

Argus Automotive Ethernet IDPS Optimized Using the NXP S32G Network Acceleration

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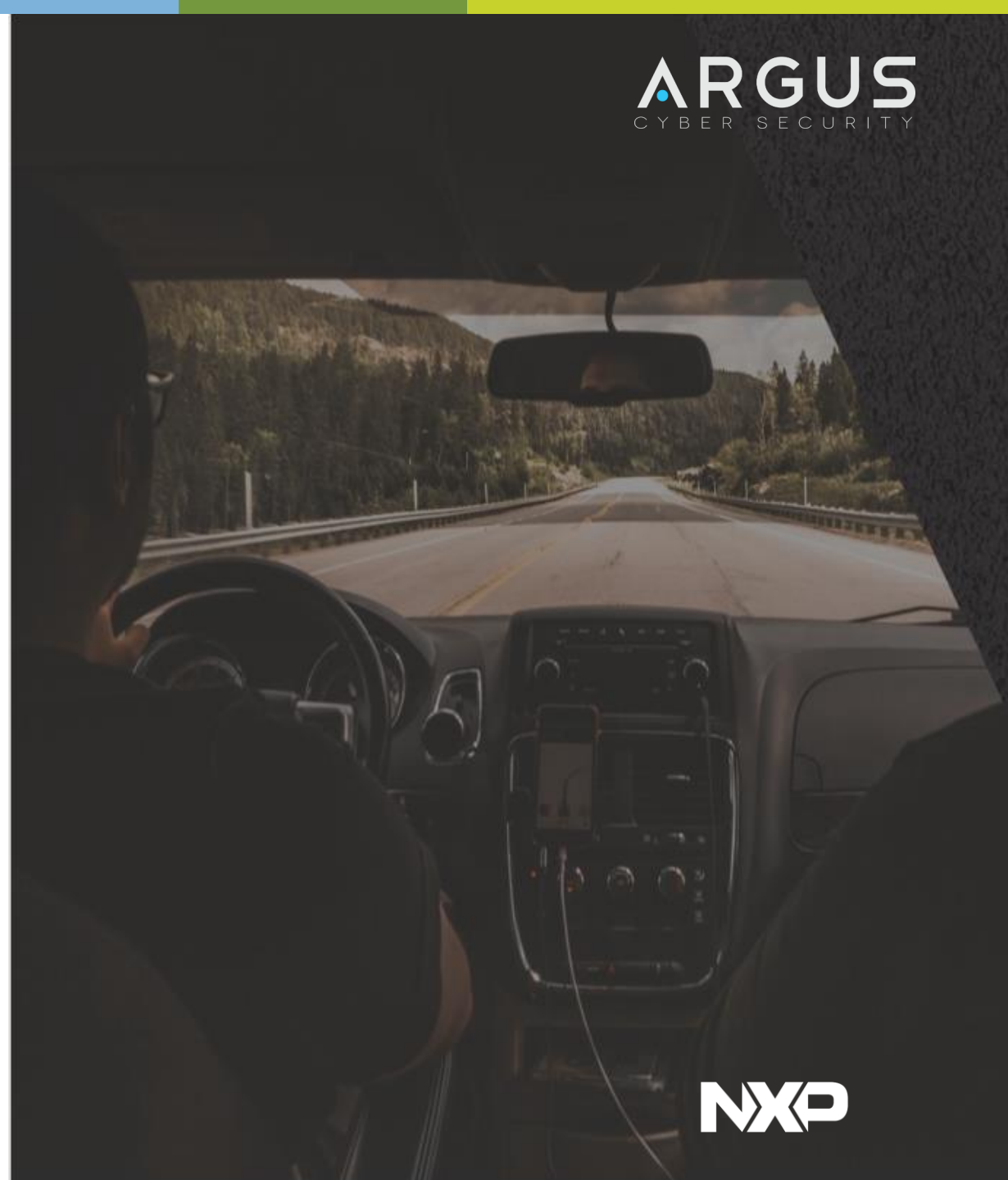
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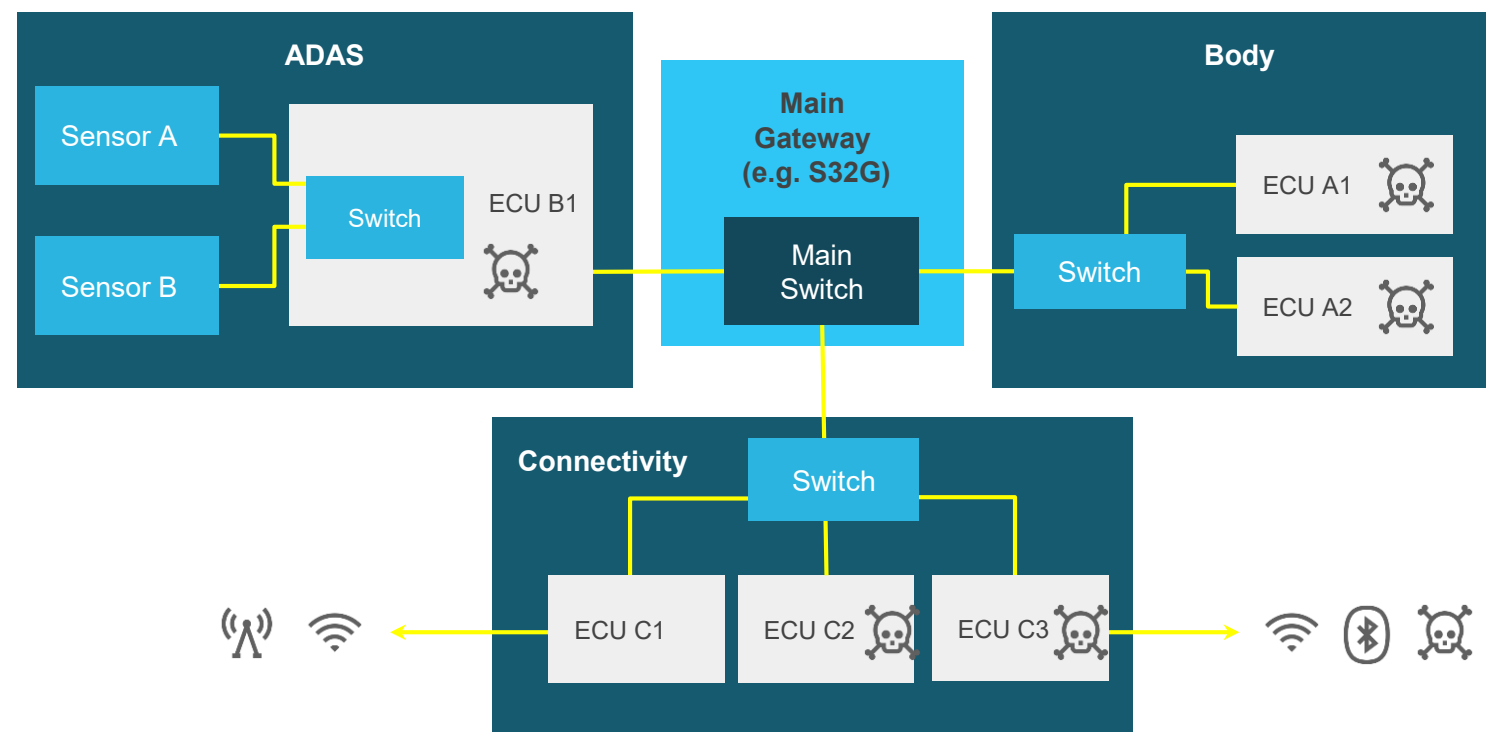
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In-Vehicle Ethernet Security

