eqiva Bluetooth Türschlossantrieb

Reversing the Protocol

Max Weller
max@teamwiki.de

SEEMOO
SECURE MOBILE NETWORKING

STM8L052
C6T6
SH210 VG
HN 621
93 Y

MP3

MP5

MP4

BTN


RST?:
touching with osci probe
resets connection
SWIM
VDD
RESET
GND
PRG2 = STM8 SWIM connector
RST?
GND
TXD
RXD?
VDD
PRG1
PRG1 = BCM debug conn.
STM -> BCM
BCM -> STM
ADR
D1
R1
C7
C4
J5
J1
J2
J4
J3
C1
C2
C3

RST?:
touching with osci probe
resets connection

SWIM
VDD
RESET
GND

PRG2 = STM8 SWIM connector

RST?
GND
TXD
RXD?
VDD

PRG1 = BCM debug conn.

STM -> BCM
BCM -> STM

Seriellport 1


RST?:
touching with osci probe
resets connection
Seriellport 2
SWIM
VDD
RESET
GND
PRG2 = STM8 SWIM connector
RST?
GND
TXD
RXD?
VDD
PRG1
PRG1 = BCM debug conn.
STM -> BCM
BCM -> STM
ADR
Seriellport 1

Pairing (first user)

Pairing (first user)

Pairing (first user)

Pairing (first user)

MAABBCCDDEEFFK00112
2334455667788 99AABBCCD
DEEFFNEQ1060512

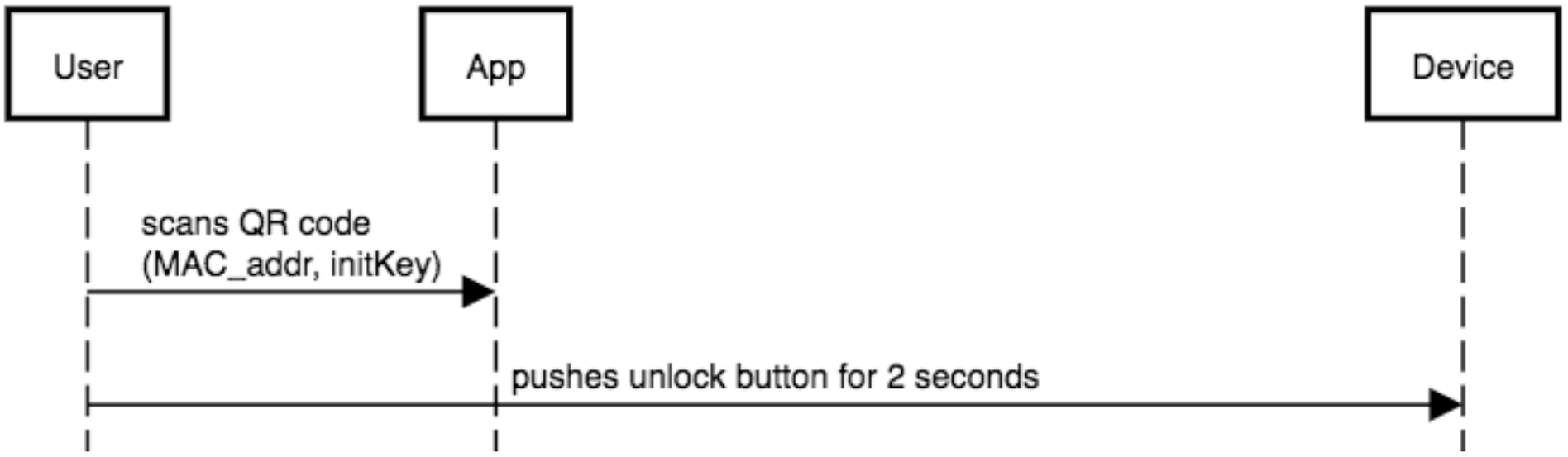
```java
import net.sourceforge.zbar.Symbol;

public class QRCodeScannerFragment extends b<SetupWizardActivity> implements PreviewCallback {
    private static final Pattern c = Pattern.compile("M([A-F0-9]{12})K([A-F0-9]{32})([A-Z0-9]{10})");
    ImageScanner a;
```

