# GUARDKNOX
# THE FIRST CYBERTECH TIER

## WHAT IS A CYBERTECH SUPPLIER?

**"When a Paradigm Shifts, Everyone Goes Back to Zero"** – said Joel Barker a futurist. The automotive paradigm shift is placing new demands on OEMs and their Tier 1 partners to provide new solutions that enhance the "driver-centric" experience in order to not only meet these demands but also to take advantage of this shift to truly thrive in this evolving landscape.

In order to meet the new demands of the industry new industry players are entering the game and disrupting the industry with a software-oriented and a driver-centric focus. As car architectures are thus evolving, key industry players not only need the technical expertise and experience but also the agility, resources, and time to meet these demands. This new business model, or the Cybertech Tier, is disrupting the industry, and changing how the industry operates.

Cybertech Tier suppliers consolidate components and applications from other tier suppliers into integrated products that are high-performing, cost-effective, and secure by design. GuardKnox is leading the charge as the first Cybertech Tier Supplier.

With roots and extensive experience in secure avionics, defense aviation, and embedded systems, GuardKnox is navigating the steep learning curve for the development of cutting-edge platforms and architecture design for the automotive industry.

GuardKnox's expertise and inherent flexibility facilitates a variety of implementations including full hardware and software solutions, software only (integrated into existing hardware) or built-to-spec. Empowering Tier 1s, OEM's, and other mobility players across the automotive ecosystem with the freedom to evolve to cost-effectively meet the challenges of rapid change

SEE ALL OUR PRODUCTS

# CAPABILITIES

## ADVANCED SERIES SOFTWARE DEVELOPMENT

Dedicated series software solution on all layers of the software stack and within multiple domains

- **High-performance communication (Ethernet) processing with integrated security**
- **Modular software stack solutions**
- **Hypervisor based & application rich compute environments**
- **Telematics**
- **Integration with vehicle devices (e.g. mobile, EV)**
- **Cyber security applications**

## ADVANCED PRE-DEVELOPMENT CAPABILITIES

Customer specific solutions leveraging GuardKnox's advanced technical know-how and product innovation

- **ECU Hardware Architecture Engineering and Design**
- **Flexible and Modular Software Stack**
- **Intelligent High-Performance Network Backbone**
- **Security Engineering**

# PRODUCTS

## SECURE SOA FRAMEWORK

Software middleware to streamline and automate the development and deployment of automotive software.

## AFTERMARKET ADD-ON

Seamlessly integrated platform for the most stringent security against ransomware and malicious hacking attempts.

## COMMUNICATION ENGINE

Single-chip solution that enables high-performance and cost-effective communication routing.

## CYBERSECURITY SOLUTIONS

Patented formal, verifiable and certifiable security methodology that verifies all communication according to strict state machine-based model.

FREEDOM TO EVOLVE

# GUARDKNOX
# PATENTED TECHNOLOGIES

## GUARDKNOX SECURE SERVICES-ORIENTED ARCHITECTURE (SOA)

SOA enables GuardKnox's solutions and platforms to allow unified communication as well as access control and service level partitioning. SOA allows for multiple partitions hosting independent services and service/application managers with access control both on application/service level as well as on the hardware level. The unified communication infrastructure allows for distributed unified communication with centralized policy over different hardware interfaces.

SOA utilizes a separation kernel for abstraction and concealment of communications across platforms – allowing for simplified and transparent interfaces to service providers. SOA also enables strong separation between services and applications on the virtual level. Additional capabilities include but are not limited to: separation via hypervisor, several computing zones, virtual ethernet, virtual CAN, network management, virtual ECUs, AUTOSAR classic and much more.

## F.A.S.T.E.R COMMENGINE™ - GUARDKNOX HIGH PERFORMANCE COMMUNICATION ENGINE

GuardKnox's F.AS.T.E.R CommEngine™ is a cost-effective single chip hardware solution that meets the automotive industry's increasing need for low latency routing decisions. The CommEngine™ implements Zonal Gateway (Zone Controller) functionality to enable high-performance and cost-effective communication routing while supporting the increasing multi-gigabit traffic through the ring backbone. It supports full communication routing between standard interfaces CAN/CAN-FD/LIN/Ethernet, Automotive Ethernet Support for 10Base-T1s, and 100Base-T1,100Base-T1/1000Base-T1., edge-processing capabilities, wide spectrum of AUTOSAR routing capabilities and leverages GuardKnox's secure Communication Lockdown™ Core.

As automotive E/E architecture transitions into the Zonal concept, there is a growing need for low latency routing decisions that address multihop routing and support multi-gigabit traffic which moves through the ring backbone. A combination of microcontroller and Ethernet switches have been proposed by the automotive industry; however, such a configuration quickly leads to timing and routing problems, resulting in delays and high-latency routing speeds.

A flexible and scalable hardware architecture enables consolidation of E/E architectures into Zonal architectures with an ethernet backbone based real-time communication and network management

- **Patent 1- 9,899,563**: GuardKnox Lockdown Methodology & its implementation within a vehicle
- **Patent 2- 10,009,350**: GuardKnox secure hardware architecture and the physical separation between vehicle networks, including Lockdown implementation in hardware
- **Patent 3 – 10,055,260**: Service-Oriented Architecture (SOA) for vehicle ECUs, including Secure SOA and efficient implementation of in-vehicle SOA
- **Patent 4 – 10,129,259** Granted: Distributed Lockdown architecture within a vehicle, enabling multiple Lockdown devices to work together
- **Patent 5- 10,191,777**: Distributed SOA to enable services not solely related to a single ECU within a vehicle
- **Patent 6 - 10,776,169:** Centralized services ECU based on Service-Oriented Architecture and methods of use thereof