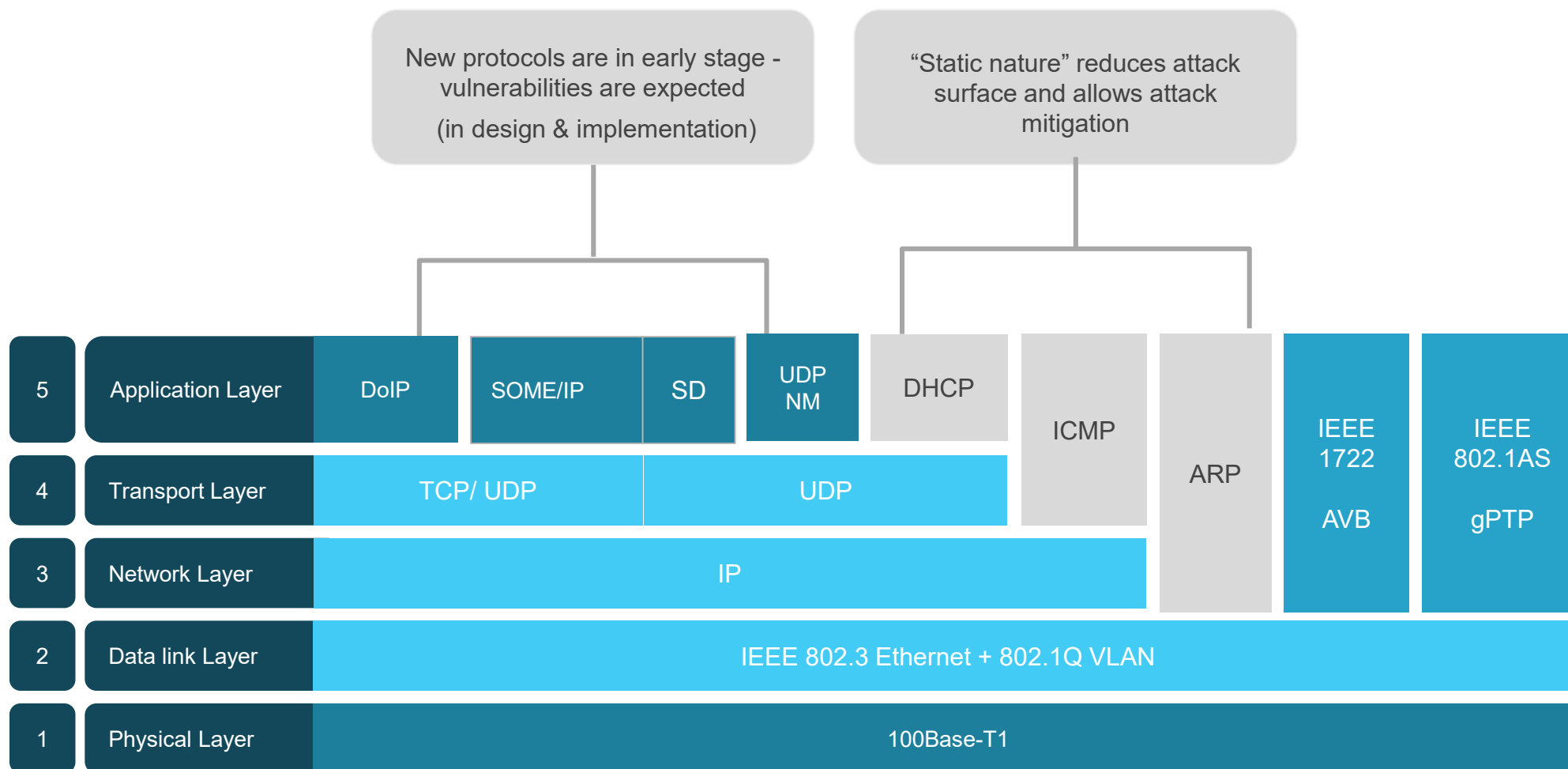
A key topic in introducing Ethernet

Example Risk scenario: Attacker compromises one ECU and attacks the network from it.

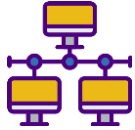


- Tampering ECU functionality** with stack vulnerabilities
- Activation of unallowed services**
- Triggering invalid action** with Malicious packets
