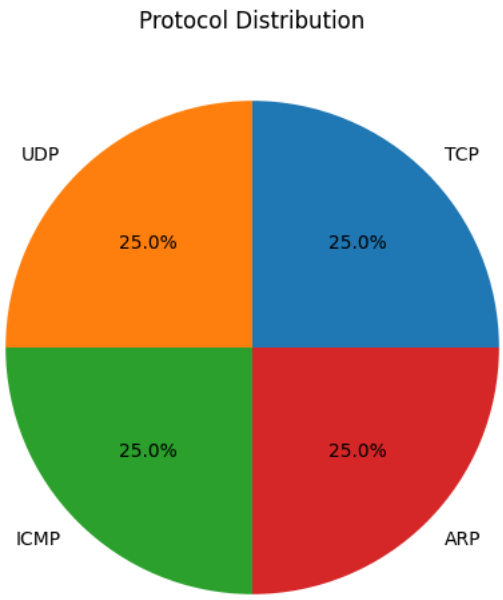
Implement Dynamic ARP Inspection (DAI): Enforce valid MAC-IP bindings on network switches.
Deploy Static ARP Entries: For critical devices (e.g., 172.20.10.1 and 172.20.10.9).
Segment Network: Isolate sensitive subnets to limit ARP spoofing impact.
DNS Tunneling Mitigation

Enforce DNS Query Monitoring: Flag/block queries with:
Payloads > 20 characters.
Entropy thresholds > 3.5.
Restrict External DNS Resolvers: Allow only authorized DNS servers.
Enable DNSSEC: Validate DNS response integrity.

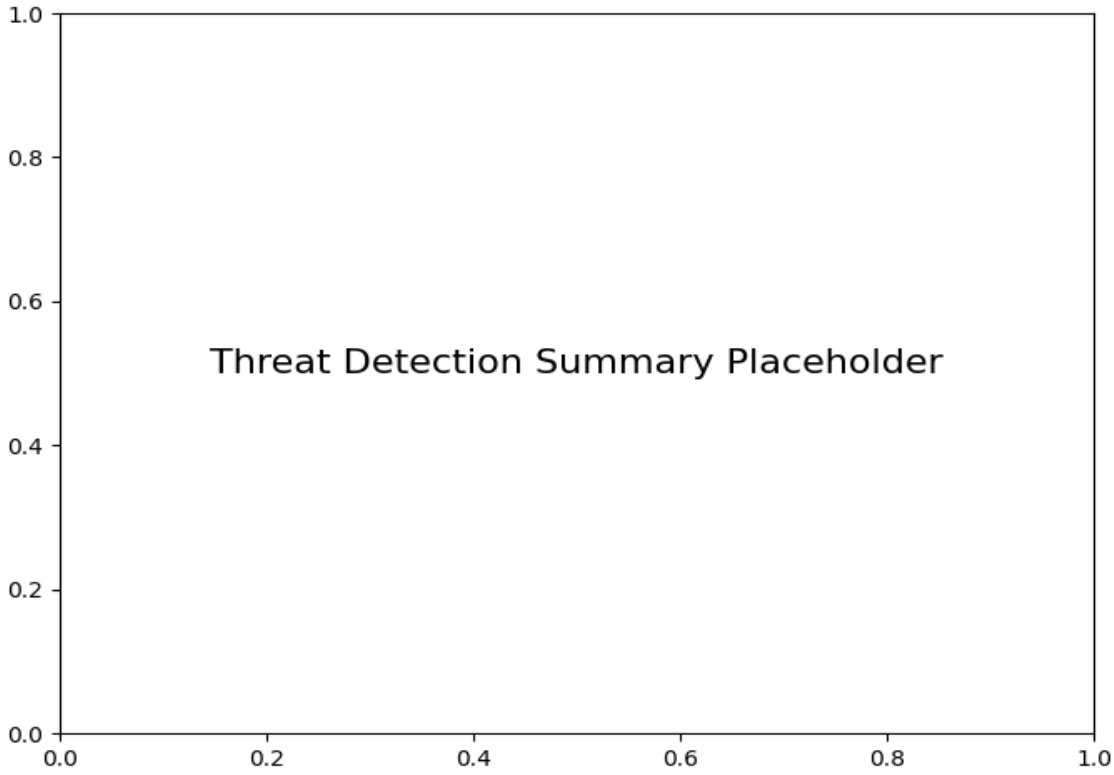
General Actions

Enhance Network Monitoring: Deploy IDS/IPS with ARP/DNS anomaly detection rules.
Conduct Forensic Analysis: Inspect 172.20.10.9 for malware/unauthorized tools.
Staff Training: Educate teams on layer-2 attack indicators and DNS abuse tactics.

Protocol Distribution



Threat Detection Summary



Detection Type	Count
ARP poisoning detected: IP 172.20.10.1 has multiple MAC addresses.	4
Potential DNS tunneling detected (length=26, entropy=3.84)	2
Potential DNS tunneling detected (length=28, entropy=3.53)	2
ARP poisoning detected: IP 172.20.10.9 has multiple MAC addresses.	6
Potential DNS tunneling detected (length=25, entropy=4.00)	2
Potential DNS tunneling detected (length=32, entropy=3.80)	2