
LIBERTY
IN
NORTH
KOREA
DEFCON

× DEFCON

Cracking North Korea's Information Control

LIBERTY IN NORTH KOREA

I. INTRODUCTION

Who I am and why this matters

LIBERTY IN NORTH KOREA

Jon Thompson

Chief Technology Officer

Liberty in North Korea

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Sysadmin > Threat Hunter >

I ROOT NORTH KOREAN PHONES

OSCP + SANS + MSc Cyber Security → NK Human Rights

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WHY NORTH KOREA?

North Korea has architected the world's most extreme info control system.

Citizens limited to a national network that is cut off from the global internet.

Sharing unauthorized information or media can result in torture or death.

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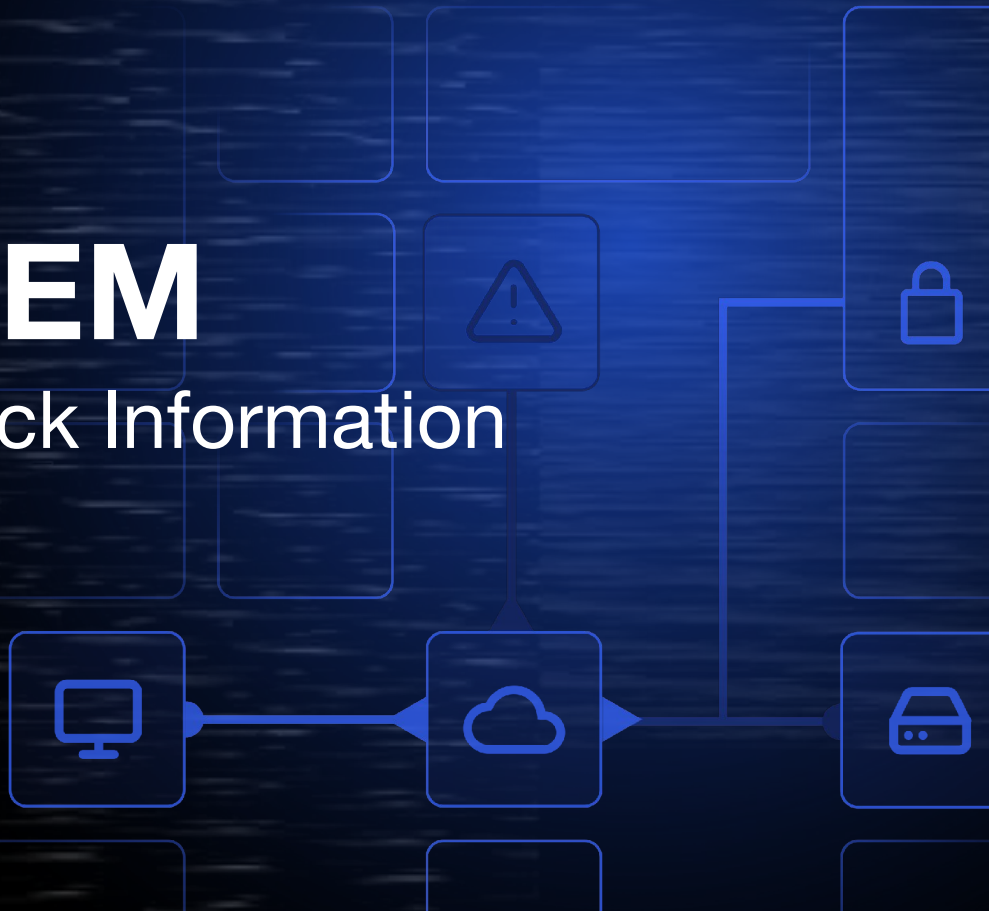
II. THE SYSTEM

North Korea's Full-Stack Information Control System



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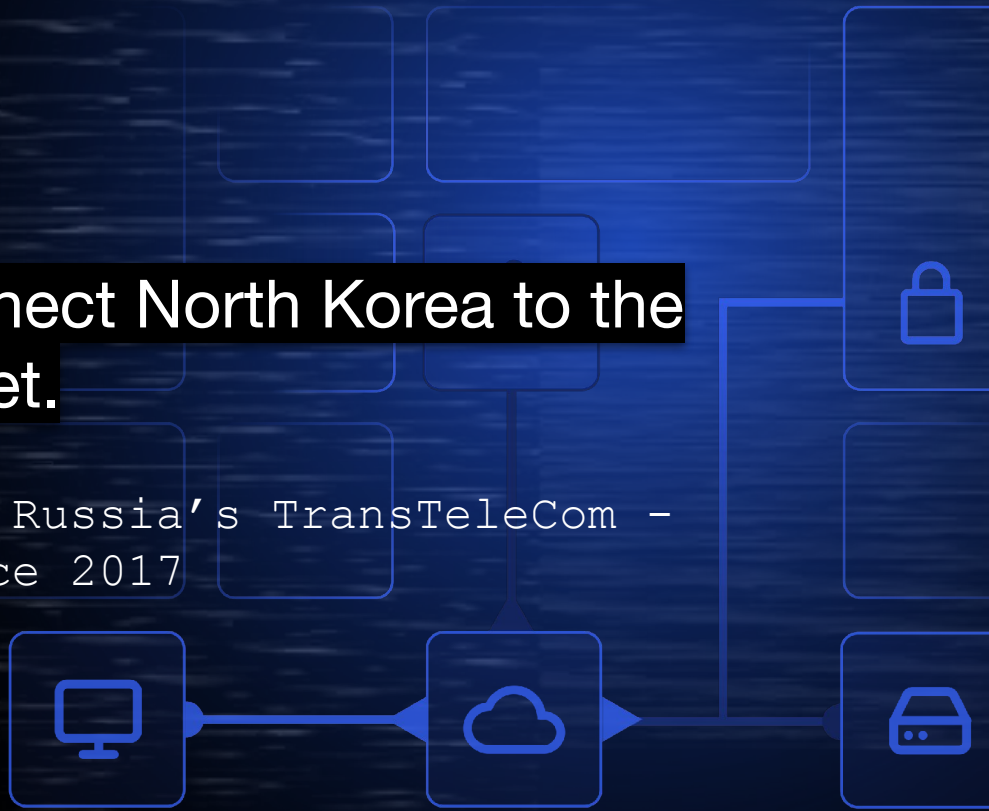
2

providers connect North Korea to the outside internet.

China Unicom + Russia's TransTeleCom - Dual-homed since 2017



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The whole country routes through here.

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1,024

Publicly routable IP addresses for the entire nation.

175.45.176.0/22 - less than a single mid-size company.