- Denial of service**

Security in In-Vehicle Ethernet Differs from IT



Security of In-Vehicle Ethernet **Example Strategy**



Access control based on static configuration



Network Authentication when possible

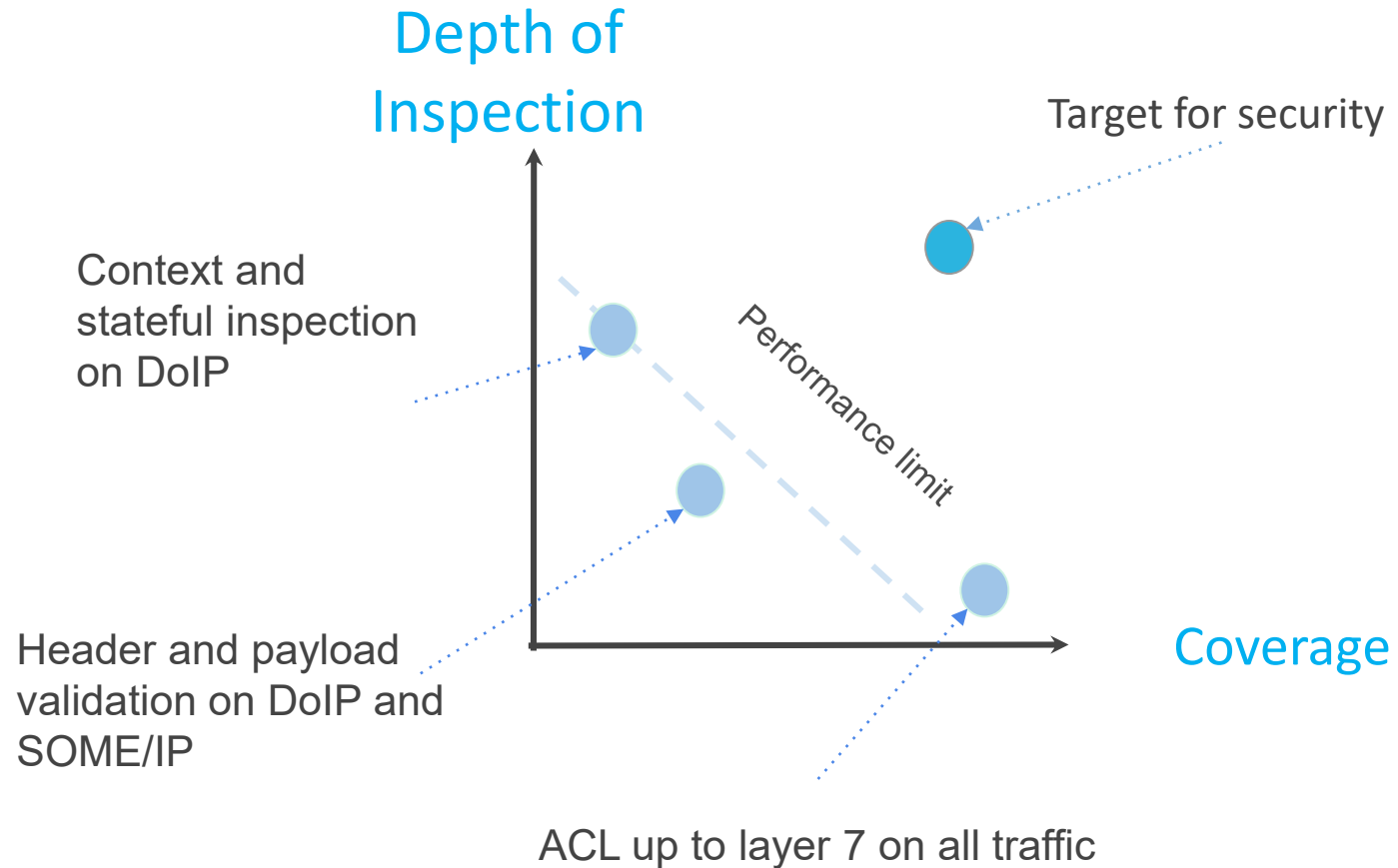


Log and report security events



Traffic analysis and DPI (IDPS/Firewall)

