Security Classes For Software Updates for IoT
draft-urien-suit-security-classes-00.txt

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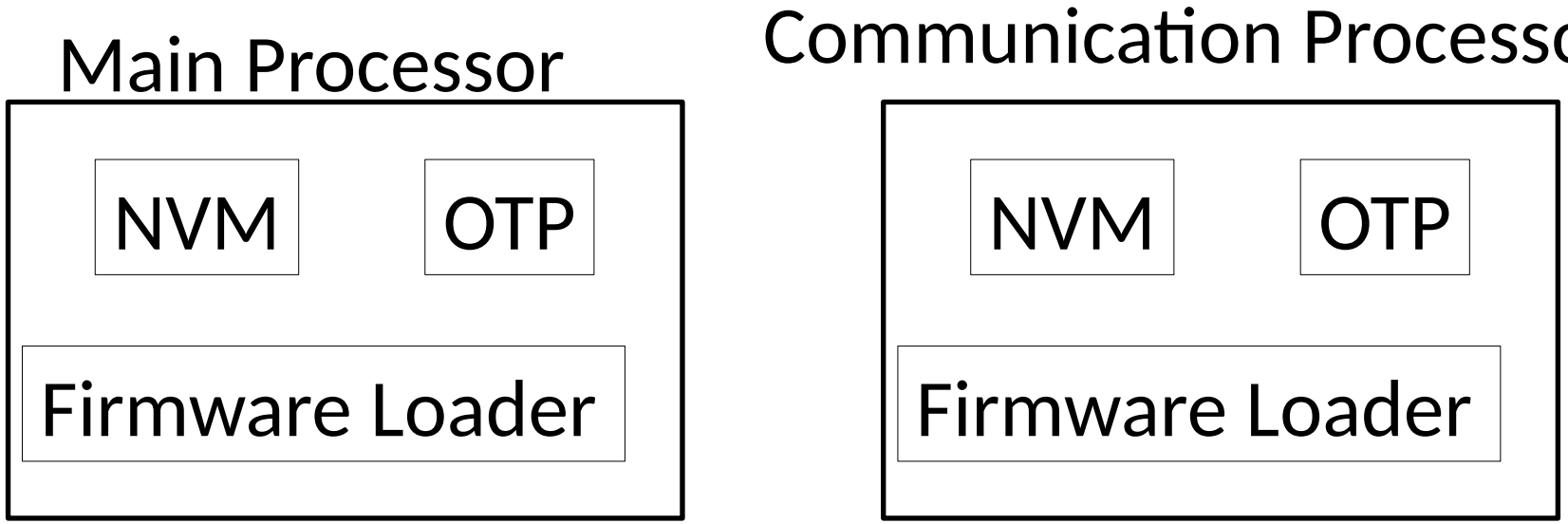
Scope

- This draft attempts to define security classes for devices targeted by SUIT protocols.
- A device security is characterized by five boolean security attributes: firmware loader (FLD), one time programmable memory (OTP), secure firmware loader (FLD-SEC), tamper resistant key (TRT-KEY) and diversified key (DIV-KEY).
  - More Attributes needed ?
- This classification creates 18 device classes.
- {FLD, OTP, FLD-SEC, TRT-KEY, DIV-KEY}

Goal

- This draft attempts to define security classes for devices targeted by SUIT protocols.
- The goal is to provide a qualitative estimation of ***risks*** induced by firmware remote updates according to device logical and hardware security resources.