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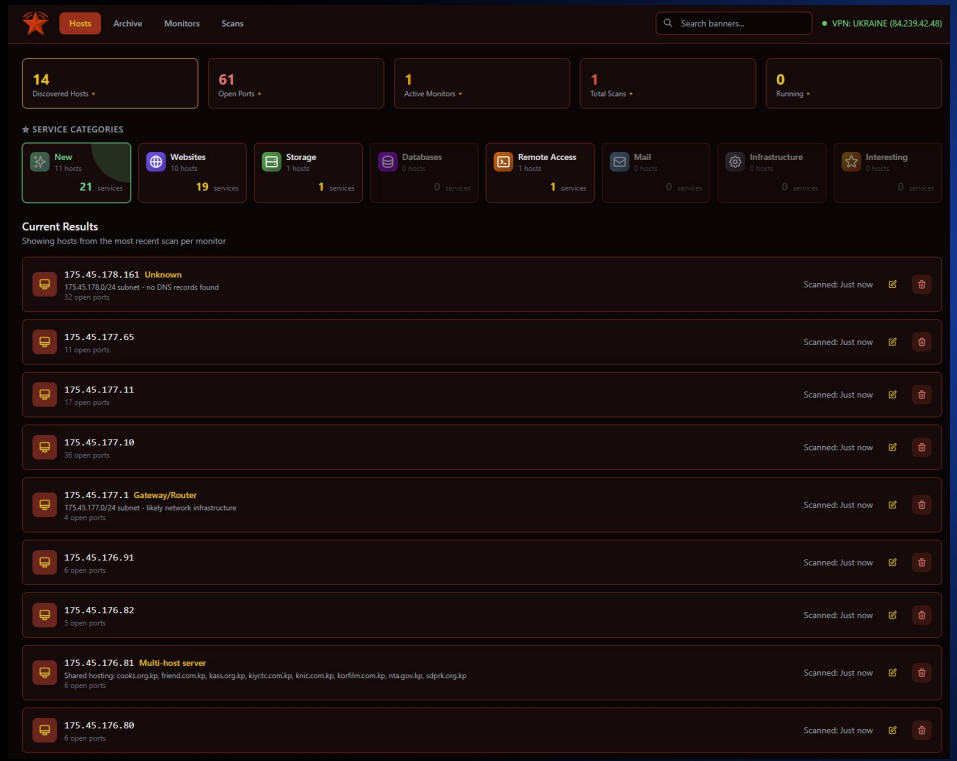
Scanning North Korean servers



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24+ phone brands

No app store

Apps install only at state-run “IT Exchange Centers”

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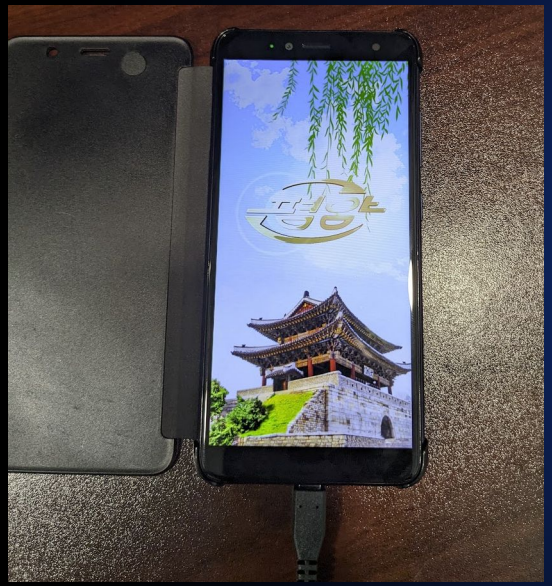
The hardware



Photos of a Pyongyang 2423 with its base model, the Blu Vivo XL3

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The hardware

Photos of a Pyongyang 2421

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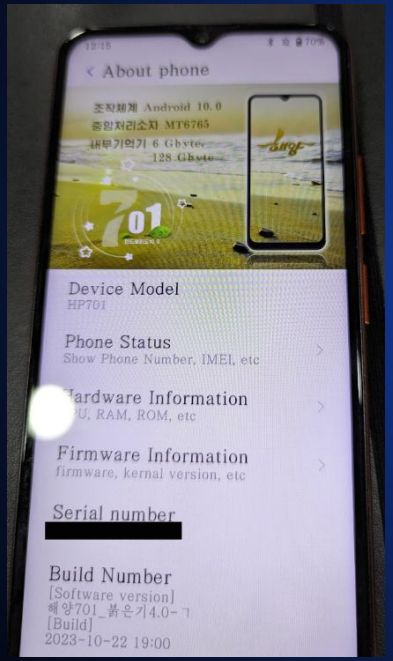
The hardware



Photos of a Han 701

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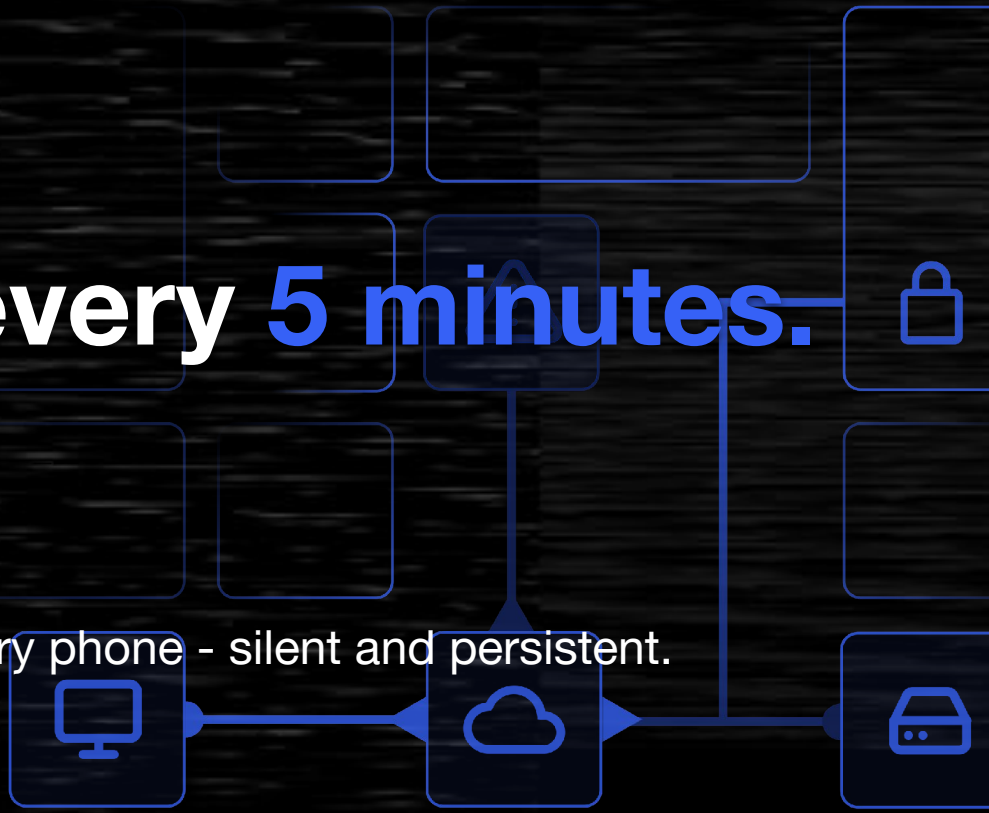
TRACEVIEWER / REDFLAG

A screenshot every 5 minutes. Not deletable.

