Network Traffic Security Analysis Report

Executive Summary

Network Traffic Analysis Security Report 1. Executive Summary
This report analyzes network traffic for potential malicious activity, focusing on DNS and ICMP tunneling attempts. The analysis reveals multiple instances of suspicious tunneling activity between internal hosts (172.20.10.9, 172.20.10.1, and 172.20.10.2). **Key Findings:**

12 tunneling attempts detected (8 ICMP, 4 DNS).

High entropy values (3.53–6.58) suggest possible covert data exfiltration.

No TCP/UDP/ARP attack traffic, indicating a focus on stealthy tunneling.

Internal hosts involved, suggesting a possible insider threat or compromised device.

2. Risk Assessment

Threat Type	**Severity**	**Description**
DNS Tunneling	High	Multiple DNS queries with high entropy and unusual lengths (25–32 bytes).
ICMP Tunneling	Critical	Repeated ICMP packets with high entropy (6.43–6.58) and fixed length (128 bytes).
Internal Hosts Involved	Medium-High	Suspicious traffic between 172.20.10.9, 172.20.10.1, and 172.20.10.2.

3. Threat Observations DNS Tunneling Indicators

High Entropy (3.53–4.00) – Indicates possible encoded/encrypted payloads.

Unusual Query Lengths (25–32 bytes) – Deviates from typical DNS requests.

Bidirectional Traffic – Both 172.20.10.9 (source) and 172.20.10.1 (destination) involved.

ICMP Tunneling Indicators

Consistent Packet Size (128 bytes) – Suggests structured data transfer.

High Entropy (6.43–6.58) – Likely encrypted or compressed data.

Source: 172.20.10.2 → **Destination: 172.20.10.9** – Possible data exfiltration.

4. Recommendations Immediate Actions

1. **Isolate Suspicious Hosts** (172.20.10.9, 172.20.10.1, 172.20.10.2) for forensic investigation.
2. **Block Unnecessary ICMP Traffic** – Restrict ICMP to essential diagnostic use only.
3. **Implement DNS Filtering** – Enforce DNS query length and entropy thresholds. **Long-Term Mitigations**

Deploy Network Anomaly Detection (NAD) – Use AI/ML-based tools to detect tunneling.

Enforce DNS Security (DNSSEC, DNS Filtering) – Prevent abuse of DNS for exfiltration.

Conduct Endpoint Forensics – Check for malware or unauthorized tunneling tools.

Update Firewall Rules – Block unusual ICMP/DNS patterns.

Monitoring & Logging Enhancements

Enable Deep Packet Inspection (DPI) for ICMP/DNS traffic.

Log and Alert on High-Entropy Packets – Set thresholds for entropy-based detection.

Conclusion: The network shows signs of **covert tunneling**, likely for data exfiltration. Immediate containment and enhanced monitoring are required to mitigate risks. ---

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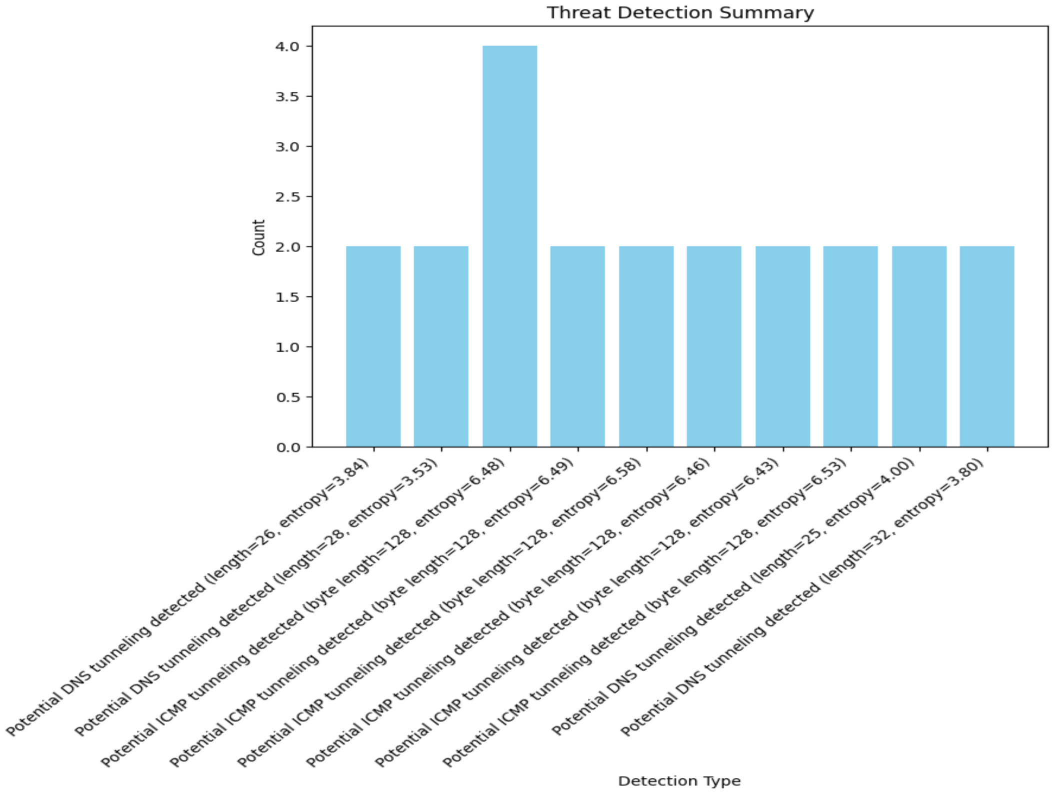
Threat Detection Summary



Detection Type	Count
Potential DNS tunneling detected (length=26, entropy=3.84)	2
Potential DNS tunneling detected (length=28, entropy=3.53)	2
Potential ICMP tunneling detected (byte length=128, entropy=6.48)	4
Potential ICMP tunneling detected (byte length=128, entropy=6.49)	2
Potential ICMP tunneling detected (byte length=128, entropy=6.58)	2
Potential ICMP tunneling detected (byte length=128, entropy=6.46)	2
Potential ICMP tunneling detected (byte length=128, entropy=6.43)	2
Potential ICMP tunneling detected (byte length=128, entropy=6.53)	2
Potential DNS tunneling detected (length=25, entropy=4.00)	2
Potential DNS tunneling detected (length=32, entropy=3.80)	2

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