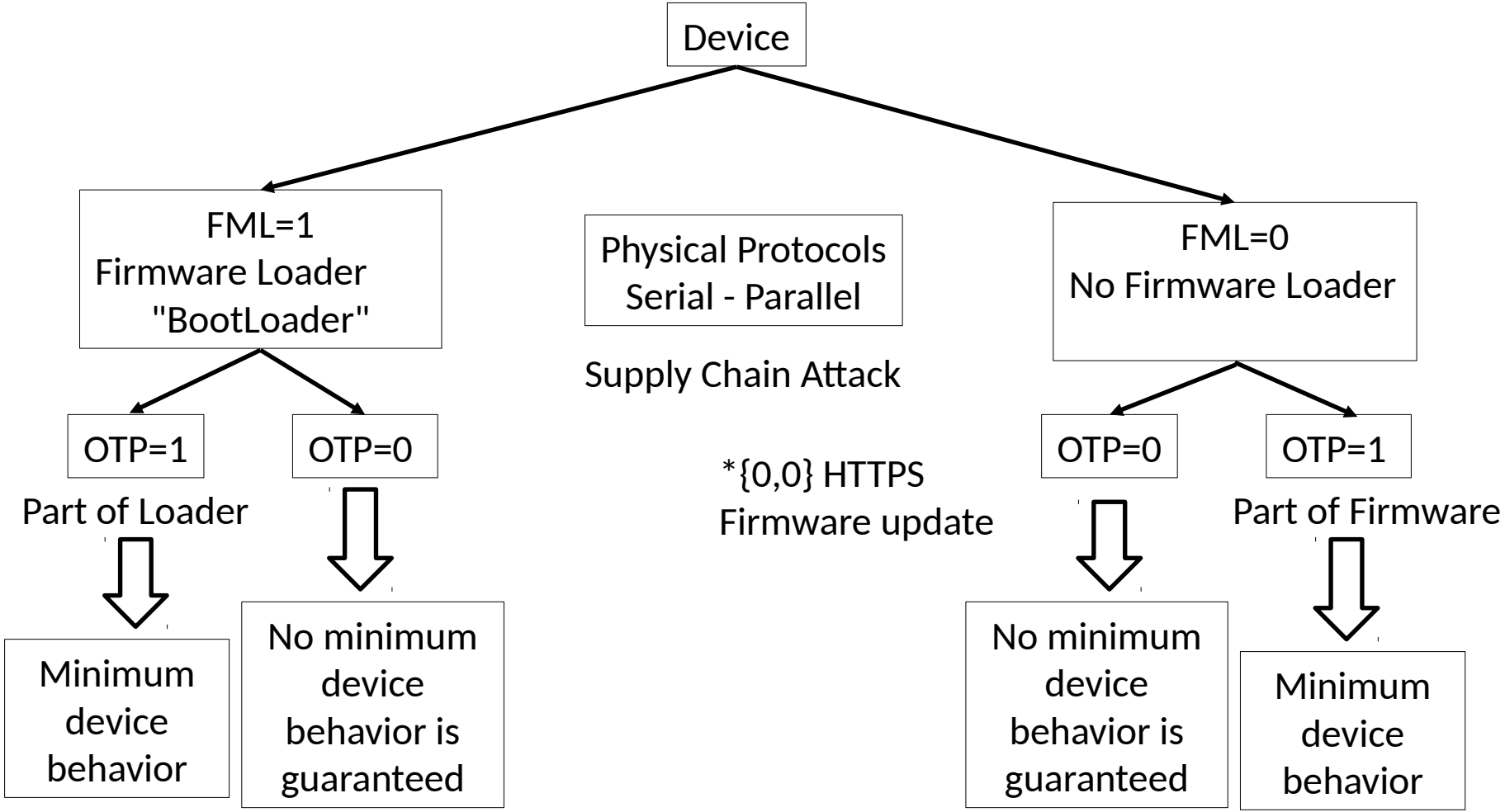
Device Architecture



Non Volatile Memory

One Time Programmable Memory

Physical Protocols


Device
FML=1
Firmware Loader
"BootLoader"
Physical Protocols
Serial - Parallel
FML=0
No Firmware Loader
Supply Chain Attack
OTP=1
OTP=0
OTP=0
OTP=1
Part of Loader
*{0,0} HTTPS
Firmware update
Part of Firmware
Minimum device behavior
No minimum device behavior is guaranteed
No minimum device behavior is guaranteed
Minimum device behavior

FML=1
Firmware Loader
"BootLoader"

One Time Programmable Memory, OTP=0/1

Secure Firmware Loader, FLD-SEC = 0/1

Tamper Resistant Key, TRT-KEY= 0/1

Diversified Key, DIV-KEY =0/1

Exemple Bank Card = { 1,1,1,1,1}

Is it possible to erase
the bootloader ?

Symmetric
Asymmetric
Certificate
Post –Quantum Crypto

Side Channel Attacks
enable key recovery

The use of diversified secrets keys limits the side channel attack effect to a single device

Questions