

# Securing the future of Automotive



MARVELL®

# Automotive Update

- With the rapidly increasing amount of designs using Ethernet for communication in cars, the need for security is increasing
- Compared to the first generation of Ethernet in cars, the upcoming architectures have much more complex use cases
- Ethernet is now entering ADAS domains in the car where the need for safe and secure communication is paramount

More than a standard switch is required to address these needs:

Marvell's Secure Automotive Ethernet Switch SoC



Deep Packet Inspection



Trusted Boot Technology



AEC-Q100 Grade 2 Certified



Low-Power Consumption



Integrated ARM Cortex-M7 Processor (250 Mhz)



Fast Configuration and Boot Times

# Areas to Secure

**Software**

**Configuration**

**Runtime  
configuration  
access**

**Diagnostic  
access**

**Configuration  
or firmware  
update**

**Data  
exchange**

**Intrusion  
detection/  
prevention**

# Secure – Software Boot

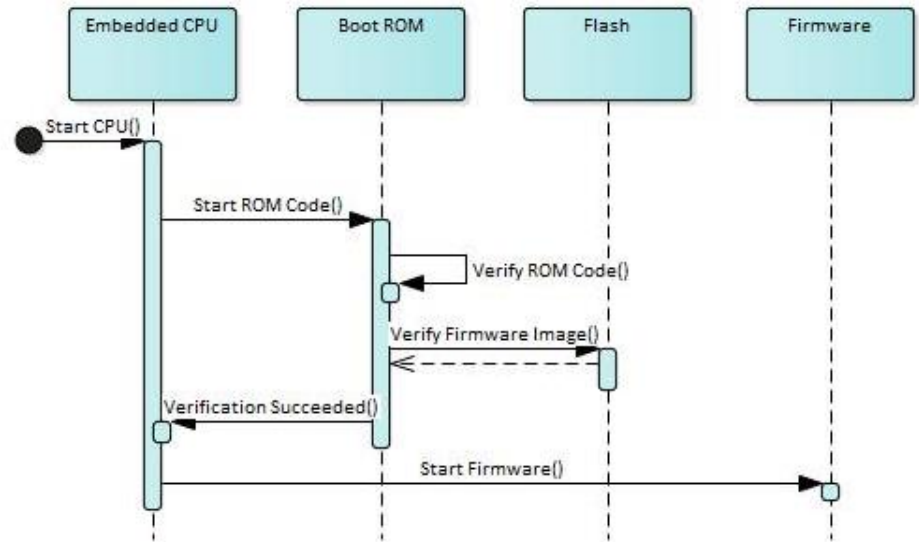
## Requirements:

Ensure authenticity and integrity of any software running on the device

## Solution:

Trusted Boot concept:

- Uses asymmetric cryptography
- Root of trust / trust anchor
- Chain of trust
- Only public key is needed locally
- OEM has the private key to sign



# Secure – Update

## Requirements:

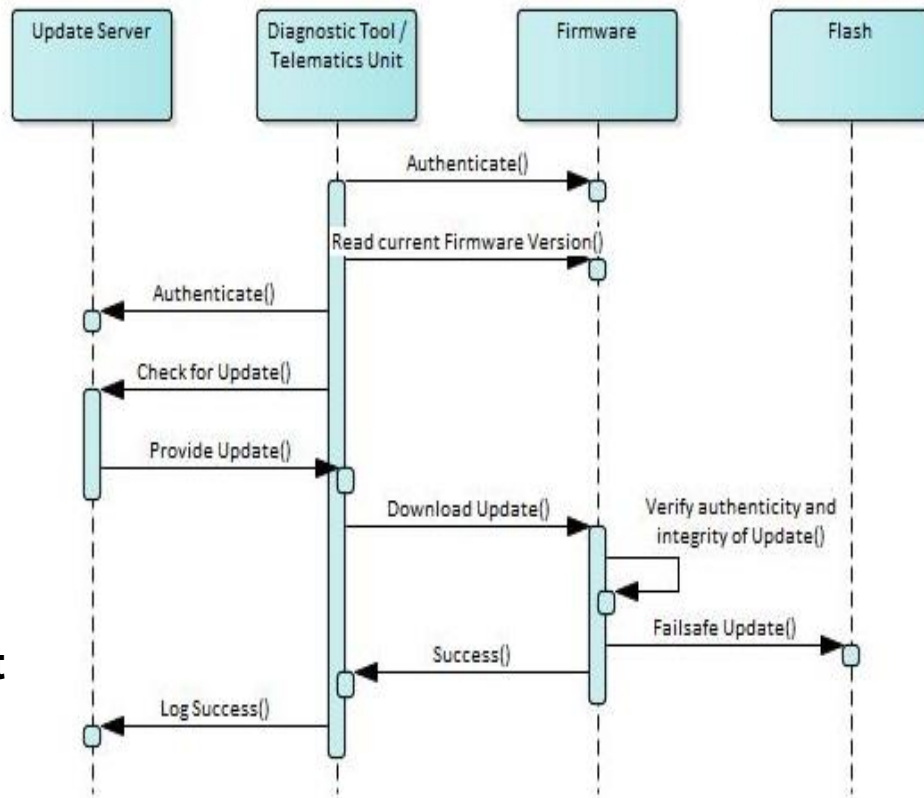
Ensure authenticity and integrity of any software and/or configuration update before using it, and

Ensure that any failure during the update process still results in a bootable and trusted firmware and configuration (fail-safe)

## Solution:

Trusted Update concept:

- Use the measures from Trusted Boot and Trusted Configuration for every update block before activation it
- Use backup images to ensure fail-safe operation



# Secure – Runtime Access

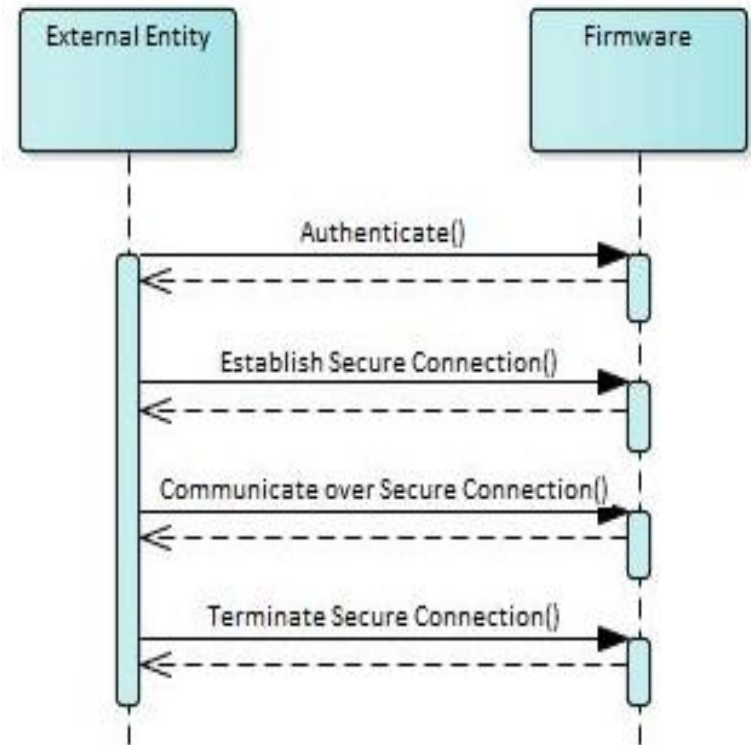
## Requirements:

Ensure that only authenticated entities can access the device for Diagnostic, Configuration and Update

## Solution:

Trusted Runtime Access concept:

- **Authenticate any and all access to the device**
- **Protect and shut down any attempted unauthorized access**



# Intrusion Prevention/Intrusion Detection

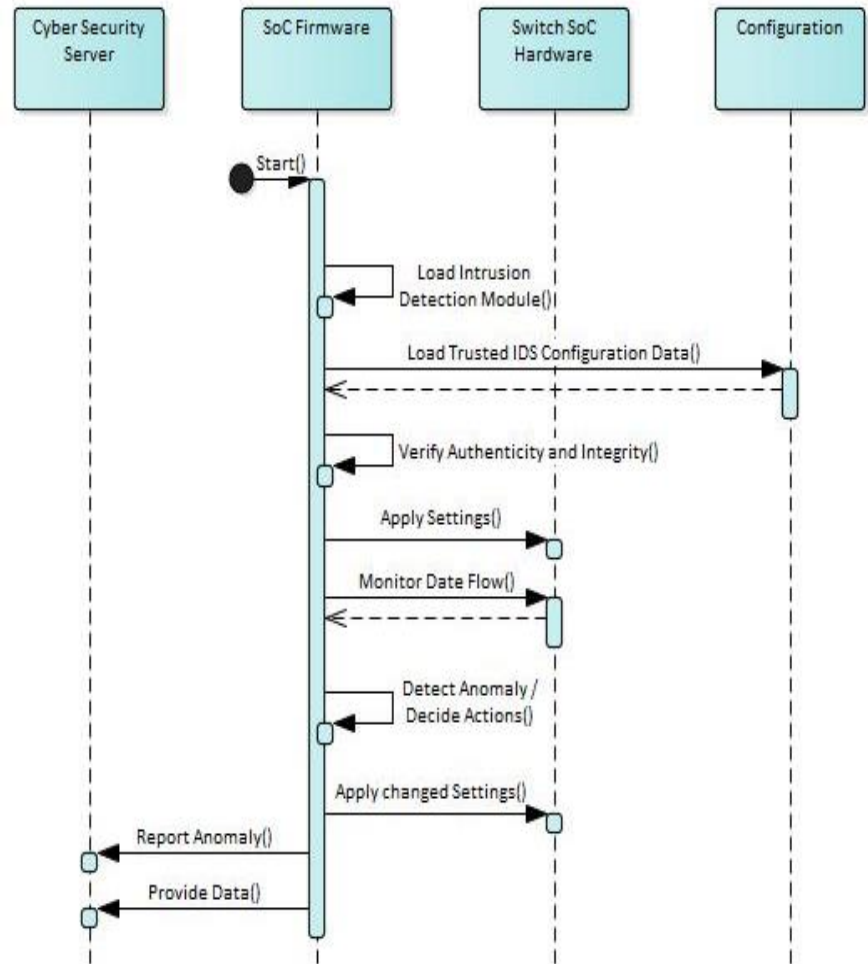
## Requirements:

Detect Intruders and Prevent Intrusions

## Solution:

Intrusion-safe concept:

- Combine hardware pre-filtering with TCAM and ingress rate limiting with a Deep Packet Inspection (DPI) module to monitor data flow and detect anomalies
- Log/report anomalies
- Execute counter measures



# SUMMARY

**Marvell provides you with the industry's first secure automotive gigabit ethernet switch, enabling a new level of safe and robust data transmission in next-generation connected vehicles**



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