Bundled into the Android OS on every phone - silent and persistent.



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The keyboard “autocorrects”

“oppa” → “comrade”

South Korean style affection rewritten into ideology.

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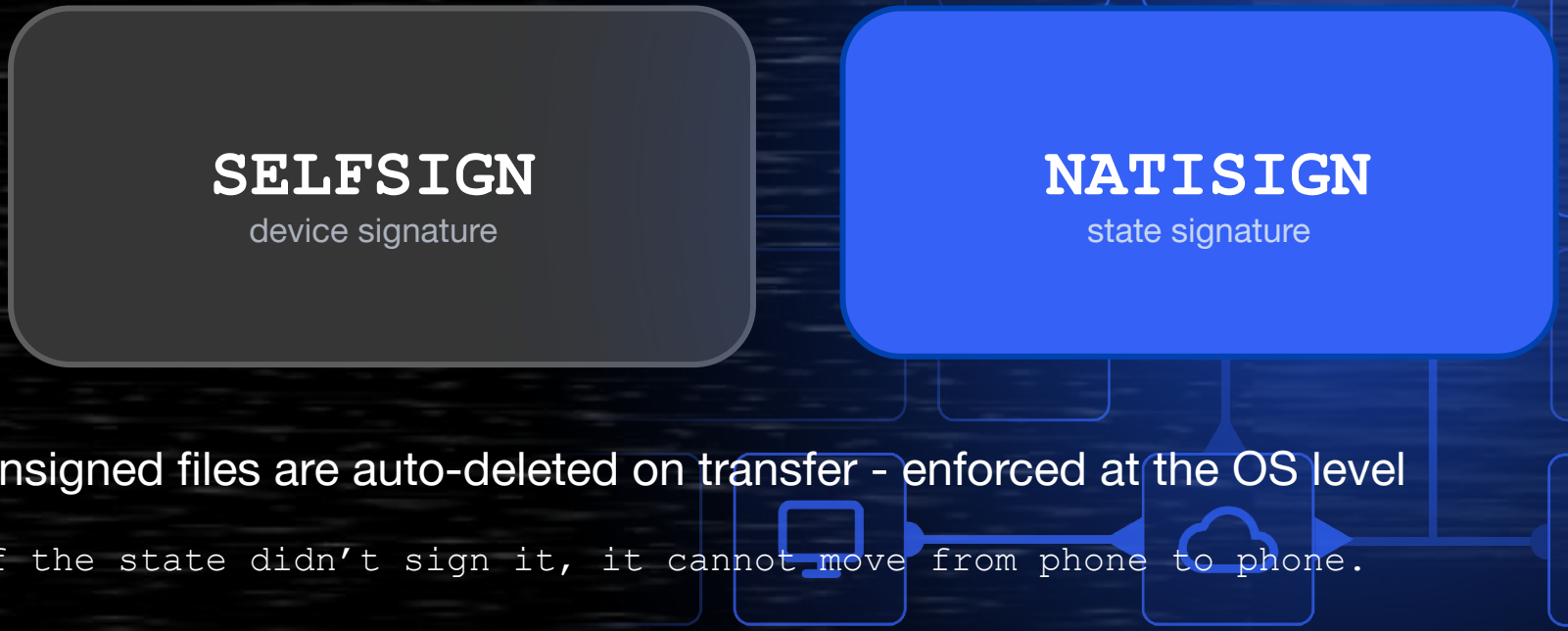
RedFlag: only state-signed files can spread



Unsigned files are auto-deleted on transfer - enforced at the OS level

`If the state didn't sign it, it cannot move from phone to phone.`

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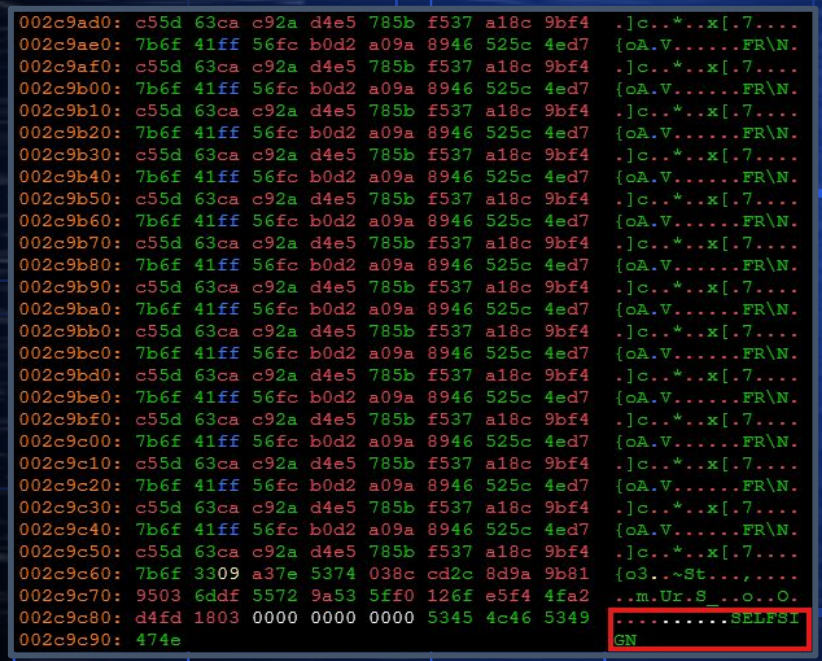
RedFlag: analyzing the signature



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SELFSIGN:

792-byte cryptographic media signature

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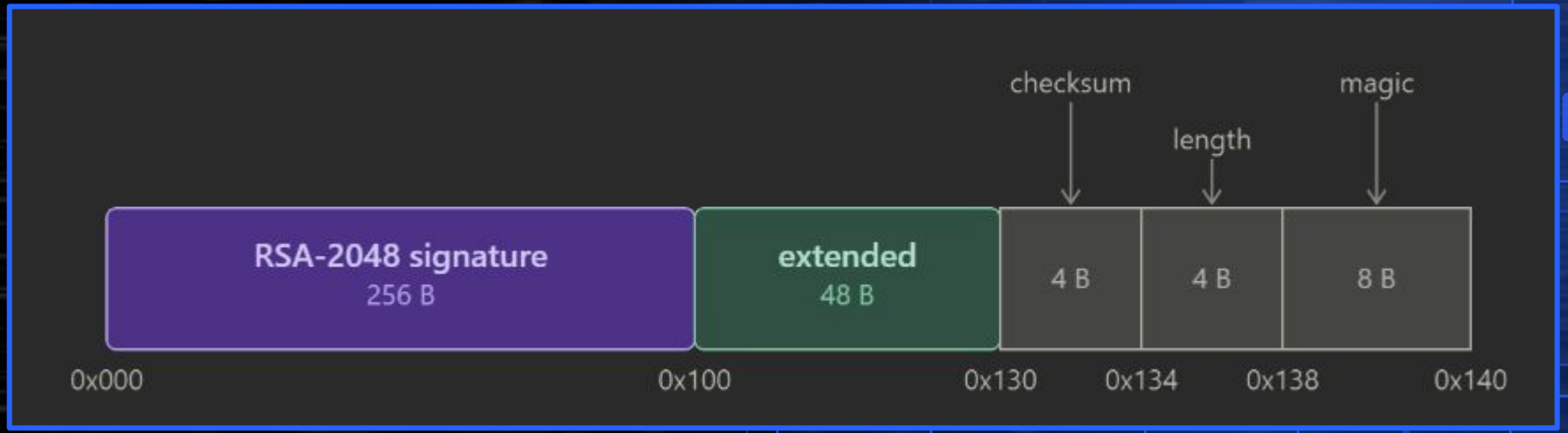
NATISIGN: 320-byte cryptographic APK signature



