TOR-Unveil: Forensic Analysis Report

Chain of Custody

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Case ID:	AUTO
Investigator:	System
Agency:	TN Police Cybercrime Division

Executive Summary

This report presents the results of an automated TOR traffic analysis using the Flow Time-Density Correlation (FTDC) method. The analysis identified 20 potential guard nodes with an average confidence of 39.1%. The system analyzed network traffic patterns to probabilistically correlate TOR entry and exit nodes.

Analysis Overview

Metric	Value
Total Guard Candidates	20
Average Confidence Score	39.1%
Improvement Factor	1.00x
Circuit Paths Identified	10
Correlation Trend	stable

Top Guard Node Candidates

Rank	Nickname	IP Address	Country	Confidence	Flags
1	tried	107.155.81.178	us	39.1%	
2	relay1	80.85.141.186	nl	38.0%	

3	insist	172.103.94.117	se	38.0%	
4	b0rken	45.129.182.225	de	38.0%	
5	GermanCraft29	152.53.251.244	de	38.0%	
6	ernies	80.239.189.84	se	37.8%	
7	lisdex	152.53.144.50	de	37.8%	
8	motauri	95.143.193.125	se	37.7%	
9	Athena	104.244.79.75	lu	37.7%	
10	StrongMoneroXMR	185.148.3.158	fi	37.6%	

AI Risk Assessment

■■ **AI DECISION SUPPORT NOTICE:** The following AI-generated risk scores provide **investigative prioritization only**. These scores indicate statistical patterns worthy of further analysis — they do NOT identify individual users or prove any connection to specific activities. Always cross-reference with additional intelligence sources before drawing conclusions.

Risk Level	Count	Recommendation
HIGH	0	Immediate Review Recommended
MEDIUM	0	Further Investigation Warranted
LOW	20	Standard Processing

AI Summary: AI analysis identified 0 high-priority, 0 medium-priority, and 20 low-priority candidates for further investigation.

Rank	Fingerprint	Risk Score	Risk Band	Top Factors
1	00D2CE3C2153...	31.0%	LOW	N/A
2	00D906059109...	30.0%	LOW	N/A
3	014BD0963637...	30.0%	LOW	N/A
4	013ABAED8F4C...	30.0%	LOW	N/A
5	016F1C83981B...	30.0%	LOW	N/A
6	0028C91CFBA3...	29.8%	LOW	N/A
7	000004ACBB9D...	29.8%	LOW	N/A
8	01181B31BE58...	29.8%	LOW	N/A
9	005ED97213F7...	29.7%	LOW	N/A
10	014040C3C7B7...	29.7%	LOW	N/A

Identified Circuit Paths

Path 1 (Confidence: 39.1%)

Role	Nickname	IP	Country

Guard	tried	107.155.81.178	us
Middle	lisdex	152.53.144.50	de
Exit	lisdex	152.53.144.50	de

Path 2 (Confidence: 39.1%)

Role	Nickname	IP	Country
Guard	tried	107.155.81.178	us
Middle	SharingIsCaring	188.195.48.170	de
Exit	lisdex	152.53.144.50	de

Path 3 (Confidence: 39.1%)

Role	Nickname	IP	Country
Guard	tried	107.155.81.178	us
Middle	seele	104.53.221.159	us
Exit	lisdex	152.53.144.50	de

Path 4 (Confidence: 39.1%)

Role	Nickname	IP	Country
Guard	tried	107.155.81.178	us
Middle	hubbabubbaABC	83.108.59.221	no
Exit	lisdex	152.53.144.50	de

Path 5 (Confidence: 39.1%)

Role	Nickname	IP	Country
Guard	tried	107.155.81.178	us
Middle	SENDNOOSEplz	204.137.14.106	us
Exit	lisdex	152.53.144.50	de

Methodology

Flow Time-Density Correlation (FTDC) Analysis

The analysis employs a multi-factor correlation approach:

1. **Temporal Correlation:** Compares timing patterns between exit node traffic and potential guard node activity using sliding window analysis (50ms default).

2. **Bandwidth Correlation:** Analyzes bandwidth capacity and utilization patterns to identify relays capable of handling observed traffic volumes.

3. **Circuit Pattern Matching:** Uses weighted scoring across three dimensions: - Bandwidth Score (50%): Relay capacity vs. required throughput - Quality Score (30%): Uptime, flags, and reliability metrics - Network Proximity (20%): Geographic and AS-level proximity analysis

4. **Iterative Improvement:** Bayesian-like updating mechanism that refines confidence scores as more correlation data becomes available.

Confidence Interpretation:
- High (>70%): Strong correlation evidence, prioritize for investigation
- Medium (40-70%): Moderate correlation, requires additional validation
- Low (<40%): Weak correlation, consider as background noise

Legal and Technical Disclaimers

IMPORTANT: This report contains probabilistic correlation analysis results. The system does NOT: - Decrypt TOR traffic or compromise user anonymity through cryptographic attacks - Perform active network attacks or exploit vulnerabilities - Guarantee 100% accuracy in guard node identification

Results should be used as investigative leads requiring additional corroboration through traditional forensic methods. All analysis respects the integrity of the TOR network and is intended solely for lawful cybercrime investigation purposes.

Chain of Custody: This report was generated automatically by the TOR-Unveil system. Any manual modifications to this document invalidate its forensic integrity.