The Typical Performance Tradeoff



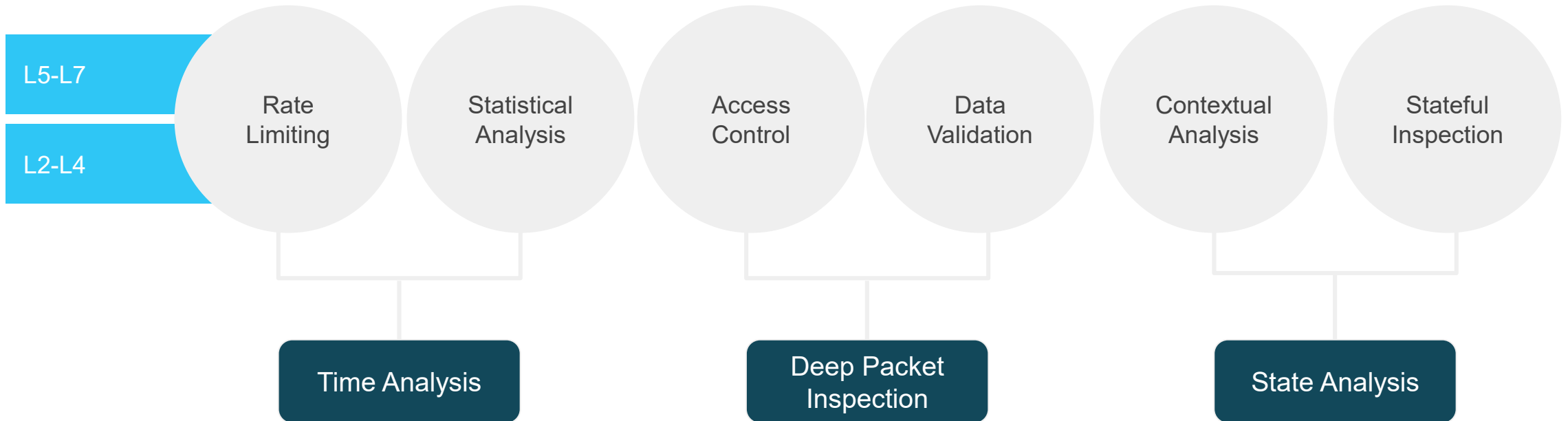
Argus Ethernet IDPS and NXP S32G

Argus Ethernet IDPS Overview

Rule-based real time analysis of traffic

Detect & log malicious traffic with optional prevention

Flexible integration options (POSIX/Classic AUTOSAR cores, network switch)



NXP S32G – Packet Forwarding Engine

- Packet Forwarding Engine (PFE)
 - Offloads multi-core Arm® processors to handle IP packets
 - Advanced packet stateful inspection, classification and filtering functionality
 - Can implement firewall, routing, and IDPS capabilities

Processing

Lockstep Microcontrollers
Cluster Lockstep Microprocessors
Automotive Networks Acceleration
Ethernet Packet Acceleration