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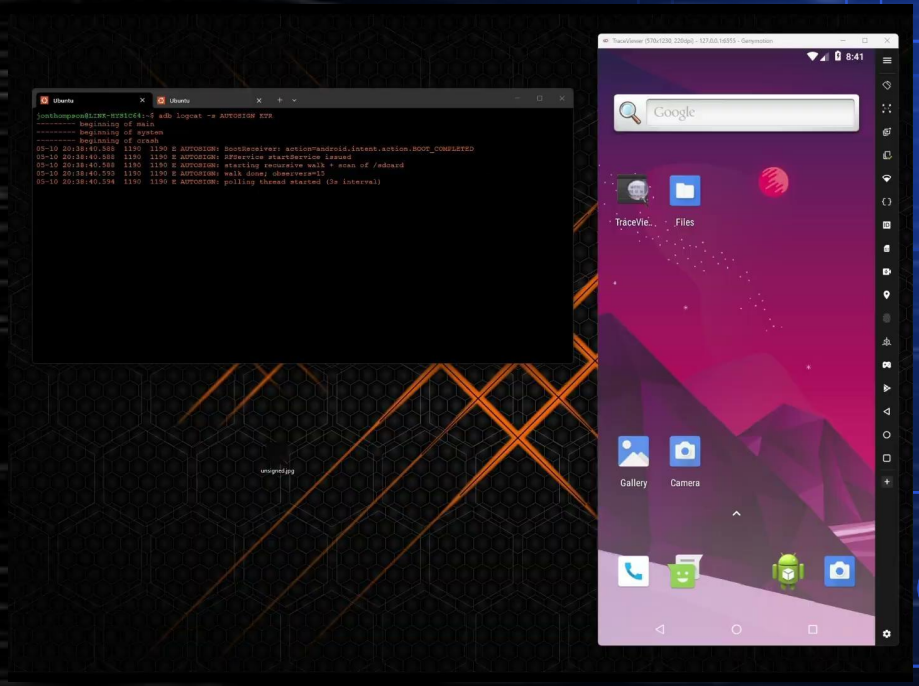
Traceviewer + RedFlag Demo



traceviewer_demo.mp4

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DESKTOP

On desktop, it’s mostly split between Windows 7 and 10/11

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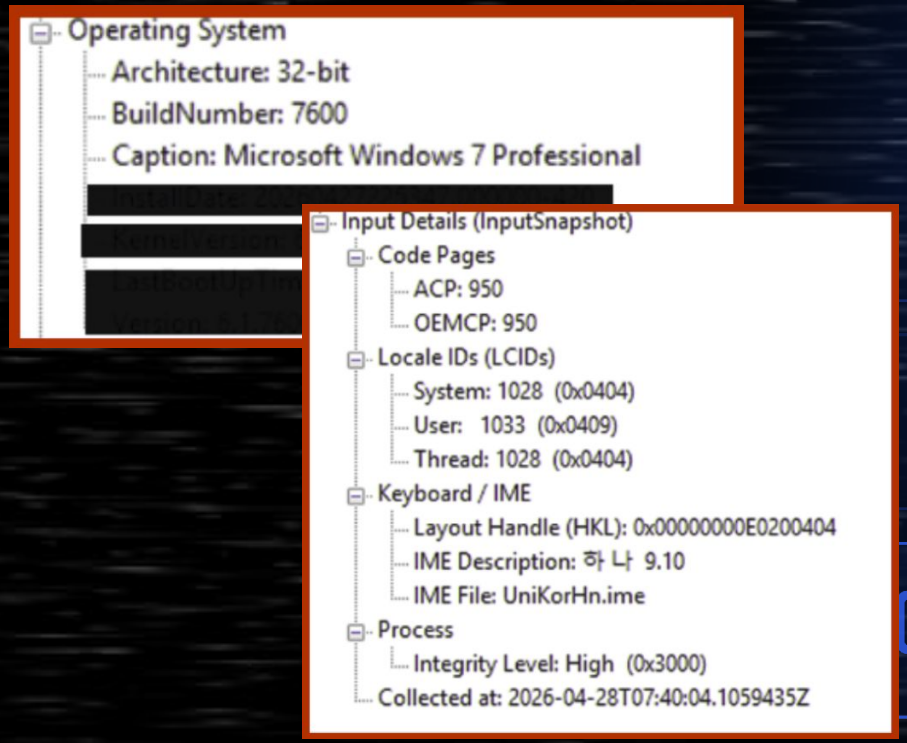
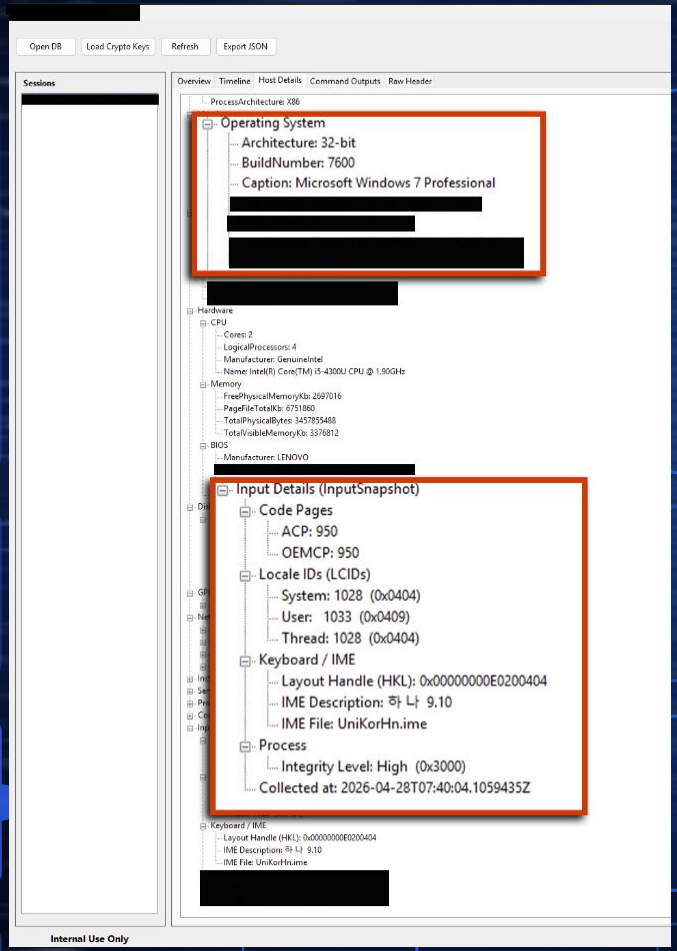
Exfil'd Data.





