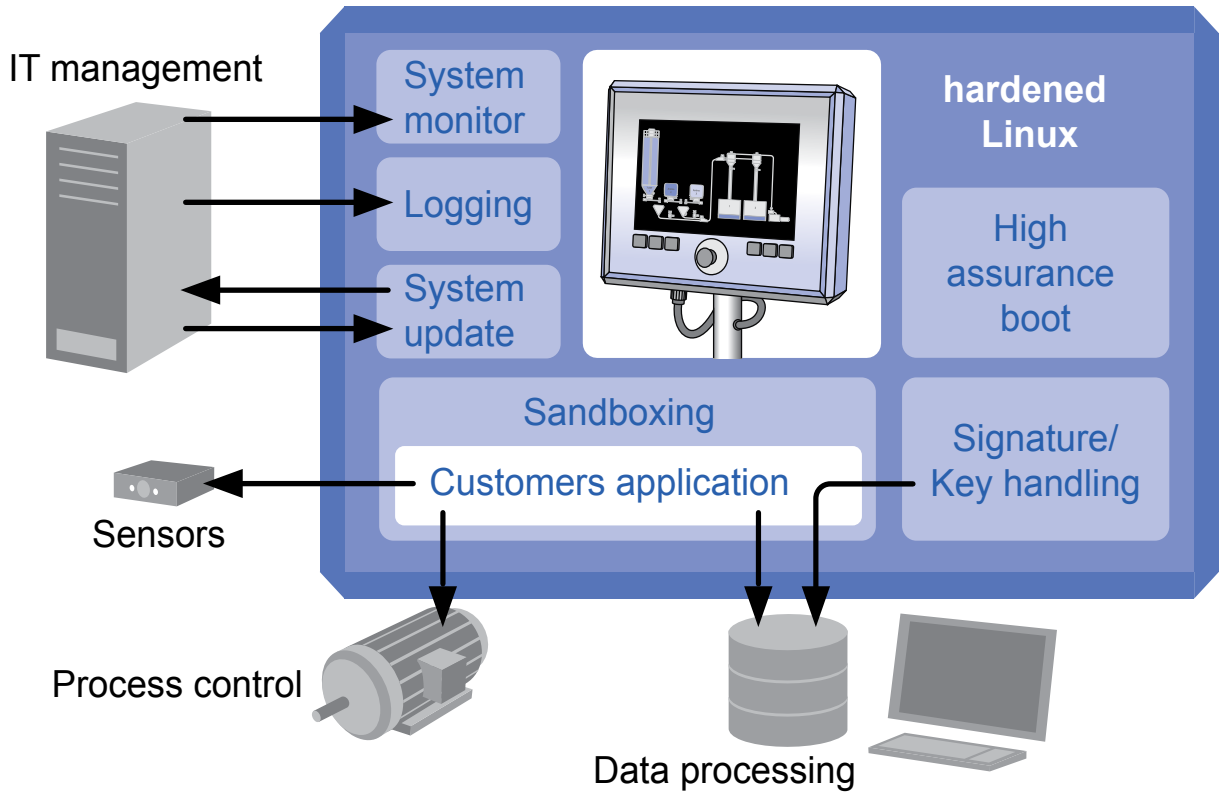
Security construction kit and automated configuration tests

In the context of the increasing networking of devices and machines, the importance of data security and protection against sabotage and manipulation is rapidly increasing. This applies to both the initial securing of the system and the continual updating of security-relevant modules over the life cycle of the product.

Providing security for a Linux system with its diversity of available software components and potentially usable security technologies requires experience and expertise: the mechanisms for securing Linux systems are, on the one hand, well-established and tested on innumerable systems, but on the other hand they are complex and often influence each other.

To make it easier to set up a secure embedded Linux platform, emlix has done some groundwork and offers security according to the construction kit principle. Which of the available security components should be chosen and how they should be combined, as well as the way in which the complete system can be kept up-to-date throughout its life cycle, is defined depending on the security requirements of the product concerned. The project risk and the effort needed to get started are thereby minimized. The majority of the building blocks themselves are established components and mechanisms.

In addition to the validity of the individual „building blocks“ of a secure embedded Linux platform, the correct configuration plays an essential role. Therefore, tests have been developed for the emlix Test Application Framework (TAF) with which the correct setup can be verified automatically and reproducibly – for every release or during production. This enables the basic functionality to be tested quickly and efficiently.



In security concepts the balance between the technically feasible and economically viable plays a decisive role. This not only depends on the development costs but also on which production, service and maintenance processes can reasonably be performed.

emlix offers products and services tailored to each customer from the initial design to the maintenance phase and provides support in maintaining a high level of security throughout the entire product life cycle using processes that make sense both technically and in terms of cost.

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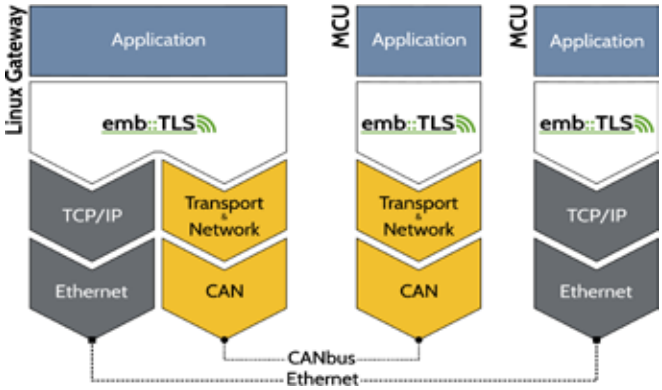
TLS Security for CAN Bus



In the area of security for Industry 4.0 emlix works with the Institute of Reliable Embedded Systems and Communication Electronics (ivESK) of Offenburg University of Applied Sciences. The ivESK has well-proven know-how in secure fieldbus communications.

The focus is on the CAN bus as an established fieldbus for industrial automation technology. The lack of security mechanisms for the CAN bus presents an increasingly large obstacle in the economical realization of secure Industry 4.0 scenarios. In the area of internet communication the Transport Layer Security protocol (currently version TLS1.2) has become established as the central security solution. Unfortunately, the standard TLS seems to be resource-hungry and unsuitable for securing fieldbus systems.

In order to take advantage of the two established technologies CAN and TLS the ivESK worked together with emlix to develop a general approach that makes it possible to integrate TLS-supported security in a CAN infrastructure. The cost advantages of CAN and the security of TLS have thereby been combined in an ideal way.

This was made possible by utilizing the flexibility of TLS as well as the targeted optimizations used in the emb::TLS implementation from ivESK. Needs-orientated adaptation of all protocol parameters thereby guarantees an optimal balance between security and resource requirements, so that security becomes possible even in the smallest systems.

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