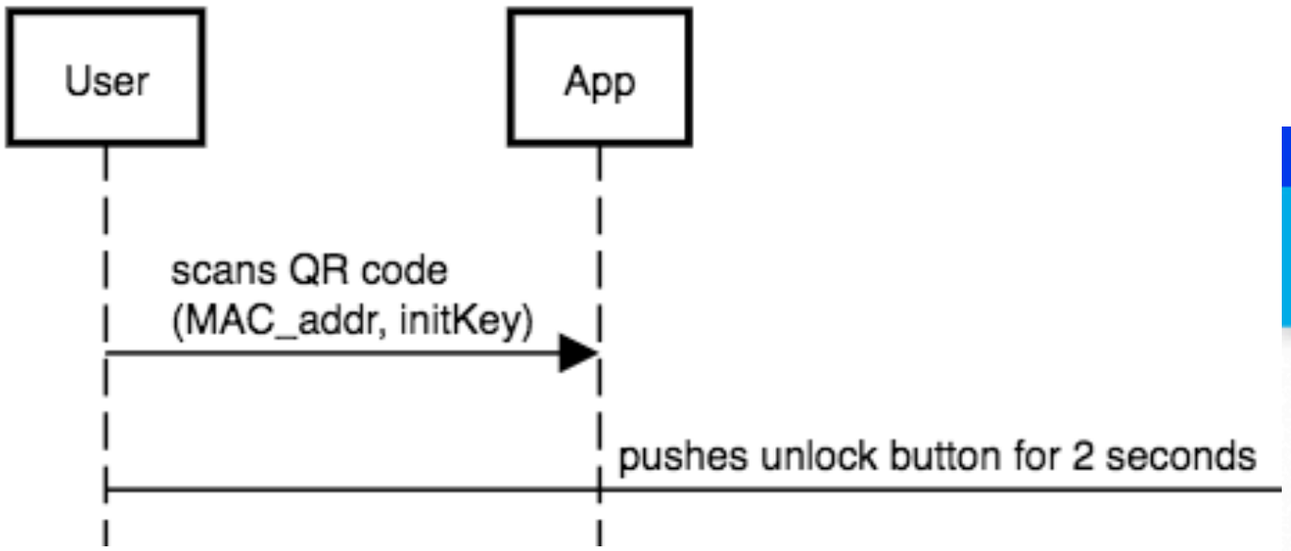
scans QR code
(MAC_addr, initKey)