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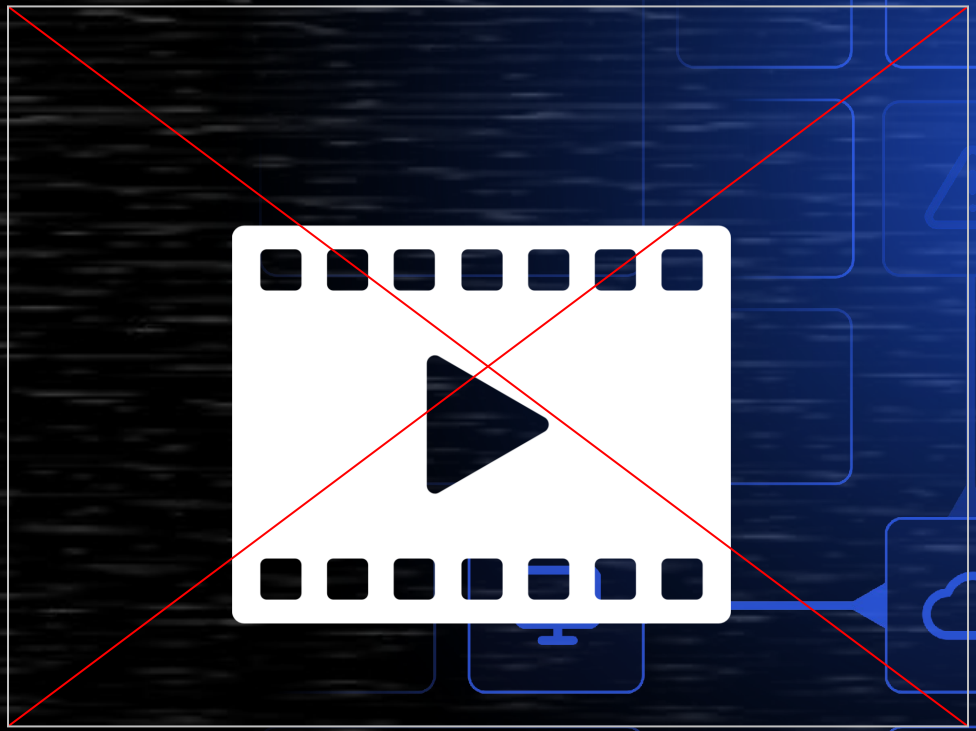
Hana IME



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Hana IME:
Get OS version and modify the registry

```
110  if ((param_1 != 0) && (DAT_1014afc8 != 0)) {
111    plVar7 = &DAT_1014afc8;
112    uVar8 = uVar10;
113    uVar9 = uVar10;
114    do {
115      if ((*(uint *)((longlong)&DAT_1014afc0 + uVar9) & osMask) == osMask) {
116        DAT_10086e28 = (HKEY)*plVar7;
117        lVar6 = (longlong)(int)uVar8 * 0x3a8;
118        WriteRecord(s_SYSTEM\CurrentControlSet\Control_1014afd0 + lVar6,&DAT_1014b0d0 + lVar6,
119                    (LPCWSTR)(&DAT_1014b158 + lVar6),*(uint *)((longlong)&DAT_1014b154 + uVar9),
120                    *(DWORD *)((longlong)&DAT_1014b150 + uVar9));
121      }
122      uVar10 = uVar10 + 1;
123      uVar8 = (ulonglong)((int)uVar8 + 1);
124      uVar9 = uVar10 * 0x3a8;
125      plVar7 = &DAT_1014afc8 + uVar10 * 0x75;
126    } while ((&DAT_1014afc8)[uVar10 * 0x75] != 0);
127  }
128  FUN_10008010(param_1);
129  FUN_10008290(param_1);
130  return 0;
131}
```

OS bitmask from jGetOSVersion

RegSetValueExA writes EnableLUA = 0

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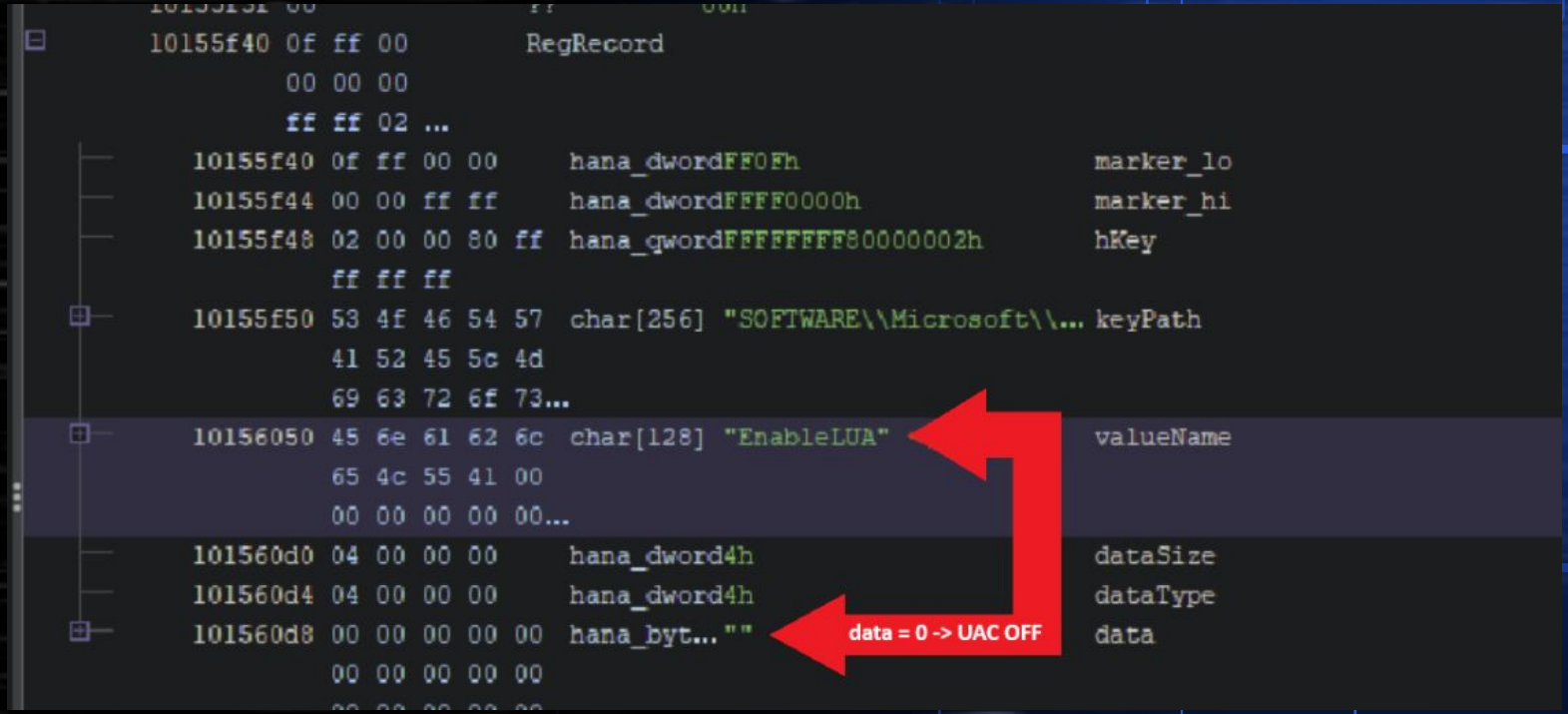
Hana IME:

The hidden feature that no one asked for…



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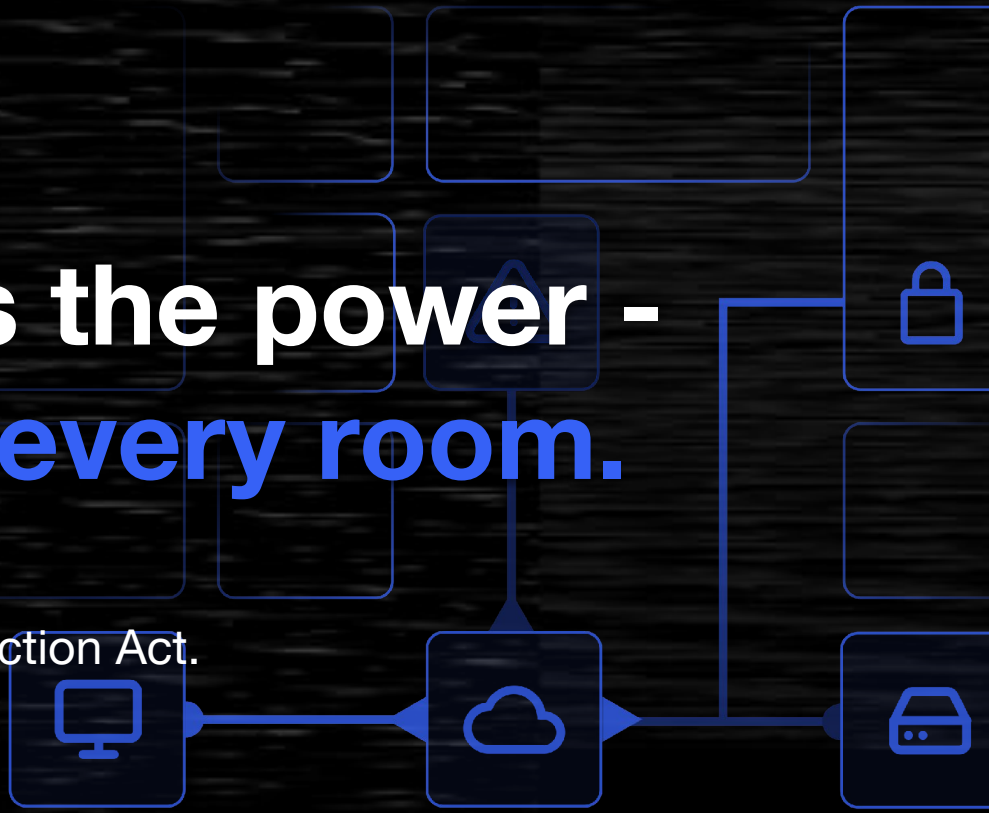
2020

Group 109 cuts the power - then searches every room.

Reactionary Ideology & Culture Rejection Act.



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MONITORING

Bureau 27 hunts smuggled phones by their radio signals

New detection methods can catch sub-minute calls

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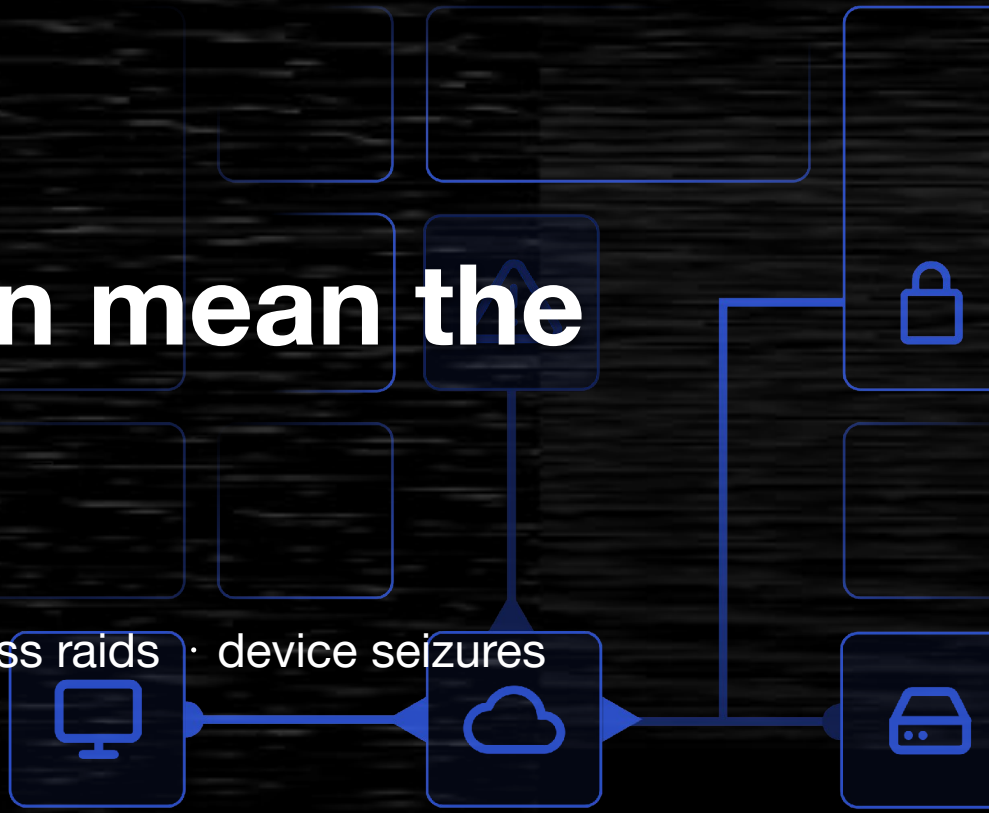
Distribution can mean the death penalty.