Safety & Security

ASIL D Functional Safety Support
Advanced Hardware Security Engine



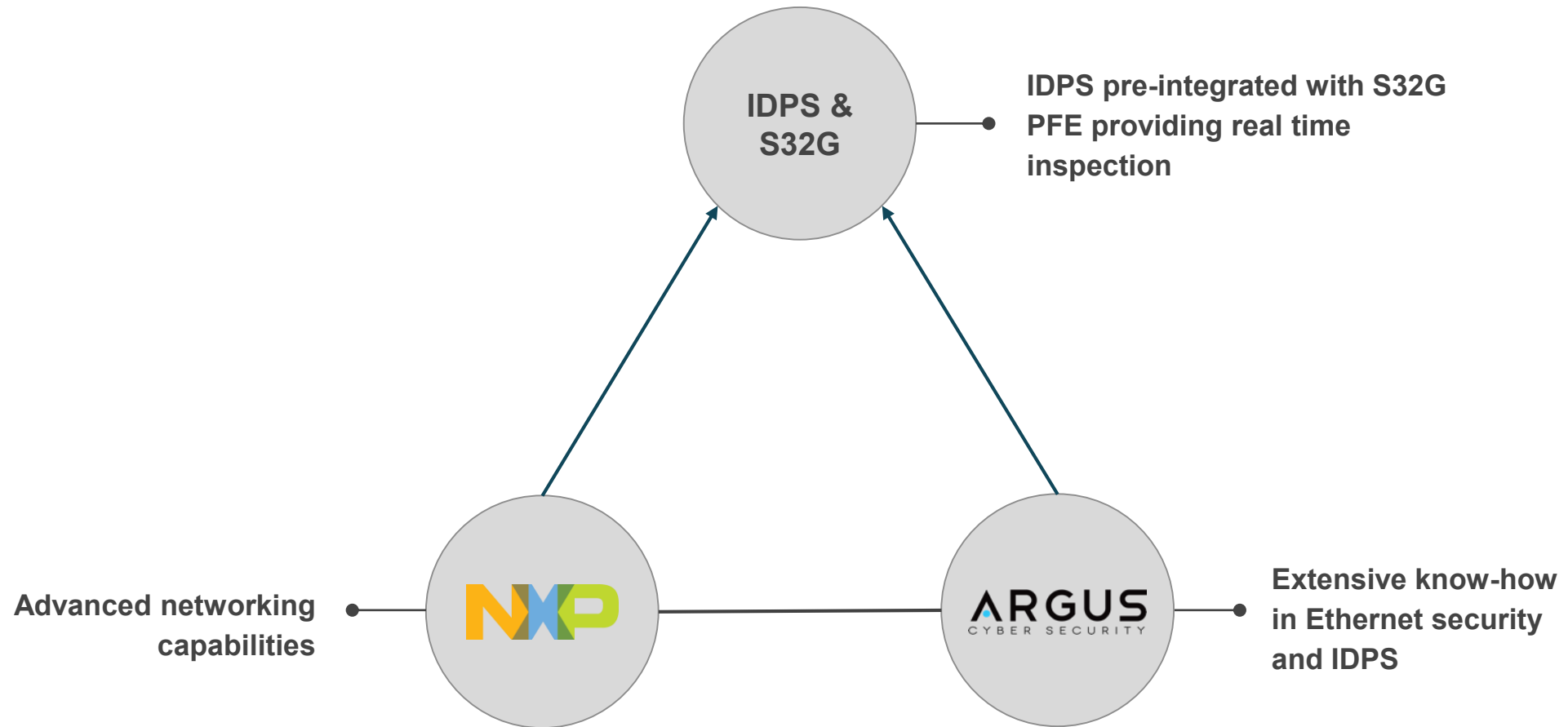
Networking

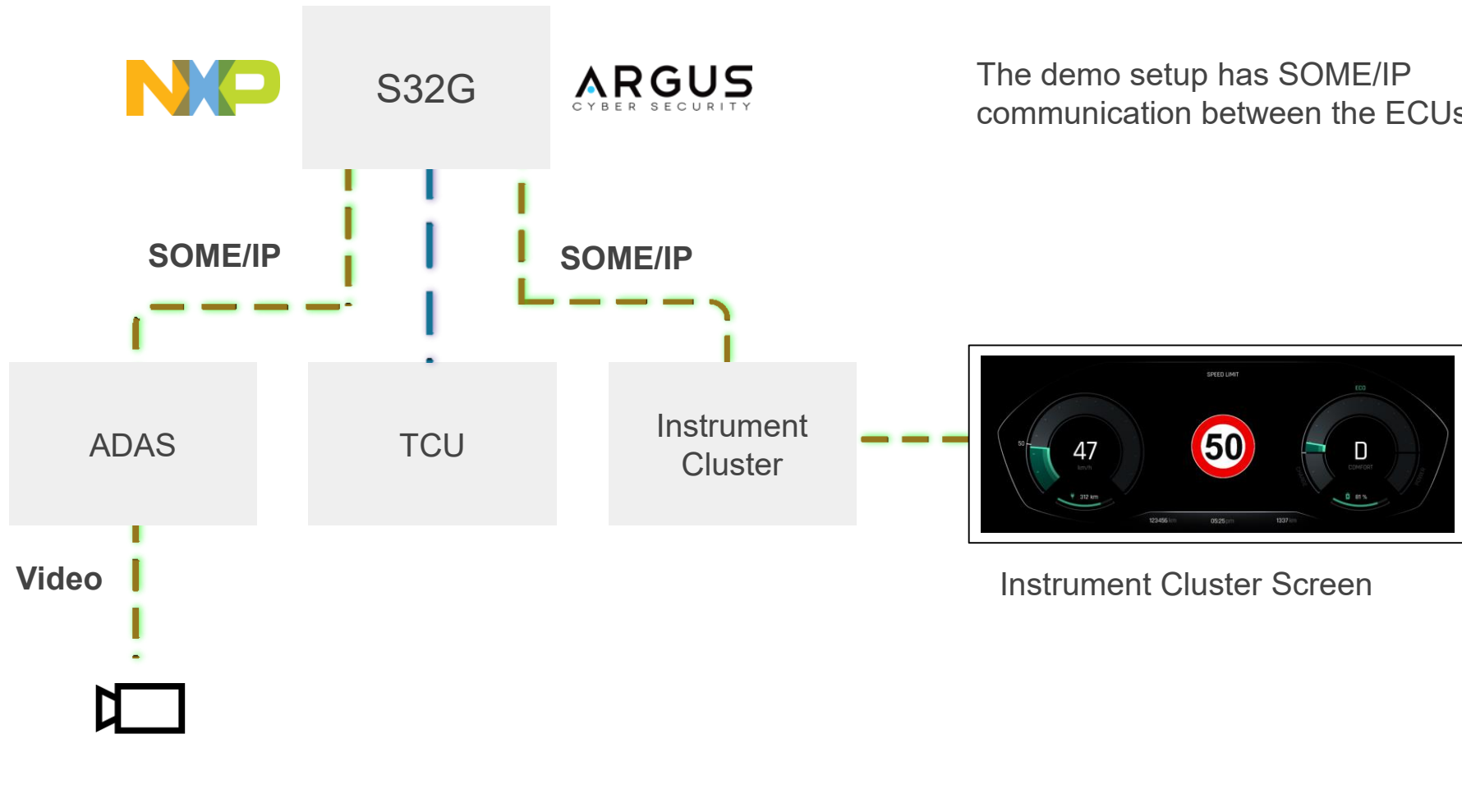
20 x CAN/CAN FD Interfaces
LIN and FlexRay™ Interfaces
4 x Gigabit Ethernet Interfaces
PCI Express Gen 3 Interfaces