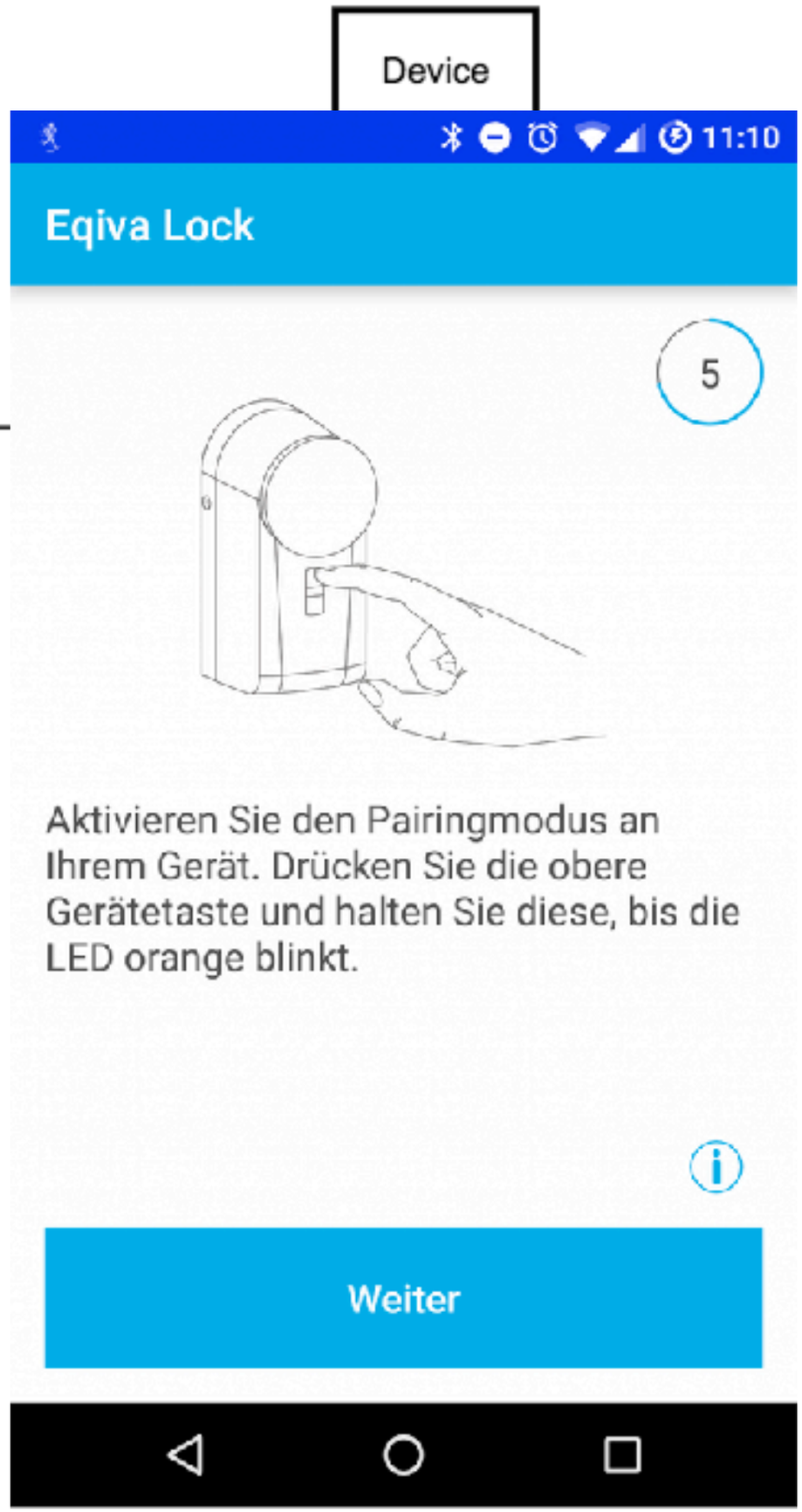
MAABBCCDDEEFFK00112
233445566778899AABBCCD
DEEFFNEQ1060512

Pairing (first user)



