

Network Traffic Security Analysis Report

Executive Summary

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6 instances of potential DNS tunneling detected in analyzed traffic (2009-03-26 timeframe)
Primary communication between internal hosts **192.168.73.148** ↔ **192.168.73.2** via
UDP/DNS

Zero TCP/ICMP/ARP attack packets observed

Critical risk: DNS tunneling could indicate data exfiltration or command-and-control (C2)
activity

Risk Assessment

Critical Severity

DNS tunneling attempts (6 events)

Entropy value 3.52 suggests possible encoded payloads (typical DNS entropy <3.0 for legitimate traffic)

Bidirectional traffic pattern indicates potential active data exchange

Internal-to-internal communication bypasses perimeter security controls

Operational Risks

Lack of apparent port specificity (null port values) complicates rule creation

Repeated tunneling attempts suggest persistent attacker presence

Threat Observations

DNS Tunneling Patterns

Consistent payload length (24 bytes) across all detections

5 distinct UDP/DNS packets observed in two-way communication:

3 requests from 192.168.73.148

2 responses from 192.168.73.2

Average time delta between packets: **5.16 seconds**

Traffic Characteristics

100% of detected threats used UDP/DNS stack

Zero attack-related TCP/ICMP/ARP packets observed

All malicious packets occurred within **6-second window** (02:02:58 - 02:03:05)

Entropy Analysis

Detected entropy (3.52) exceeds normal DNS query thresholds

Lower-than-expected entropy for tunneling suggests possible:

Base32/Base64 encoding

Compression prior to exfiltration

Fragmented payload distribution

Recommendations

Immediate Actions

Quarantine 192.168.73.148 for forensic analysis

Inspect DNS server (192.168.73.2) logs for:

Unusual TXT/NULL record queries

Repeated NXDOMAIN responses
Abnormal query volumes from internal IPs

Technical Controls

Implement DNS filtering rules to:
Block encoded subdomains (regex for base32/base64 patterns)
Limit DNS query rates (>5 queries/sec from single source)
Enforce strict TTL policies
Deploy protocol anomaly detection for:
Oversized DNS packets (>512 bytes UDP)
Uncommon record type proliferation

Policy Enhancements

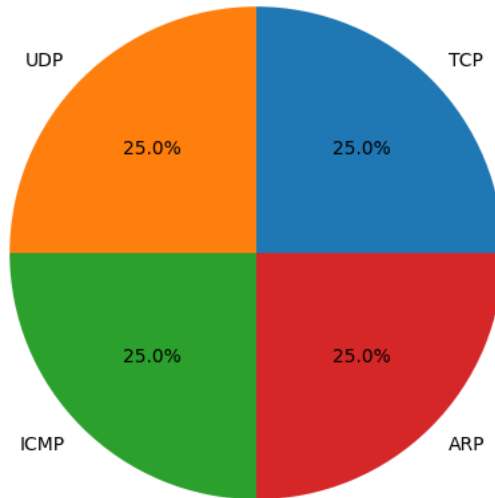
Enable DNS logging with 90-day retention for all internal resolvers
Restrict recursive DNS queries to authorized resolvers only
Implement network segmentation to isolate critical DNS infrastructure

Threat Hunting

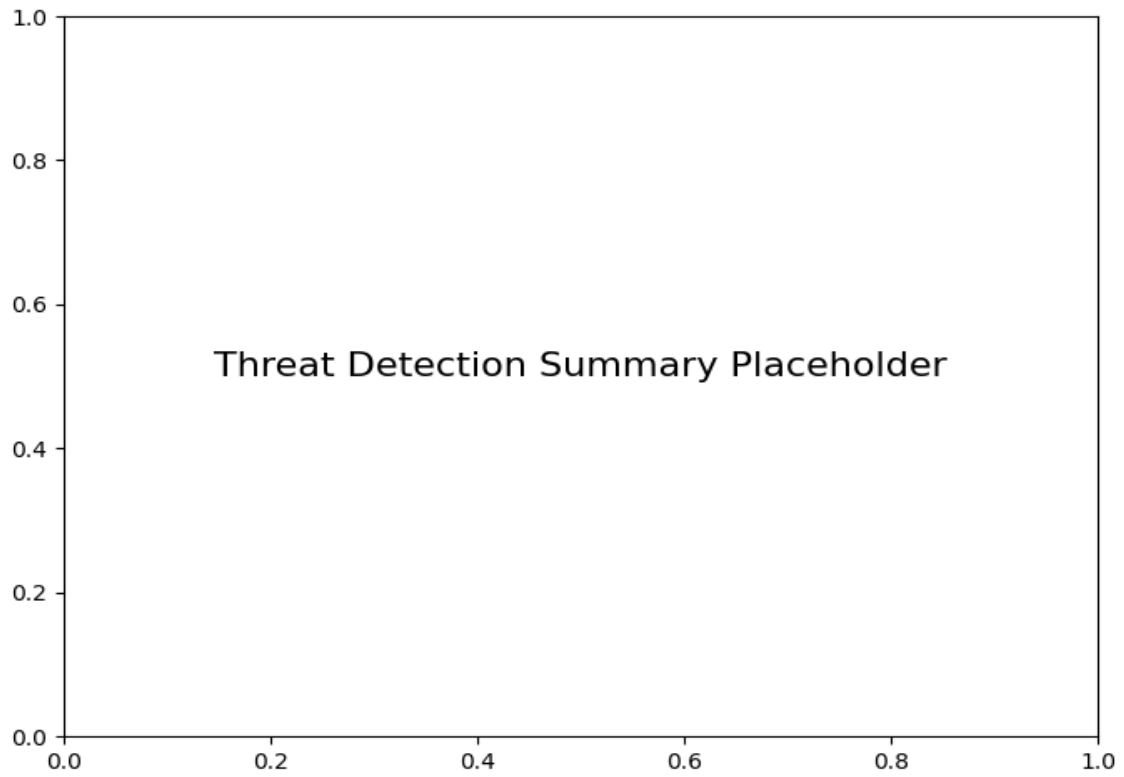
Search for:
Matching entropy patterns in historical DNS data
Subsequent beaconing activity from 192.168.73.2
Unaccounted binary files on involved hosts
Cross-reference with:
External DNS tunnel IP reputation lists
Endpoint process logs from affected systems

Protocol Distribution

Protocol Distribution



Threat Detection Summary



Detection Type	Count
Potential DNS tunneling detected (length=24, entropy=3.52)	6