

Agilio[®] CX 50GbE SmartNIC for OCP

WITH INLINE CRYPTO AND BUFFER MANAGEMENT

The innovative multi-host Agilio CX 50GbE SmartNIC for OCP enables the disaggregation of flash storage and the deployment of scale-out heterogeneous compute and storage racks by providing direct connectivity from a single network controller to multiple hosts.

Deployable in OCP Yosemite v2 multi-host servers, the single-port Agilio CX 50GbE SmartNIC, in OCP mezzanine 2.0 form factor, provides line-rate TLS/KTLS cryptography and Advanced Buffer Management (ABM) for significant tail latency reduction, enabling higher performance for Web 2.0 and data center applications.

ADVANCED CRYPTOGRAPHY

Securing every connection is of critical importance for cloud and hyperscale providers. Only the Agilio CX 50GbE SmartNIC provides line-rate cryptography for secure connections without invoking the host. With 2GB of on-board DRAM, the Agilio CX 50GbE SmartNIC can support up to 2M stateful sessions per SmartNIC while encrypting and decrypting network traffic at no cost to the host nor with application performance degradation.

BEST-IN-CLASS TAIL LATENCY REDUCTION

The OCP Yosemite v2 multi-host server is highly optimized to satisfy stringent performance, power and cost requirements but is affected by the bandwidth bottleneck between the network interface and the hosts. This bottleneck increases tail latency and reduces application performance. With 17MB of on-chip cache, the Agilio CX 50GbE SmartNIC with ABM eliminates the bandwidth bottleneck, significantly reduces packet drops and tail latency, and increases overall application performance. Through these efficiency and performance benefits, hyperscalers are enabled with more compute and storage capacity per rack.

OFFLOAD EBPF, VSWITCH, VROUTER AND P4

The Agilio CX SmartNIC platform fully and transparently offloads eBPF, virtual switch, virtual router, and P4-based datapath processing for networking functions such as overlays, security, load balancing and telemetry. The platform enables cloud and SDN-enabled compute and storage servers to free up critical server CPU cores for application processing while delivering significantly higher performance.



HIGHLIGHTS

- Enables optimized server designs
- Up to 50Gb/s of SSL, IPsec and TLS/KTLS inline offload and acceleration
- Tail latency reduction and optimization
- 84 processor cores for full programmability
- Flexible and scalable tunneling policies
- Fully and transparently offloads eBPF, virtual switch, virtual router, and P4-based processing for networking functions
- Standard NIC functionality – netdev, DPDK, SR-IOV, stateless offloads, etc.

APPLICATIONS

- Cloud IaaS/PaaS and Web 2.0 apps
- Disaggregated storage
- Network congestion management
- TLS/KTLS security
- Network telemetry



SPECIFICATIONS	
Interfaces	1-port 50GbE (QSFP28)
PCIe Express	PCIe Gen3 compliant (up to 16 lanes) Auto-negotiates to x4, x2
Operating System	CentOS, Ubuntu
Ethernet	PCIe Gen3 compliant, OCP Mezzanine version 2
Connectivity	IEEE Std 802.3ae 10 Gigabit Ethernet IEEE Std 802.3by 25 Gigabit Ethernet IEEE Std 802.3cd 50 Gigabit Ethernet IEEE Std 802.1Qlp VLAN tags and priority IEEE Std 802.Xwg Explicit Congestion Notification IEEE 802.1P VLAN tags and priority
Protocol Support	TCP/UDP, MPLS, VXLAN*
Remote Boot	PXE UEFI
Offloads	Large Send Offload (LSO) TCP Segmentation Offload (TSO) Large Receive Offload (LRO) Checksum Offload Receive Side Scaling (RSS)
Management and Control Interfaces	NC-SI, Network Controller Sideband Interface I ² C interface for device control and configuration
Open Cloud Server	Mezzanine v2 Spec

ENVIRONMENTAL REQUIREMENTS	
Operating Temp.	0 to 50°C
Storage Temp.	-40 to 70°C
Relative Humidity	5% to 95%, non-condensing
Air Flow	300 LFM (Min.)

FEATURES

Security

- Up to 50Gb/s SSL, IPsec and TLS/KTLS inline offload and acceleration
- AES GCM 128/256, SHA-1, SHA-2, MD5
- Up to 2M stateful flows

Buffer Management

- 17MB on chip cache
- Up to 70X tail latency reduction (P99.99)

Acceleration of Compute-Intensive Functions

- Deep packet Inspection (DPI)
- Atomic operations
- Per-flow real-time statistics

Virtual Switch Data Plane Offload

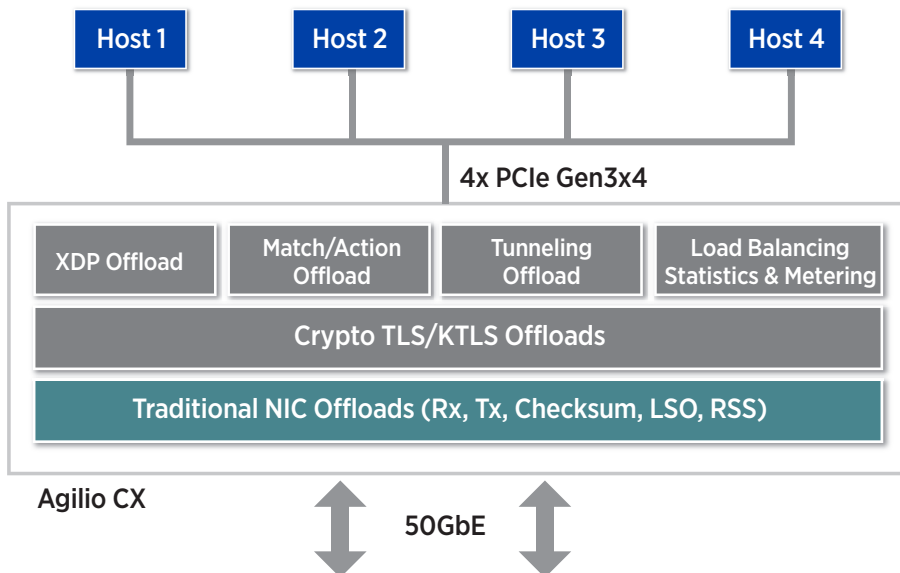
- VXLAN, MPLS tunnel encapsulation and de-encapsulation
- Programmable for custom tunnel types
- Flexible match/action and wildcard policy offloads
- Per-flow metering and QoS

Network Acceleration and Offloads

- TCP/UDP/IP stateless offload
- Receive-side Scaling (RSS)
- DPDK, zero-copy, kernel bypass, packet direct

Agilio CX for OCP Multi-Host Servers

(Web 2.0 Apps, Storage Client, XDP)



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