Roving inspection units · warrantless raids · device seizures



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III. THE CRACKS

How people beat the system anyway

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Smuggled media

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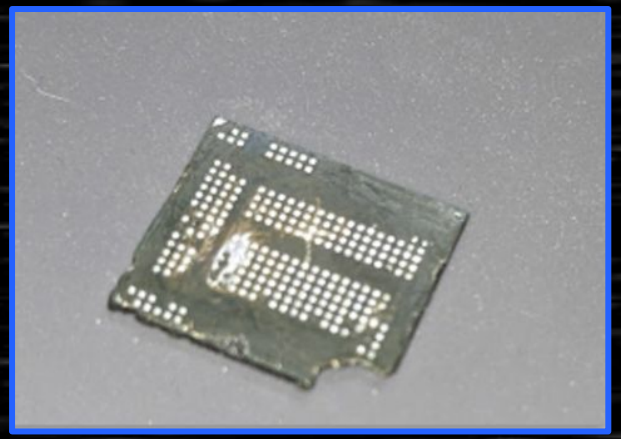
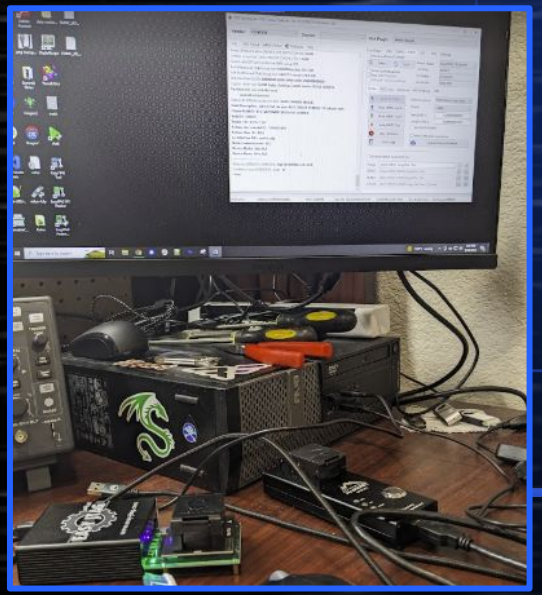
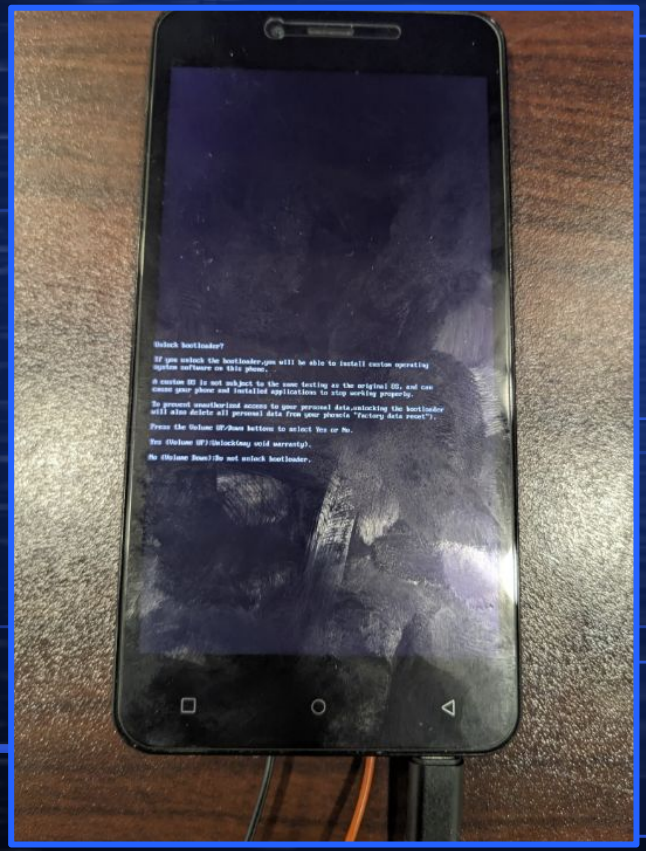
Trial and error







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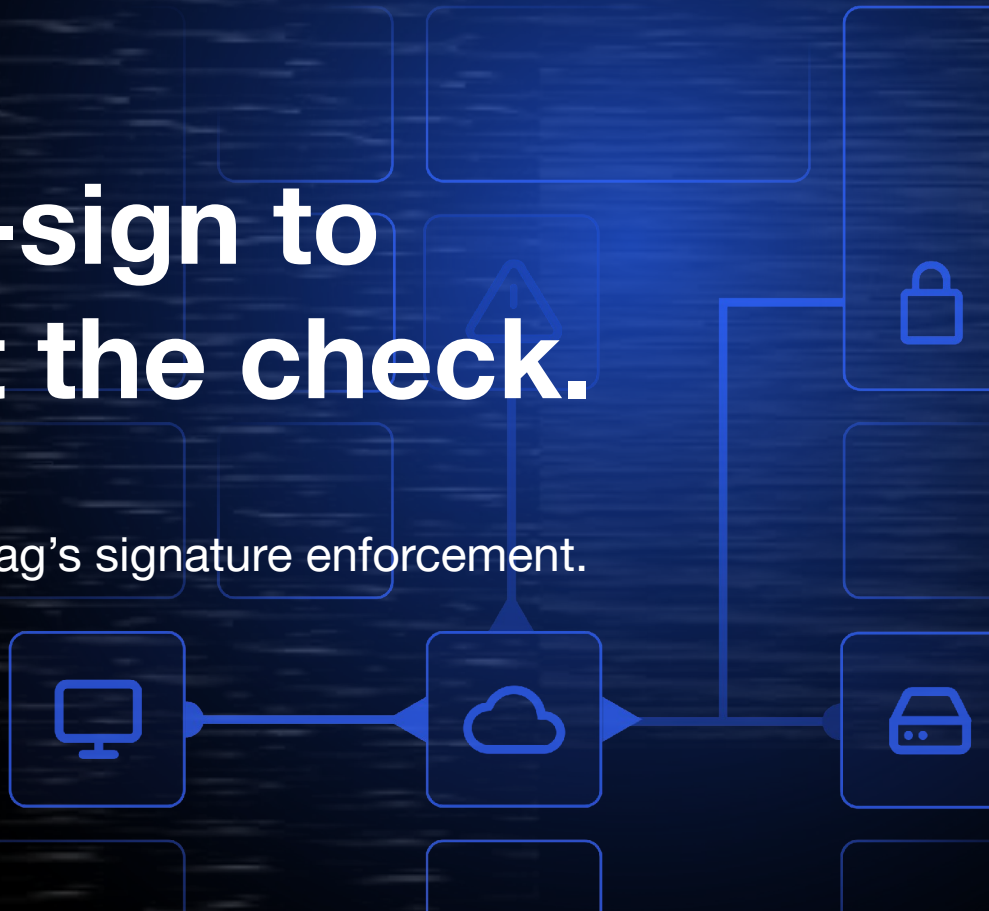
“Pigeon” Self-sign to beat the check.

