

Agilio® LX 1x100GbE SmartNIC

100GBE SMARTNIC FOR HIGH-PERFORMANCE CLOUD, SDN AND NFV NETWORKING

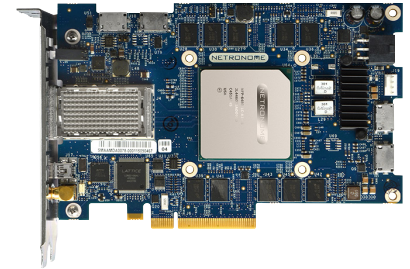
Commercial off-the-shelf (COTS) servers are increasingly used as service nodes for networking and security processing, but often need acceleration to support intelligent applications at high data rates across millions of flows. Netronome Agilio LX SmartNICs deliver high performance server-based networking functions such as load balancing and virtual switching and can be deployed in standard x86 servers for service node applications in the data center.

The Agilio LX family of SmartNICs are specifically designed for virtualized and non-virtualized x86 server-based service nodes and WAN Gateways. With a unique architectural approach tightly coupling Netronome flow processing cores with general-purpose multicore x86 processors over a high-speed virtualized PCIe datapath, the solution delivers significant scale and efficiencies for networking functions such as security (e.g., IDS/IPS, NGFW, DDoS), load balancing and gateway applications.

Netronome SmartNICs provide a platform to accelerate virtual switching tasks by offloading the entire Open vSwitch (OVS) data path, eliminating CPU resource constraints, increasing throughput (Mpps) and bandwidth (Gb/s) allowing highly virtualized servers to scale within the data center. Other valuable offloads include L2/L3 switching and routing, packet classification and filtering, NAT, tunnel handling, intelligent load balancing and cryptography. By offloading these compute-intensive networking functions, performance can be significantly improved.

Based on Netronome's NFP-6000 flow processor, the single port 100GbE SmartNIC incorporates two PCIe Gen3x8 interfaces, 8GB of DDR3 memory, and 96 highly threaded flow processing cores. Along with Netronome Agilio software, SmartNICs enable application acceleration with standards-based APIs and SDN configuration protocols delivering unmatched host bandwidth to standard single-, dual- and quad-socket servers optimizing NUMA architectures. The solution enables x86-based COTS servers to deliver application performance and scale at levels previously possible only with custom, proprietary and expensive designs.

Netronome SmartNICs provide a 10X performance increase over traditional NICs for server-based networking applications running on x86-based service nodes. Additional hardware accelerators are provided for cryptography, time stamping and SR-IOV. Large on-chip and on-board memories deliver 8M flow table entries and 128k wildcard rules to satisfy the requirements of the most demanding SDN and



HIGHLIGHTS

- vSwitch datapath offload on popular OS platforms
- SR-IOV, DPDK, zero-copy, packet-direct and stateless offloads
- Server-based SDN with stateless and stateful flow processing
- Comprehensive network acceleration technologies
- Industry-leading intelligent data plane architecture
- Fully programmable control for new network feature rollouts
- Flexible and scalable tunneling and match-action policies

NFV applications. The Agilio LX SmartNIC family provides line-rate programmable packet and flow processing to keep pace with the rapid change in SDN protocols and standards.

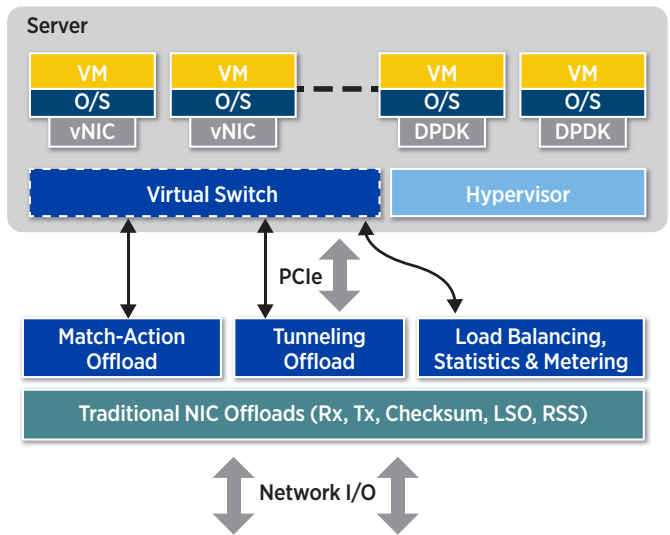
| SPECIFICATIONS | |
|-----------------------|--|
| Interfaces | 1-port 100GbE, CXP |
| Memory | 8GB of DDR3 DRAM @1866 Mhz w/ ECC |
| Processor | NFP-6480 Processor Operating at 1.2GHz |
| PCIe Interfaces | (2) Gen 3x8 |
| Operating Systems* | Red Hat Enterprise Linux (RHEL), CentOS, Ubuntu |
| Hypervisors* | Linux KVM |
| Ethernet | IEEE Std 802.3ba 40 Gigabit Ethernet IEEE Std 802.3ad Link Aggregation and Failover IEEE Std 802.1Q.1p VLAN tags and priority Jumbo frame support (9.6KB) Configuration and diagnostic tools |
| PCI Express Interface | PCIe Base 3.0-compliant 1.1- and 2.0-compatible 2.5, 5.0 or 8.0GT/s link rate x8 MSI-X vector per RX/TX queue pair Interrupt coalescing PCIe mapped LAN, UART |
| Connectivity | Interoperable with 10GbE switches CXP to SFP+ connectivity through breakout cable |

*Please ask your Netronome representative for the latest supported O/S and Hypervisors.

| ENVIRONMENTAL REQUIREMENTS | |
|----------------------------|---|
| Operating Temp. | 5 to 50°C |
| Storage Temp. | -10 to 60°C |
| Relative Humidity | 5% to 95%, non-condensing |
| Air Flow | 400 lfm min (passive heat sink), 0 lfm min (active heat sink) |

| AGENCY APPROVALS | |
|------------------|-------------------------|
| Certification | NRTL, FCC, EU, RoHS, CE |

Agilio LX 1x100GbE SmartNIC Block Diagram



FEATURES

Virtual Switch Data Plane Offload

- VXLAN, NVGRE, MPLS, tunnel encapsulation and de-encapsulation
- Programmable support for custom tunnel types
- Flexible packet parsing
- Flexible exact match-action policy offloads
- Flexible wild card match policy offloads
- Hardware-based flow cache for cut-through acceleration
- Stateless and stateful load balancing
- Per-flow metering and QoS

Network Acceleration and Offloads

- TCP/UDP/IP stateless offload
- Receive-side scaling (RSS)
- Single-Root IOV (SR-IOV)
- Multiple queues per virtual machine
- DPDK, zero-copy, kernel bypass, packet direct

Acceleration of Compute-Intensive Functions

- Bulk cryptography and sophisticated hashing
- Deep packet inspection (DPI)
- Atomic operations
- Per-flow real-time statistics

Other Features

- Up to 8M flows on card
- Up to 500k tunnels
- P4 and C-programmable for fast feature rollouts

NETRONOME

Netronome Systems, Inc.
2903 Bunker Hill Lane, Suite 150
Santa Clara, CA 95054
Tel: 408.496.0022 | Fax: 408.586.0002
www.netronome.com

©2018 Netronome. All rights reserved.
Netronome, the Netronome logo, and Agilio are trademarks or registered trademarks of Netronome Systems, Inc. All other trademarks mentioned are registered trademarks or trademarks of their respective owners in the United States and other countries.