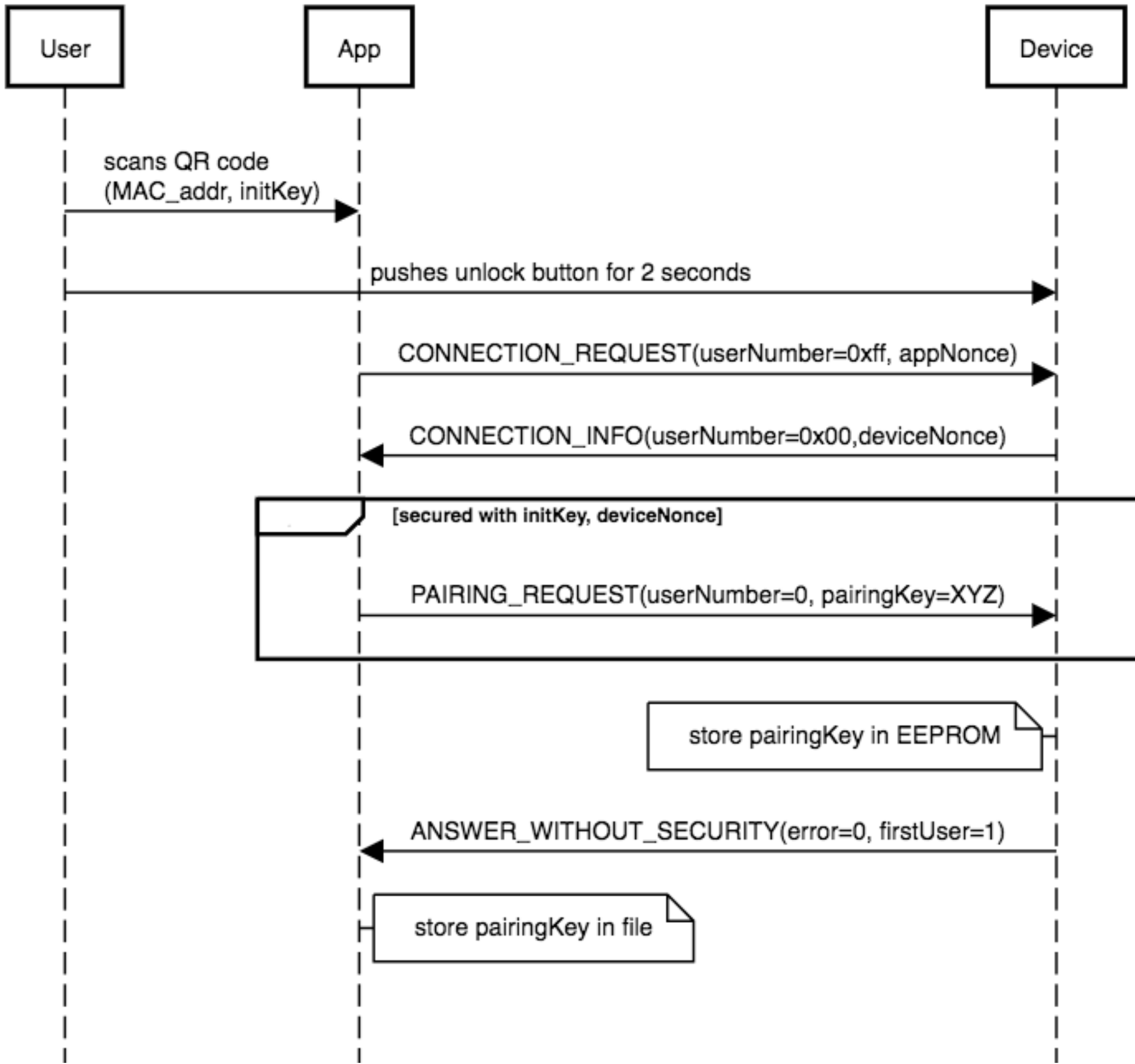
Pairing (first user)



