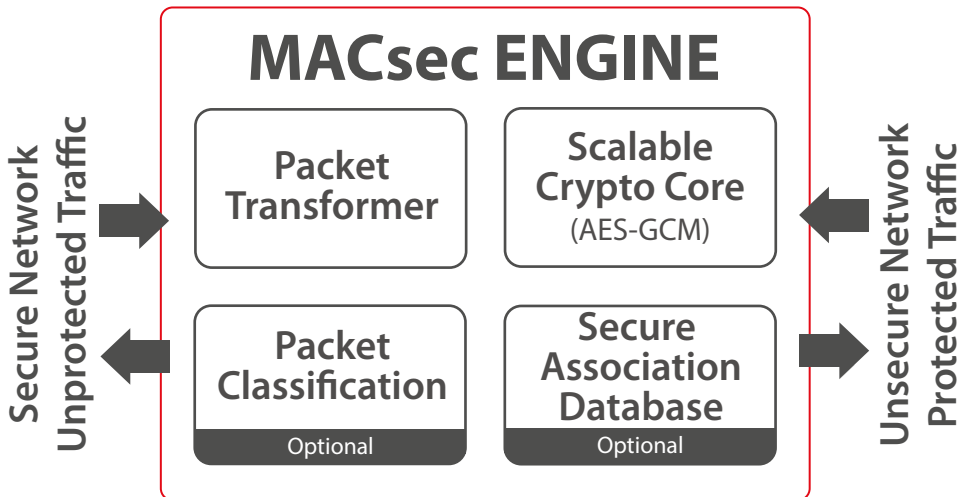


1.5Tbps MACsec ENGINE

The 1.5Tbps MACsec Engine implements the latest IEEE 802.1AE specification, providing connectionless data integrity, data origin authenticity and confidentiality on OSI layer 2.

The scalable architecture provides low-latency, line rate acceleration of frame encapsulation, encryption and replay protection. The multi-channel structure makes the engine extremely suitable for use in switches, enabling per-port security with a single IP instantiation. Integration options with either performance or area-optimized AES-GCM IP cores enables a high level of scalability enabling unrivalled trade-off possibilities between throughput, area and latency.



Implementation aspects

At its very core, the MACsec Engine is completely technology-agnostic and can be integrated in a wide range of FPGA and ASIC technologies. On FPGA, the engine can use vendor-specific optimizations to reach very high throughput goals.

Features

- ✓ Throughput up to 1.5Tbps
- ✓ ASIC and FPGA
- ✓ Multi-channel support for link aggregation or FlexE
- ✓ Scalable datapath width
- ✓ Compliant with IEEE 802.1AE-2018
 - Supports AES-GCM-128/256
 - Extended Packet Numbering (optional)
 - Confidentiality Offset (optional)
- ✓ Classification based on MAC, SCI, VLAN ID
- ✓ Generic interface to TCAM
- ✓ VLAN-in-the-clear mode
- ✓ Bypass mode
- ✓ Data interface: AMBA 4 AXI-Stream
- ✓ Control interface: AMBA 4 APB

Applications

- ✓ Cloud & data center interconnection
- ✓ Secure IP/MPLS (replace MPLS over GRE + IPsec)
- ✓ Secure IoT devices on LAN
- ✓ In-vehicle communication with Automotive Ethernet

Deliverables

- ✓ Netlist or RTL
- ✓ Scripts for synthesis & STA
- ✓ Self-checking RTL test-bench on referenced vectors
- ✓ Documentation

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