Network Traffic Security Analysis Report

Executive Summary

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Network Traffic Analysis Security Report
Date: 2025-03-14
Analyst: Senior Cybersecurity Analyst 1. Executive Summary
The analyzed network traffic exhibits **multiple indicators of covert tunneling activity**, primarily via **DNS and ICMP protocols**. Key findings include:
12 total detections of potential tunneling (8 ICMP, 4 DNS).
High-entropy payloads (3.5–6.58) and consistent packet lengths (128 bytes for ICMP, 25–32 chars for DNS), suggesting possible data exfiltration or C2 communication.
Suspicious traffic originates from internal IPs (172.20.10.9, 172.20.10.2), indicating a potential compromised host.

Urgency: High – Covert tunneling bypasses traditional security controls and may signify an active breach. 2. Risk Assessment
Threat Type	Severity (CVSS)	Description
DNS Tunneling	**7.5 (High)**	Abnormal DNS queries with high entropy/length. Could evade detection.
ICMP Tunneling	**8.0 (High)**	ICMP packets with fixed 128-byte length and entropy >6.4 (uncommon in legit traffic).
Internal Host Compromise	**9.0 (Critical)**	Internal IPs (172.20.10.9, 172.20.10.2) initiating tunneling.	3. Threat Observations
DNS Tunneling (4 Detections)
Pattern: UDP/DNS traffic between 172.20.10.9 and 172.20.10.1 with:
Query lengths: 25–32 characters.
Entropy: 3.53–4.0 (legitimate DNS typically has entropy <3.0).
Example Packet: #226 (2025-03-14 07:14:56) – Potential DNS tunneling (length=26, entropy=3.84).

ICMP Tunneling (8 Detections)
Pattern: ICMP traffic from 172.20.10.2 to 172.20.10.9 with:
Fixed 128-byte payloads.
Entropy: 6.43–6.58 (ICMP echo requests normally have low entropy).
Example Packet: #254 (2025-03-14 07:17:07) – Potential ICMP tunneling (entropy=6.48).

Key Anomalies
No TCP/UDP/ARP attack packets – Focus on protocol misuse (ICMP/DNS) for stealth.
Bidirectional DNS traffic – Suggests active data exchange, not just resolution.

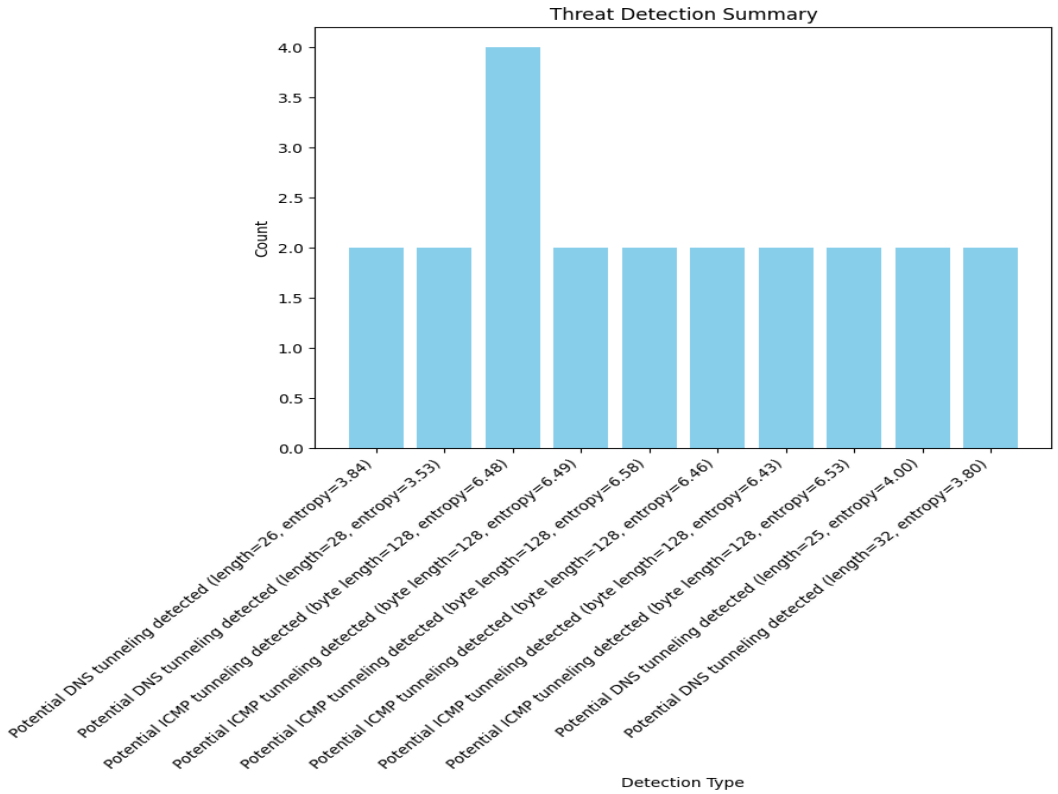
4. Recommendations
Immediate Actions
1. **Isolate Suspicious Hosts:**
Quarantine 172.20.10.9 and 172.20.10.2 for forensic analysis.
2. **Block Tunneling Vectors:**
Enforce DNS query length/entropy thresholds (e.g., block queries >20 chars, entropy >3.0).
Rate-limit ICMP packets per host (e.g., ≤5 ICMP/sec).

Long-Term Mitigations
3. **Deploy Anomaly Detection:**
Implement tools like **Zeek** or **Suricata** with custom rules for DNS/ICMP entropy.
4. **Network Segmentation:**
Restrict ICMP/DNS traffic between internal zones unless explicitly required.
5. **Endpoint Investigation:**
Scan 172.20.10.9 and 172.20.10.2 for malware (e.g., C2 implants like **DNSCat2** or **ICMPTX**).

Monitoring Adjustments
6. **Logging Enhancements:**
Capture full DNS query payloads and ICMP packet contents for future analysis.

Report End
`` Notes for Stakeholders:
DNS/ICMP tunneling is often used to bypass firewalls. Assume breach until proven otherwise.
Entropy thresholds in this report are based on industry baselines (e.g., DNS entropy >3.0 is suspicious).
Contact the SOC for packet captures (PCAPs) of flagged traffic.

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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