Securing the future of Automotive
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
  - Configuration or firmware update
  - Data exchange
- Runtime configuration access
- Diagnostic access
  - 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.