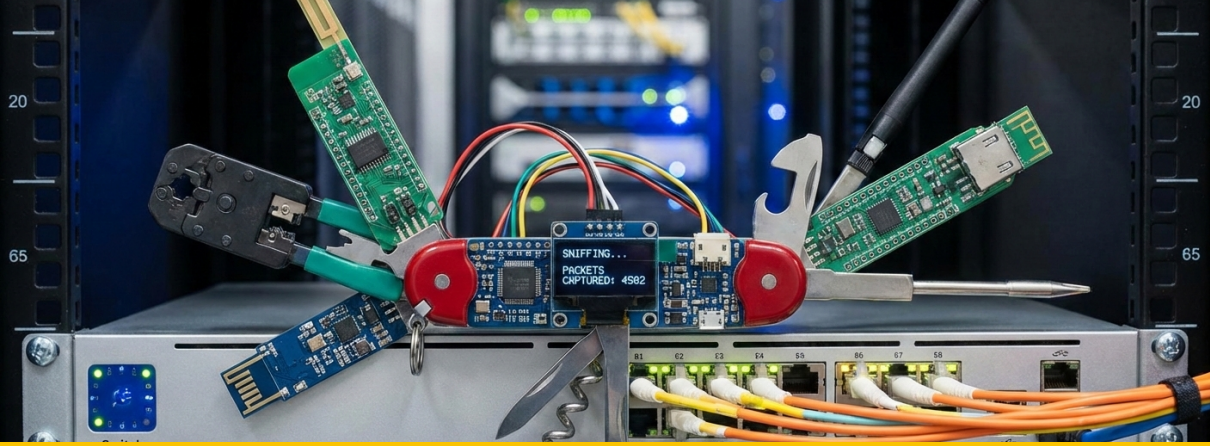

Swiss Army Knife Network Sniffer (NSAK)

Version 0.4

January 11, 2026

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Introduction

Motivation

Subtitle

- **Cyberangriffe nehmen zu** Angriffsbarrieren sinken, Automatisierung steigt
- **Sicherheit erfordert Sichtbarkeit** Netzwerkangriffe sind oft nur auf Layer 2–4 erkennbar
- **Bestehende Frameworks sind komplex** Hoher Konfigurations- und Betriebsaufwand
- **Unser Ansatz (PoC)** Modularer, kontrollierter Network-Sniffer für Angriffsszenarien

Eher alles als Bilder (Franky)

Design and Architecture

Was ist der Swiss Army Network Sniffer

NSAK Concepts

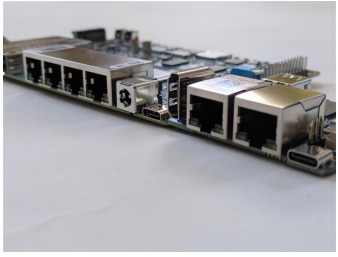
- **Devices** Physical machines used as attack and target hosts
- **Environments** Network infrastructure and topology
- **Scenarios** Sequence of drills (e.g. ARP spoofing, Packet Capture)
- **Drills** Individual attack or observation steps
- **Operator** Red / Blue team

(Lücku)

Hardware Evaluation

Hardware Selection

Banana Pi R4



- RAM: 8 GB
- CPU: Quad-Core ARM
- Ports: 4× 1 GbE + 2z 10GB
- Wi-Fi: Optional

NanoPi R76S

- RAM: 16 GB
- CPU: RK3588S
- Ports: 2× 2.5 GbE
- Wi-Fi: Optional

Implementation

NSAK Framework

- Core:
- CLI: Frontend which uses the API exposed by the core to enable user interaction
- Resource Repository: Python implementation of Scenarios, Drill,

(Lücku)

Scenario: MITM ARP-spoofing / Transparent TCP Proxy

Use Cases / Demo-Szenario

Drills:

- Discover Hosts: Scans the target network
- ARP Spoof: Spoofs the MAC Addresses of discovered hosts
- Transparent TCP Proxy:
  - Creates a TCP client and server
  - Redirects traffic with IPTables / NFTables
  - Reads and modifies intercepted packages

Environment:

- Simulation with podman/docker compose
- Instructions for building a lab with two Raspberry PIs and a switch

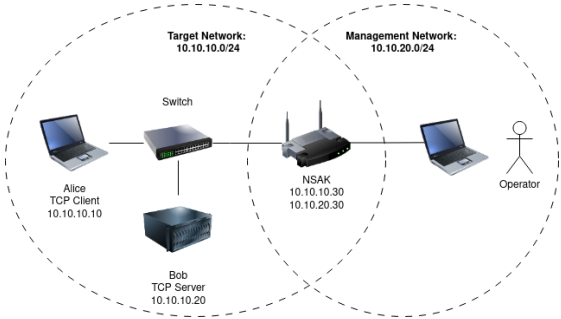


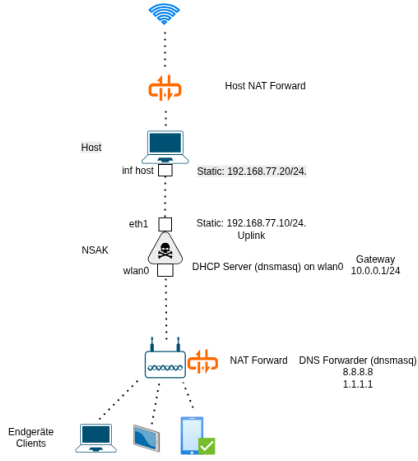
Figure: Simple TCP client - server environment

▸ Demo Video

(Lücku)

Demo-Szenario

Rogue AP



(Franky)

Evaluation and Discussion

Future Work and Conclusion

Key insights and Takeaways

Future Work

-

Conclusion

- (Lücku)

Access Point Demo: Can you spot the rogue AP?

Open questions?