

High-Bandwidth Network Security

Xelera Secure Networks

Xelera Secure Networks is a high-performance software suite which provides network security functions with high bandwidth and low latency. The software suite runs on data center and public cloud servers. Networks with security capabilities are often limited in bandwidth and scalability. Xelera Secure Networks eliminates these performance bottlenecks and provides up to 100G secure network bandwidth.

PERFORMANCE

The Xelera Secure Networks software takes the performance bottlenecks out of network security. It provides a performance range from 6 Gbps to 100 Gbps bandwidth, starting with a software-only accelerator and scaling up to 100G Ethernet with the transparent utilization of server-class hardware accelerators such as FPGAs.

DEPLOYMENT

The software is deployed on COTS server hardware either bare-metal or in virtualized/containerized environments. It provides an optional high-speed interface to the Linux Kernel Network Stack or works as a full Kernel bypass. The acceleration software is managed through an API-controlled configuration interface.

PRODUCT BRIEF

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SECURE NETWORKS

- High-performance network security software
- High bandwidth, low latency
- Full performance range in a COTS server - from a 6 Gbps software-only accelerator to 100 Gbps

ACCELERATOR MODES

Software-only Accelerator

Performance-optimized user-space software for data plane processing running solely on CPU cores.

6 Gbps Network Bandwidth

Look-aside Accelerator

Connects to standard (virtual) network interfaces and offloads security functions to hardware accelerators.

Saturates 10 G Ethernet

Inline Accelerator

Uses the physical network ports on the hardware accelerator and performs all networking & security functions on-chip.

Saturates 100 G Ethernet

XELERA SECURE NETWORK SUITE



IPsec Accelerator
High-speed IPsec
Reduction of CPU cores



DDoS Detection
Low latency packet and
flow inspection



TLS Offload
High-bandwidth TLS
Reduction of CPU core



WireGuard
Accelerating next-
generation VPNs

The Xelera Secure Network Suite provides multiple high-speed network security functions built on a performance-optimized data plane processing framework.

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SECURE NETWORKS

High-Bandwidth Network Security

Xelera Secure Networks – IPsec Accelerator

ESP

- AES256 GCM 12/16
- Compliant with RFC 4303

KEY EXCHANGE

- IKEv2
- Encryption: AES256 GCM 8/12/16
- PRF (HMAC): MD5, SHA1, SHA2-256, SHA2-384, SHA2-512
- Integrity (HMAC): SHA1, SHA2-256, SHA2-384, SHA2-512
- DH: MODP groups 1 (768 bits), 2 (1024 bits), 5 (1536 bits), 14 (2048 bits), 15 (3072 bits), 16 (4096 bits), 17 (6144 bits), 18 (8192 bits)
- DH Perfect Forward Secrecy
- Authentication: RSA
- Compliant with RFC 5996

DEPLOYMENT

- Bare metal
- Docker / Kubernetes
- Virtual machines
- Tested with popular hypervisors

Software-only Accelerator

- COTS servers
- CPU core count: 4 logical cores

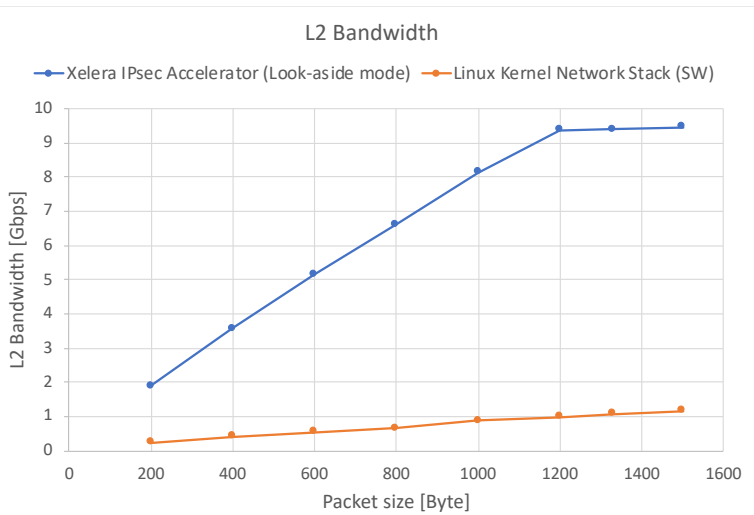
Look-aside Accelerator

- COTS servers with Xilinx FPGA accelerators
- CPU core count: 4 logical cores

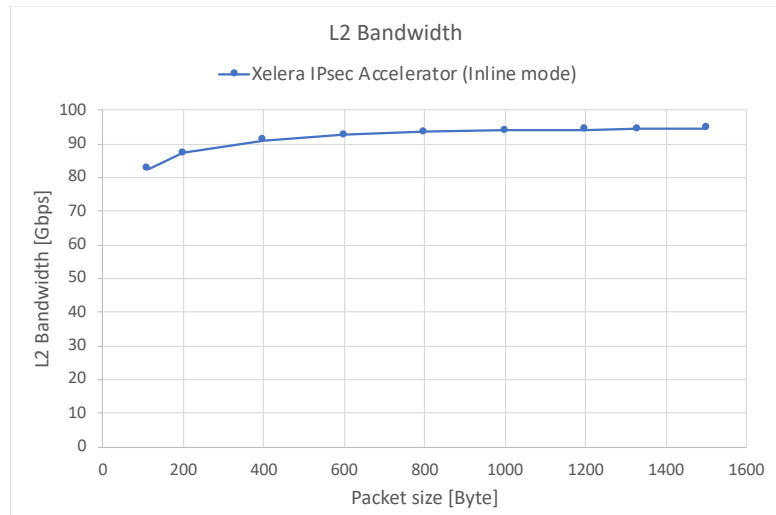
Inline Network Accelerator

- COTS servers with Xilinx FPGA accelerators
- CPU core count: 1 logical core

BENCHMARK



Worst-case latency: 0.93 ms



Worst-case latency: 0.74 ms

Server 1: Dell PowerEdge R740 | 2x Intel Xeon Gold 2.3 GHz | 12C/24T | 64GB RAM
 Server 2: Dell PowerEdge R7525 | 2x AMD EPYC 7252 3,10 GHz | 8C/16T | 64GB RAM
 Linux kernel: 5.4.0-77-generic (Stock Ubuntu 20.04.2 LTS)
 L2 bandwidth measurement (discards Ethernet preamble, checksum and interframe gap)

CONTACT

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