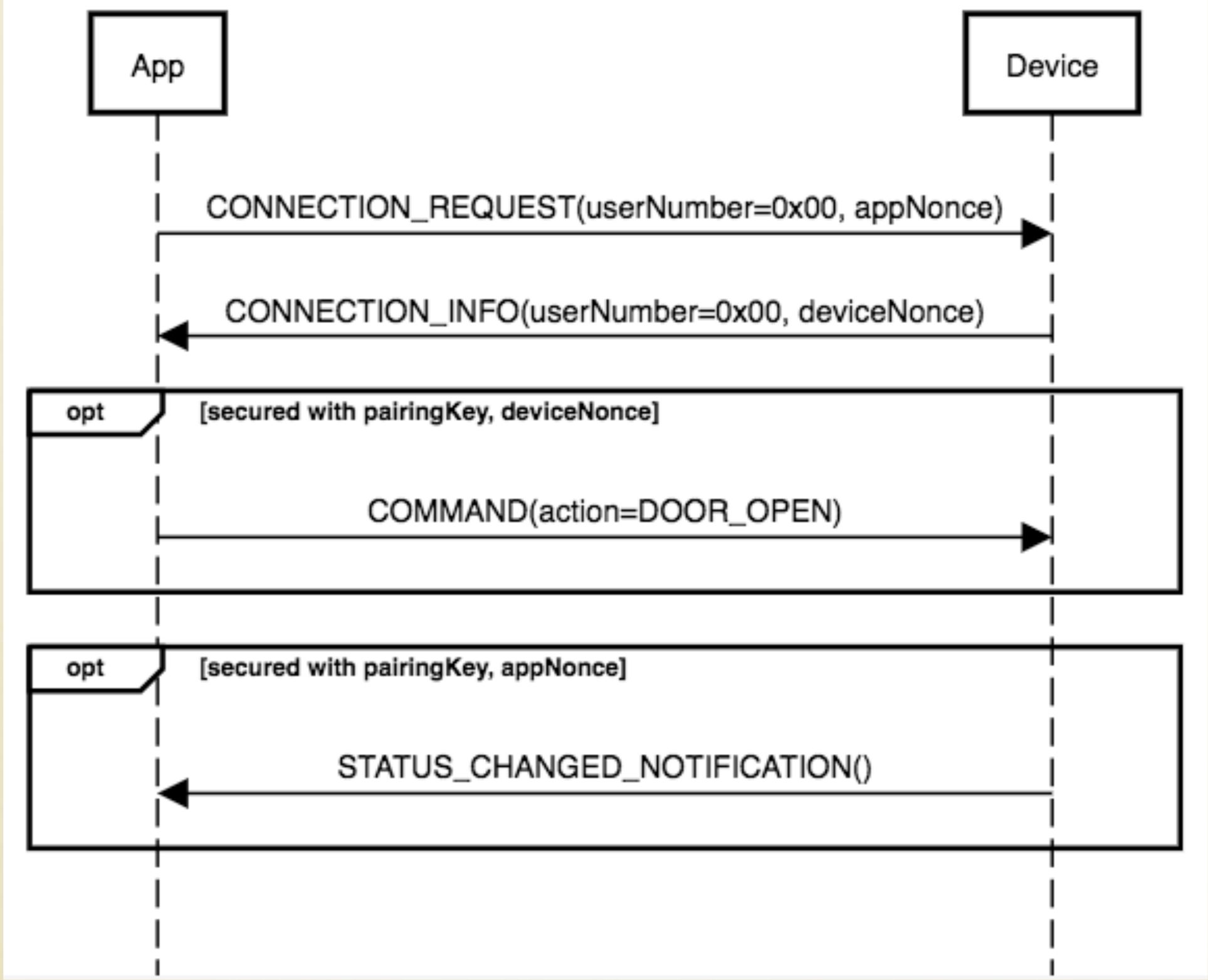


```
public enum CommandTypeEnum {
    FRAGMENT_ACK(0),
    ANSWER_WITHOUT_SECURITY(1),
    CONNECTION_REQUEST(2),
    CONNECTION_INFO(3),
    PAIRING_REQUEST(4),
    STATUS_CHANGED_NOTIFICATION(5),
    CLOSE_CONNECTION(6),
    BOOTLOADER_START_APP(16),
    BOOTLOADER_DATA(17),
    BOOTLOADER_STATUS(18),
    ANSWER_WITH_SECURITY(129),
    STATUS_REQUEST(130),
    STATUS_INFO(131),
    MOUNT_OPTIONS_REQUEST(132),
    MOUNT_OPTIONS_INFO(133),
    MOUNT_OPTIONS_SET(134),
    COMMAND(135),
    AUTO_RELOCK_SET(136),
    PAIRING_SET(138),
    USER_LIST_REQUEST(139),
    USER_LIST_INFO(140),
    USER_REMOVE(141),
    USER_INFO_REQUEST(142),
    USER_INFO(143),
    USER_NAME_SET(144),
    USER_OPTIONS_SET(145),
    USER_PROG_REQUEST(146),
    USER_PROG_INFO(147),
    USER_PROG_SET(148),
    AUTO_RELOCK_PROG_REQUEST(149),
    AUTO_RELOCK_PROG_INFO(150),
    AUTO_RELOCK_PROG_SET(151),
    LOG_REQUEST(152),
    LOG_INFO(153),
    KEY_BLE_APPLICATION_BOOTLOADER_CALL(154),
    DAYLIGHT_SAVING_TIME_OPTIONS_REQUEST(155),
    DAYLIGHT_SAVING_TIME_OPTIONS_INFO(156),
    DAYLIGHT_SAVING_TIME_OPTIONS_SET(157),
    FACTORY_RESET(158);
```