Self-signing media to defeat RedFlag’s signature enforcement.



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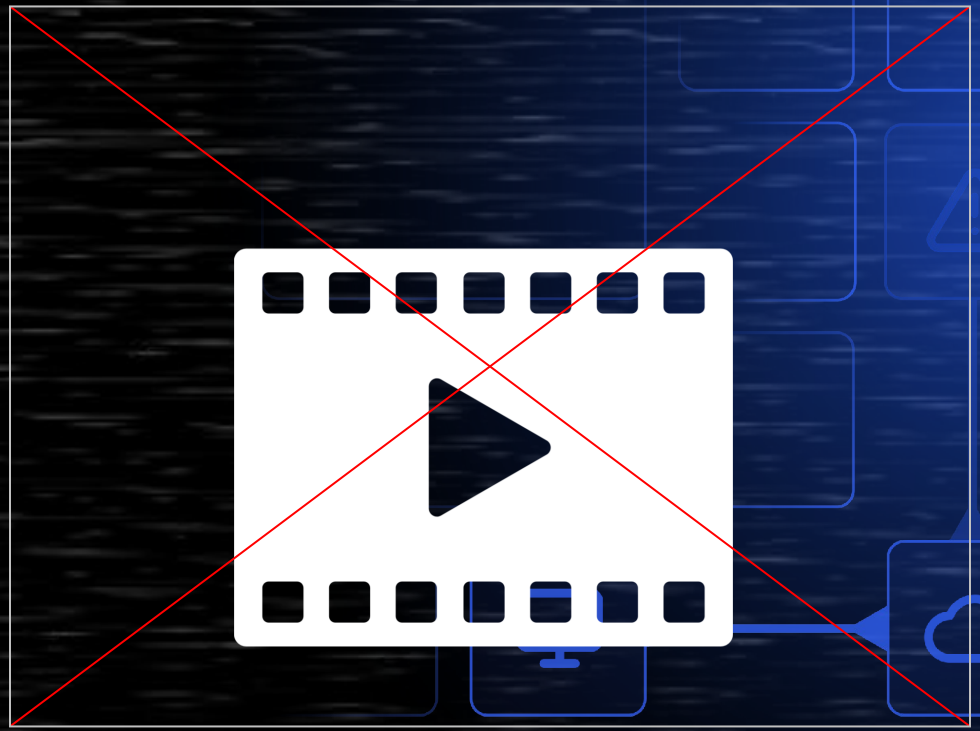
Pigeon



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Contextual anti-forensic tools

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IV. THE GAPS

The support system is collapsing

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The biggest crisis for the movement since the 1990s.

But a small community of defectors, activists, and technologists persists.

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V. OUR WORK

What we're doing about it

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What we've built so far...

4

Software projects in active development

68

Defector user tests in 2025

SECURITY

The primary design requirement in all of our products

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VI. THE ASK

This is where you come in

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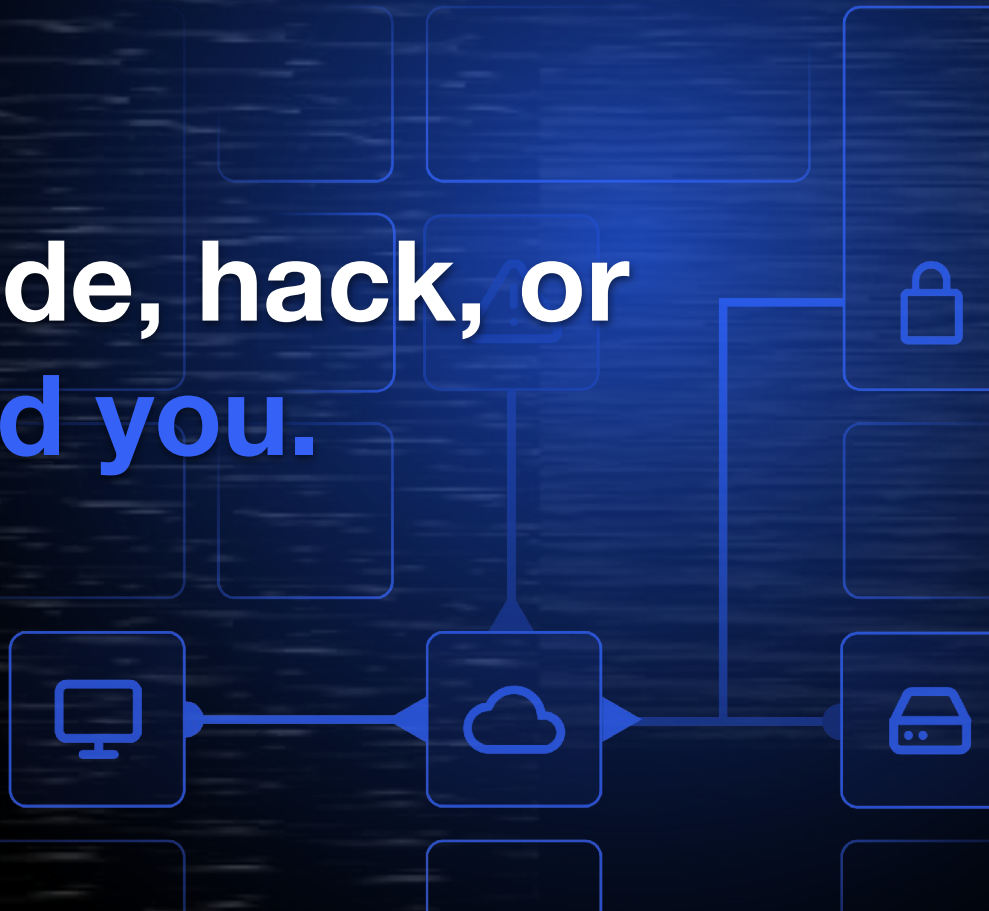
If you write code, hack, or build - we need you.



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What you'd work on.

PHONE EXPLOITS

Root, unlock, and exploit NK handsets

AI

Scale analysis, future state, application development

EMBEDDED SYSTEMS

Hardware analysis, application development, censorship bypass

DIRECT-TO-CELL

Reach devices independent of the state network

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Di$tribution Networks

The most resource-intensive part of our work

Developing a single network can cost tens-of-thousands of dollars

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“LiNK is developing technology to break barriers which I have no doubt will create a free world for North Koreans. I promise to contribute in whatever small way I can until the day when our dreams of a beautiful society and freedom in North Korea come true.”

- Jang Hyeok, escaped NK in 2019

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volunteer.libertyinnorthkorea.org

volunteers@libertyinnorthkorea.org

Scan to volunteer!

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THANK YOU