Applications

Service-oriented Gateway
Domain Controller
ADAS/AD Safety Controller

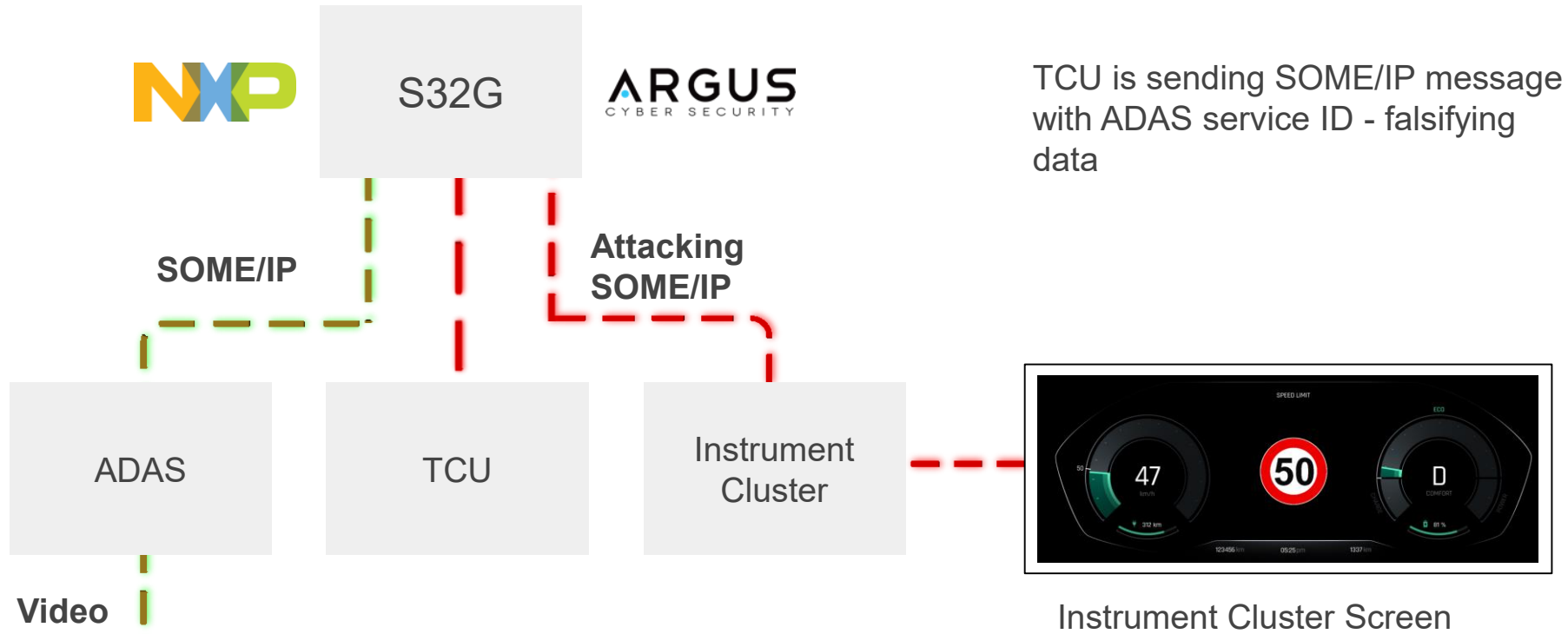
Argus Ethernet IDPS on S32G PFE