Pairing (first user)

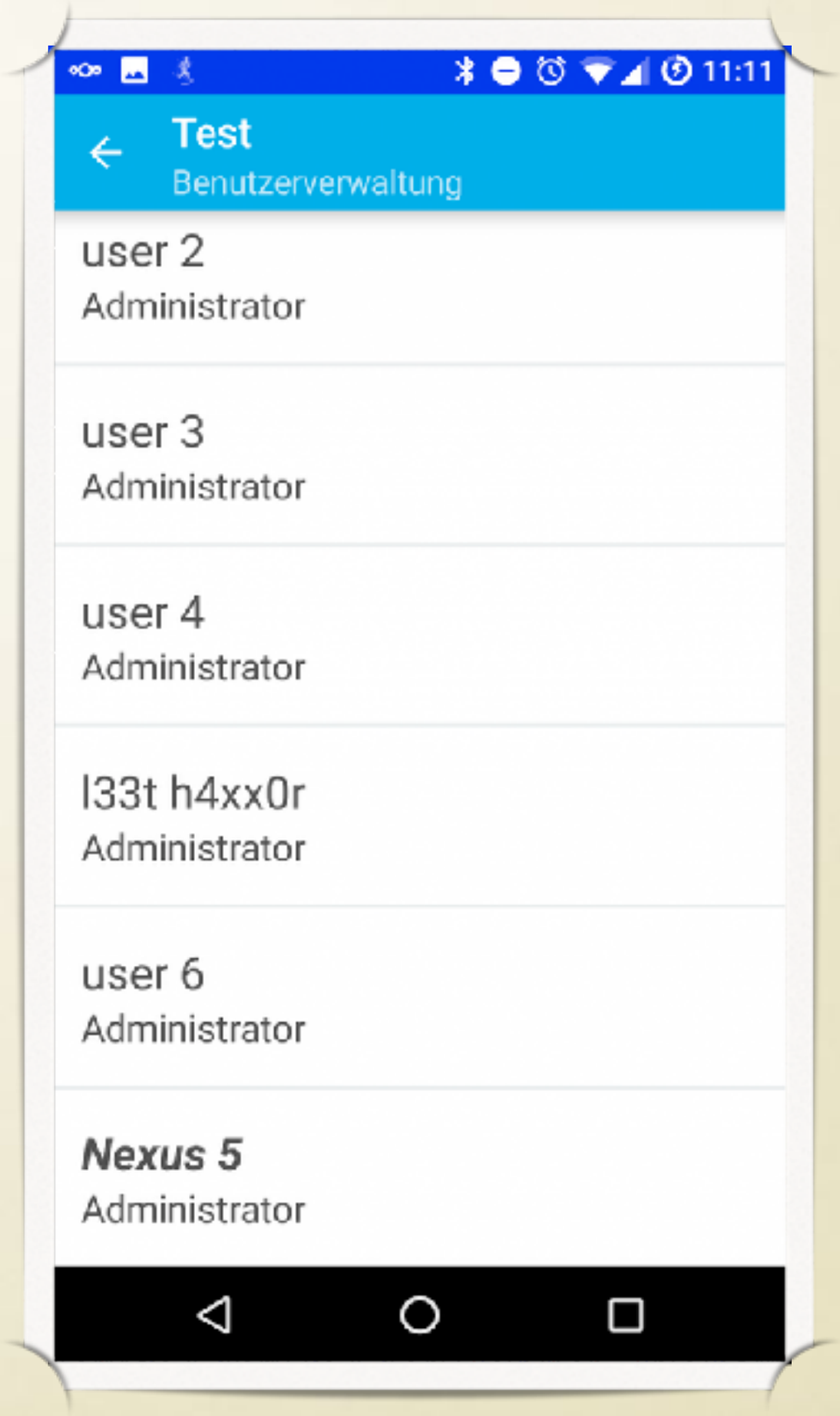


Door action command



Malicious vendor attack

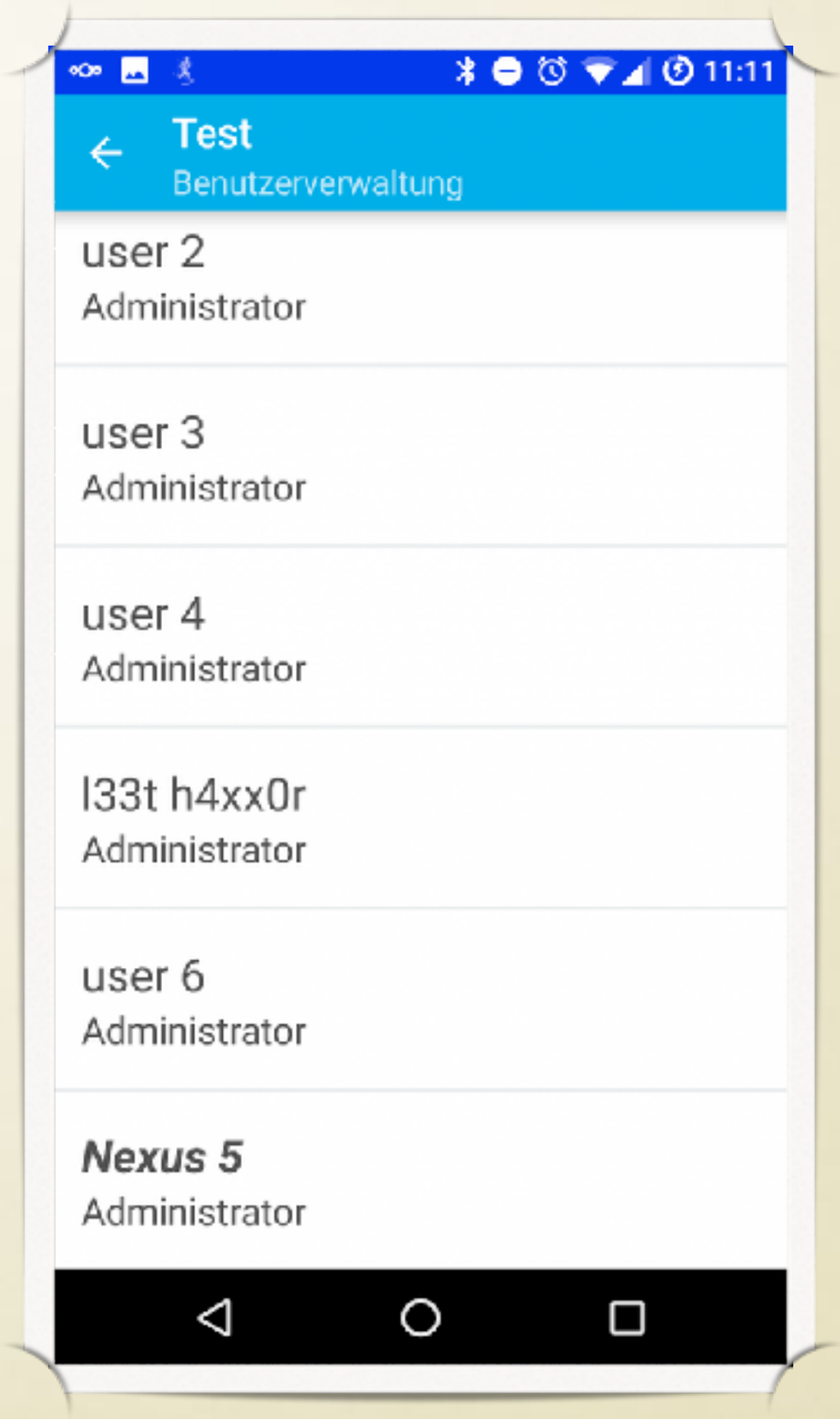
- verkauft vorgepairtes Gerät, „besucht“ einige Zeit später Lieferadresse
- Kunde könnte es unter *Einstellungen -> Benutzerverwaltung* entdecken



