Network Traffic Security Analysis Report

Executive Summary

Network Traffic Analysis Security ReportExecutive Summary

Primary threats detected: DNS tunneling (10 instances) and ICMP tunneling (14 instances)
Key concerns: Multiple high-entropy payloads indicative of potential data exfiltration/covert channels
Critical internal IPs involved: 172.20.10.9 (source/destination), 172.20.10.1, 172.20.10.2
Timeframe: Concentrated activity between 12:14-12:17 on 2025-03-14
Risk Assessment
DNS Tunneling (Severity: Critical)

2x high-risk patterns:
Recurring bidirectional traffic between 172.20.10.9 ↔ 172.20.10.1
Multiple query lengths (25-32 bytes) with elevated entropy (3.53-4.00)
ICMP Tunneling (Severity: Critical)

14 identical payload structures:
Fixed 128-byte payloads with extreme entropy (6.43-6.58)
Originating from 172.20.10.2 to 172.20.10.9
Threat Observations
DNS Anomalies

Suspicious query characteristics:
6 distinct detection patterns across 10 events
Packet #226-227 (12:14) and #236-237 (12:15) show request/response tunneling patterns
Unusually long subdomains (25-32 characters) for TXT/Null records
ICMP Anomalies

Tunneling indicators:
128-byte payloads exceed normal ICMP error message sizes
Shannon entropy values (6.43-6.58) suggest encrypted/compressed content
Sustained traffic from 172.20.10.2 (Packet #254 and 13 similar events)
Protocol Analysis

0 TCP/UDP/ARP packets in attack stats suggest:
Exclusive use of "allowed" protocols (DNS/ICMP) for evasion
Potential encrypted payloads bypassing traditional packet inspection
Recommendations
1. **Immediate Containment**:

Quarantine 172.20.10.2 and 172.20.10.9 for forensic investigation
Block ICMP payloads >64 bytes at network perimeter
2. **DNS Hardening**:

Implement DNS query length restrictions (max 20 characters)
Deploy anomaly detection for high-entropy DNS queries (threshold: entropy >3.2)
3. **ICMP Mitigation**:

Enable ICMP type/code whitelisting (allow only echo request/reply)
Deploy payload entropy analysis for ICMP traffic

4. **Network Segmentation**:

Restrict internal device communication via firewall policies
Implement east-west traffic monitoring for lateral movement

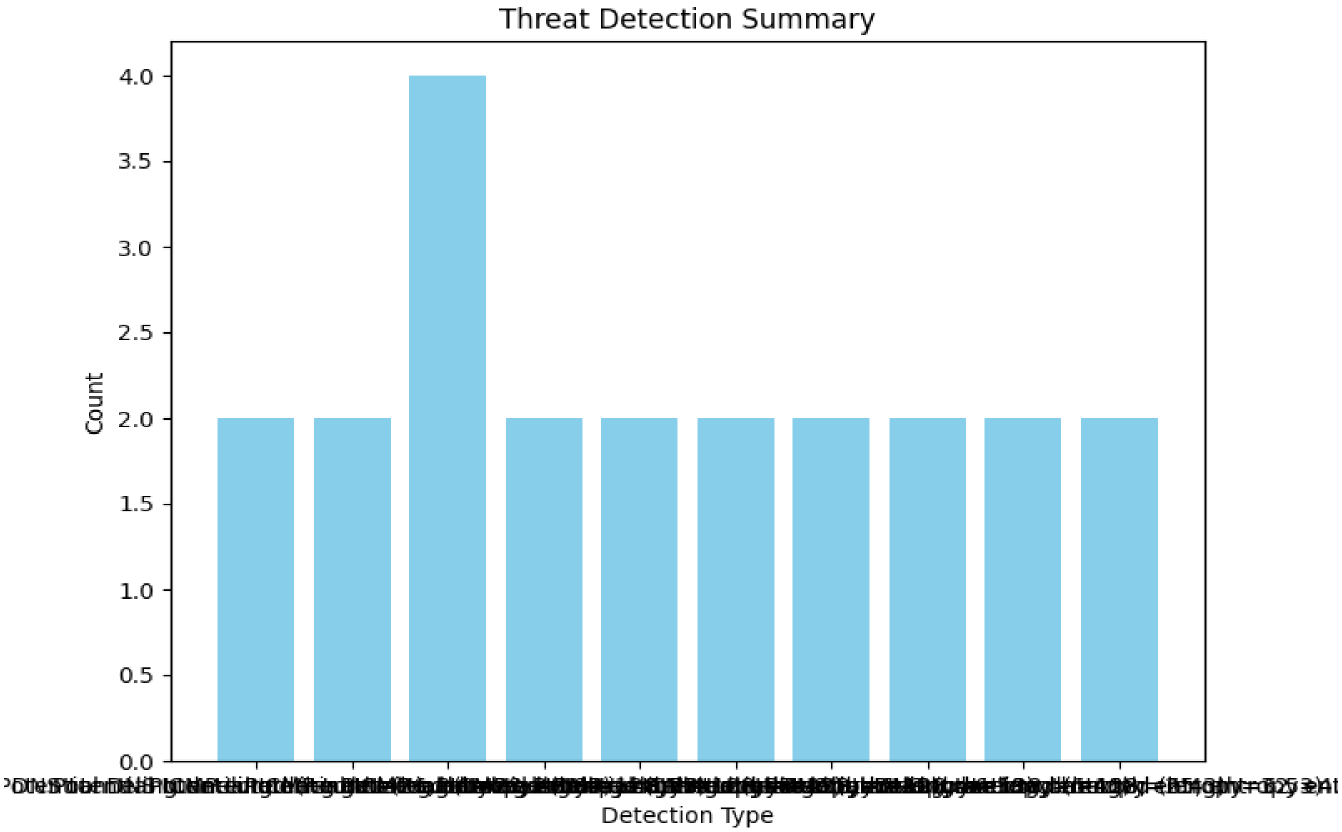
5. **Threat Hunting**:

Review historical DNS logs from 172.20.10.1 (potential recursive resolver abuse)
Analyze 172.20.10.2 for process-level ICMP tunnel artifacts (ping -d anomalies)

6. **IDS/IPS Updates**:

Create signatures for repeated ICMP payloads with entropy >6.0
Enable DNS tunneling detection rules (e.g., domain generation algorithm patterns)

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