The demo setup has SOME/IP communication between the ECUs

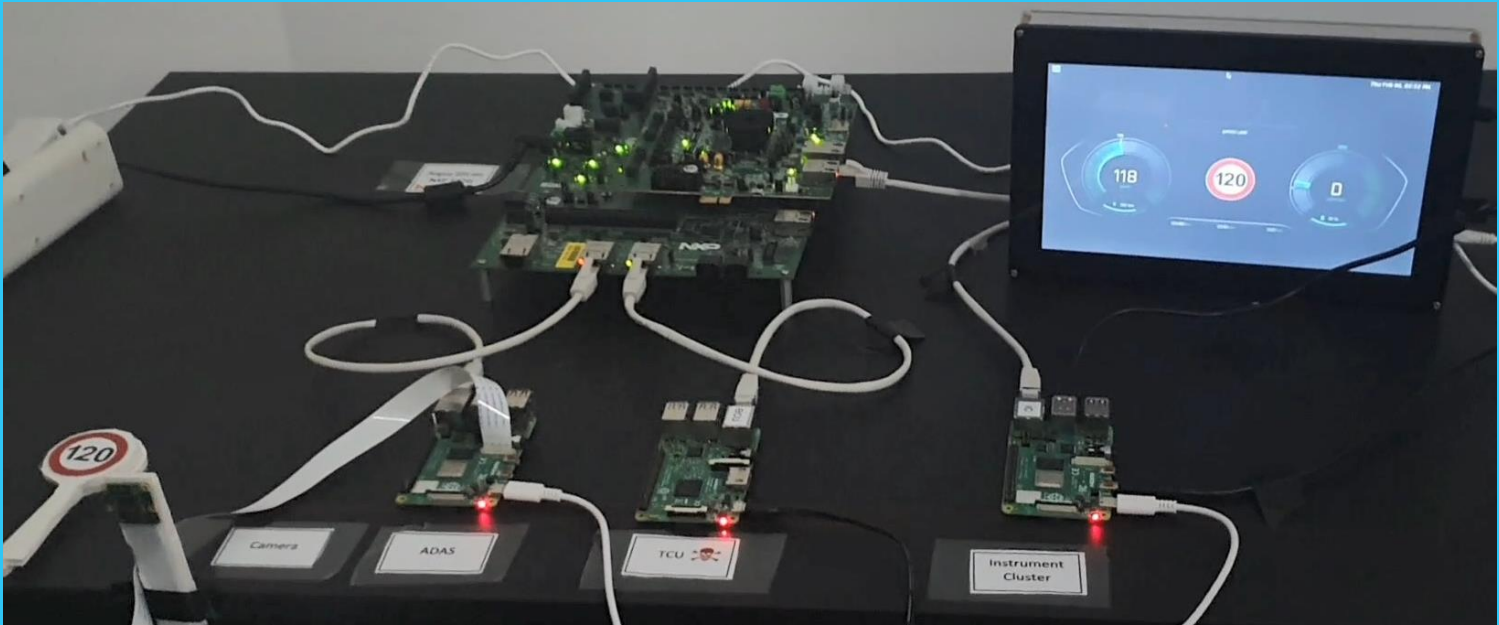




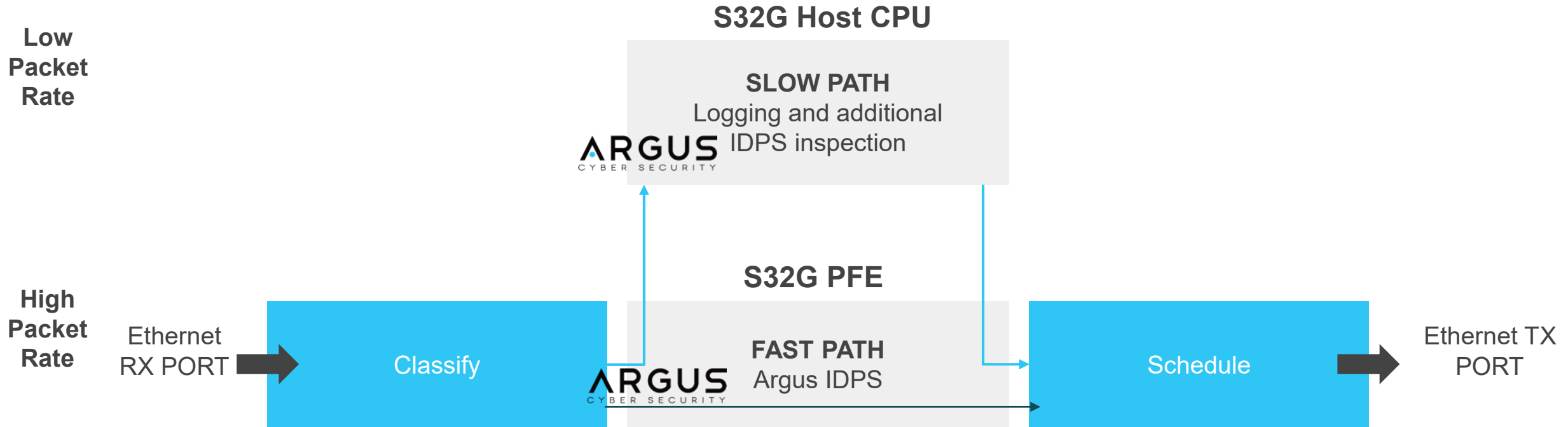
TCU is sending SOME/IP message with ADAS service ID - falsifying data