Malicious vendor attack

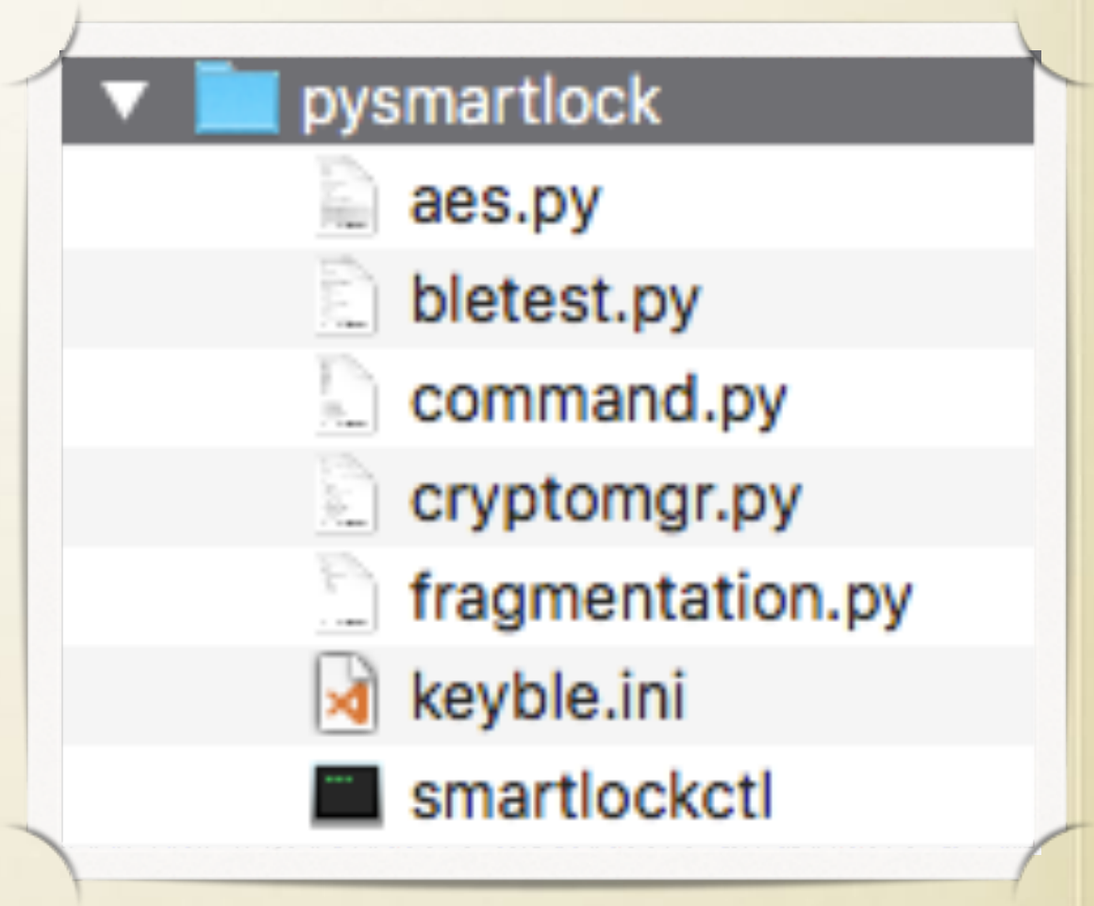
- verkauft vorgepairtes Gerät, „besucht“ einige Zeit später Lieferadresse

- Kunde könnte es unter *Einstellungen -> Benutzerverwaltung* entdecken



Ergebnis

- Protokoll macht einen vernünftigen Eindruck
- Keine Cloud
- Keine Aussage zur Firmware möglich (Bugs/ Backdoors unklar)



https://github.com/max-weller/hwreverse/