A 10 Gbps in-line network security processor based on configurable hetero-multi-cores

可配置异质多核10Gbps在线网络安全处理器

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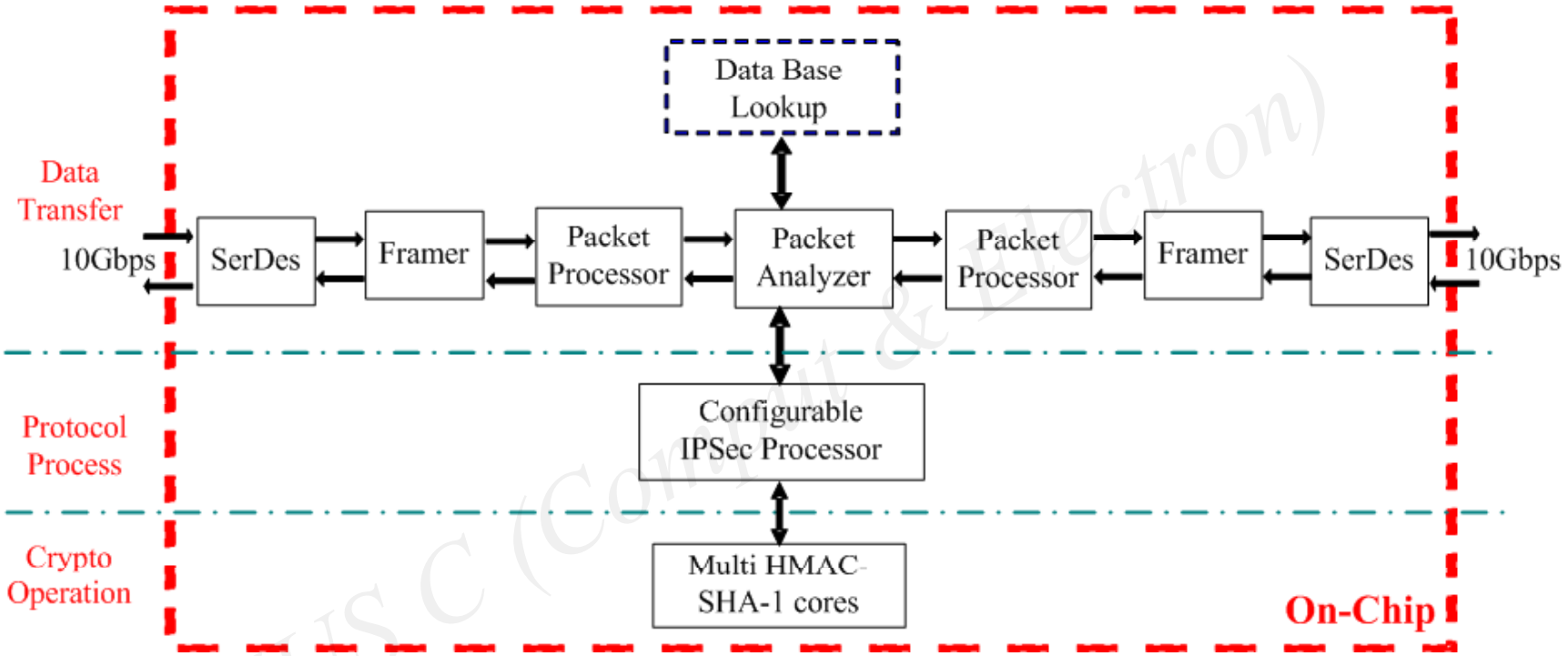
- With the proposal of the 40/100 Gbps Ethernet standard (IEEE Std. 802.3:2012), study of network security devices at 10 Gbps and higher speeds becomes more urgent

- The software-implemented IPSec protocol cannot meet the high speed network security demand due to its heavy computational burden. Instead, hardware implementation is a good solution

- A configurable hetero-multi-core in-line network security processor (NSP) is presented, integrating 10 Gbps data transfer, the IPSec protocol, and crypto-operation. It is implemented using 65 nm CMOS technology and the layout area is 2.5 mm × 3 mm with 360 million gates

- The in-line NSP gives a peak throughput of 10.06 Gbps in AH transport mode with the average 512-byte test packet length under 250 MHz clock rate by post simulation

- Function diagram of the 10 Gbps configurable in-line NSP:



- The design can be used in the next generation network-based security equipment at 40/100 Gbps for its configurability