

VECTOR >

MICROSAR Switch

Product Catalogue

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1. Overview

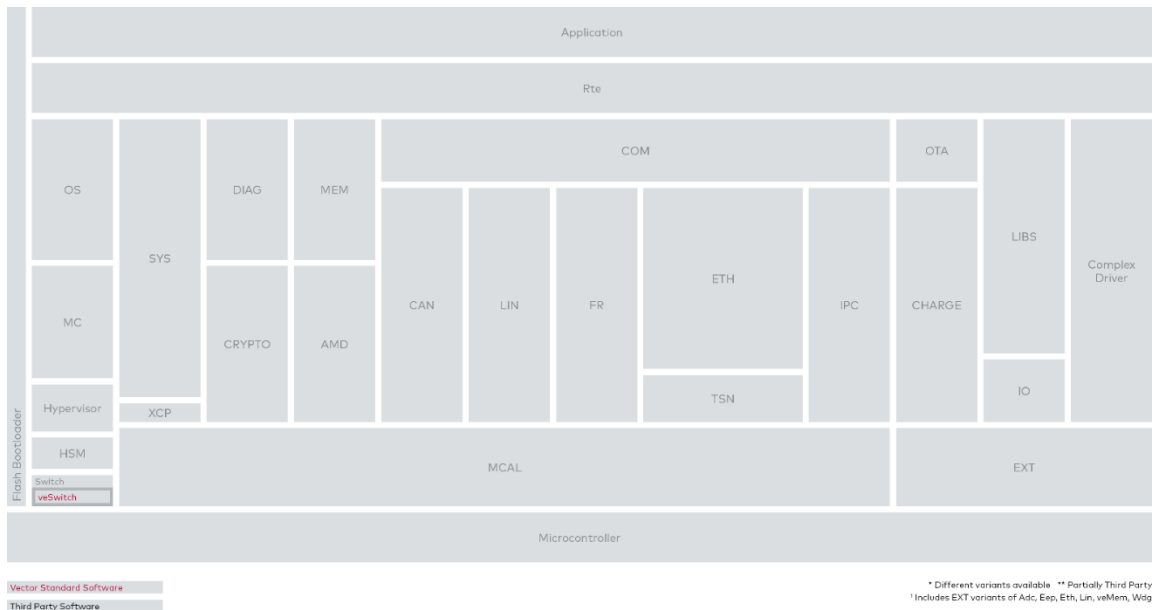


FIGURE 1: MICROSAR Switch integration into MICROSAR Classic

1.1 MICROSAR Switch (veSwitch)

MICROSAR Switch is designed to be executed on the CPU subsystem of an automotive Ethernet switch device, representing a base functionality that allows standalone operation and boot of the CPU subsystem. It allows Ethernet- and switch register access from the CPU subsystem and includes the configuration of connected PHYs as well as time synchronization according to AUTOSAR. Depending on the underlying hardware and given resources, MICROSAR-specific and customer-specific component extensions are possible making MICROSAR Switch a basis for a fully independent operation of an automotive Ethernet switch device.

- > Standalone operation and boot of the CPU subsystem including relevant Basic Software modules for switch and mode management
- > Full ethernet and switch register access from the CPU subsystem
- > Runtime configuration of connected PHYs
- > AUTOSAR compliant time synchronization and coordination
- > Generic communication with the host controller using Remote Procedure Calls (RPC - requires MICROSAR Classic Rpc on the host controller)
- > Includes a MICROSAR Classic OS and Runtime Environment (Rte)
- > Includes UdpNm and Nm (relevant for PN handling)
- > Allows integration of application code using AUTOSAR Software components
- > Configuration using DaVinci Configurator Classic following the proven AUTOSAR configuration workflow is recommended.

Add-Ons

- > Com: Includes communication modules Com, LdCom, SomelpXf and Sd. Provides basic diagnostic functionalities via included DIAG modules Dcm and Dolp.
- > Update: Enables secure boot functionality and update capability for the MICROSAR Switch package
- > Firewall: Provides the ability to filter packets for selected switches according to the standards IEEE 802 and AUTOSAR, including the reporting of dropped or accepted packets via IdSM Security Events and the utilization of TCAMs for hardware-based filtering. Filtering can be applied to protocols up to ISO/OSI layer 5. Filtering of specific fields is supported by Ethernet, IPv4, IPv6, ARP, ICMP, UDP, TCP, DHCP, SoAd, DoIP and PTP protocols.

- > Log & Monitoring: Enables logging via Dlt (AUTOSAR) and Runtime Measurement on the switch. This functionality requires CANoe Option AMD/XCP. In addition, this option adds Xcp on Tcp as a means to calibrate and measure the switch application.
- > MACsec: Includes ethernet switch driver extension and MACsec key agreement to enable MACsec support on the switch
- > WoDI: Wakeup-on-dataline support in the Switch.
- > Security: Implements a comprehensive library of cryptographic operations for execution on the switch-internal CPU
- > Tsn: Time-sensitive Networking (TSN) targets extremely low packet loss rates, finite low and stable end-to-end latency, precise time synchronization and convergence of time-sensitive and time-insensitive communication in the same physical network. TSN for EthSwt is implemented according to IEEE 802.1Q and currently supports Qav (Credit Based Shaper), Qcr (Asynchrone Traffic Shaper) and Qci (Stream Filtering and Policing).
- > HwPackageFilter: The hardware packet filter add-on for the Ethernet switch driver performs highly configurable and flexible traffic identification based on the content of the switched Ethernet frames. The purpose is to assign dedicated actions to the identified traffic, e.g. stream based shaping, policing or firewalling.

For more information about MICROSAR Switch please visit vector.com/microsar-switch.

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