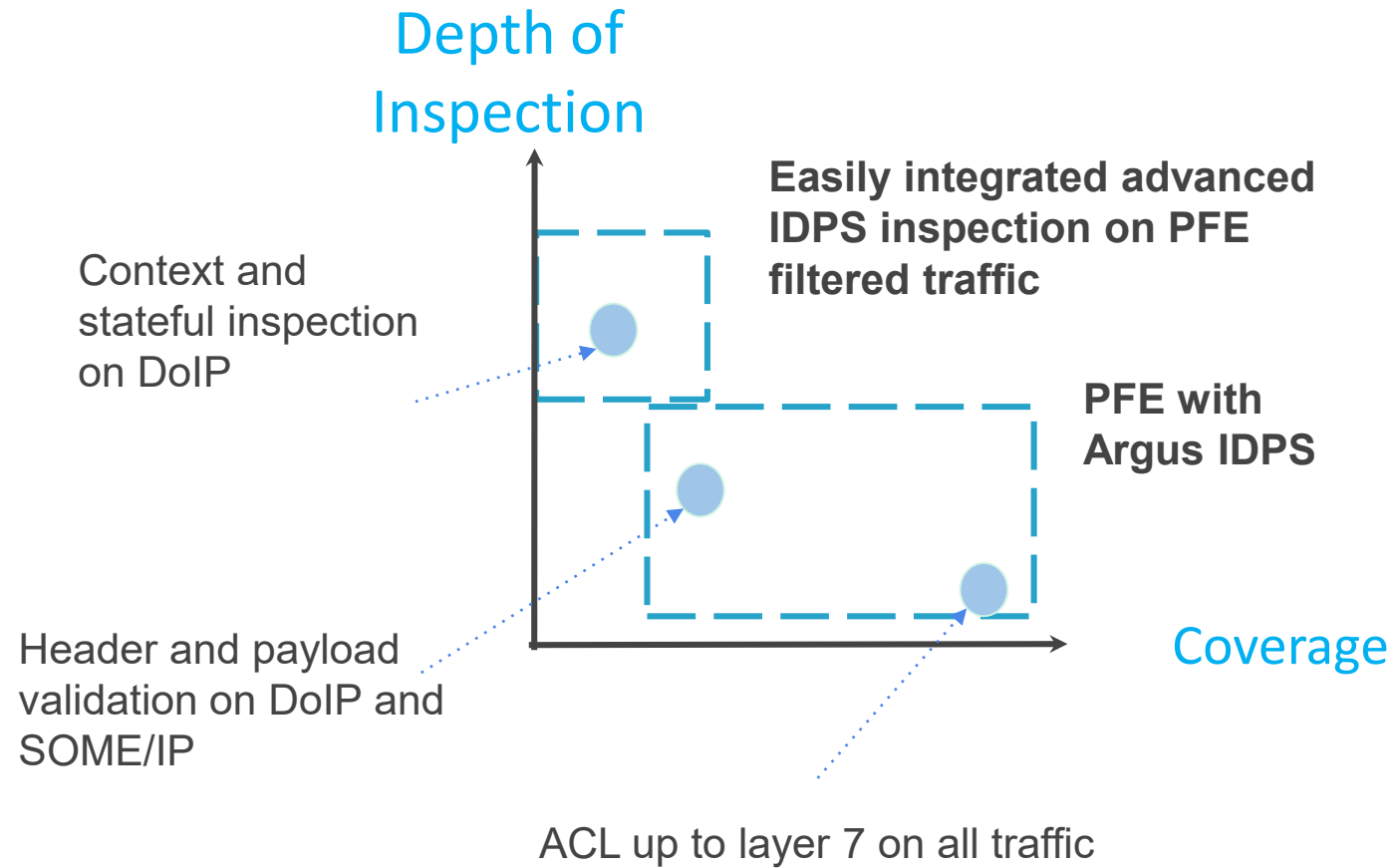
Demo



Argus Ethernet IDPS on S32G PFE



Optimizing the Performance with S32G



Summary: Argus Ethernet IDPS on NXP S32G

- **Implementing multiple lessons learned** from the joint Argus-NXP collaboration
- **Maximum security with minimum resources:** Taking full advantage of the Packet Forwarding Engine
- **Reduces integration risk and cost:** IDPS pre-integration
- **Real-time prevention in pre-defined cases:** Minimal latency with inspection close to routing and packet retrieval
- **Security events are logged for future analysis:** Alerts received by the host CPU

For More Information

- Contact Argus for more information on the Ethernet IDPS product: argus-sec.com/contact/
- Check nxp.com/s32g for more information about the S32G processor

The screenshot shows the NXP website navigation bar with links for Products, Applications, Design, Support, and Company. A search bar is located on the right. The breadcrumb trail indicates the path: Processors and Microcontrollers > Arm Processors > S32 Automotive Platform > S32G274A for Vehicle Network Processing. The main heading is "S32G Safe and Secure Vehicle Network Processor" with social media icons for Follow, Email, and Share. Below the heading is a navigation menu with tabs for OVERVIEW, DOCUMENTATION, TOOLS & SOFTWARE, and TRAINING & SUPPORT. The OVERVIEW tab is active, showing a "Jump To" sidebar with links for Overview & Features and Target Applications. The main content area includes an "Overview" section with a "PRE-PRODUCTION" warning, a detailed description of the processor's capabilities, and a list of "Features" such as Quad Arm Cortex-A53 cores, Triple Arm Cortex-M7 lockstep cores, Low Latency Communications Engine (LLCE), Packet Forwarding Engine (PFE), Hardware Security Engine (HSE), and Advanced functional safety hardware.

NXP Products Applications Design Support Company

Processors and Microcontrollers > Arm Processors > S32 Automotive Platform > S32G274A for Vehicle Network Processing

S32G Safe and Secure Vehicle Network Processor

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Jump To
Overview & Features
Target Applications

Overview

PRE-PRODUCTION

The S32G vehicle network processor combines ASIL D safety, hardware security, high-performance real-time and application processing, and network acceleration for service-oriented gateways, domain controllers and safety co-processors. Providing more than 10 times the performance and networking of NXP's previous family of automotive gateway devices, the versatile S32G processor is enabling the next generation of vehicle gateways and architectures.

S32G silicon and enablement (documentation, software, and boards) are available for approved customers. Please contact your local [NXP sales representative](#) for more information

This page contains information on a preproduction product. Specifications and information herein are subject to change without notice.

Features

- Quad Arm® Cortex®-A53 cores with Arm Neon™ technology organized in two clusters of two cores with optional cluster lockstep for applications and services
- Triple Arm Cortex-M7 lockstep cores for real-time applications
- Low Latency Communications Engine (LLCE) for automotive networks acceleration
- Packet Forwarding Engine (PFE) for Ethernet networks acceleration
- Hardware Security Engine (HSE) for secure boot and accelerated security services
- Advanced functional safety hardware and software for ASIL D systems
- AEC-Q100 Grade 2 device (-40°C to 105°C)

THANK YOU!





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