

# NETRONOME 10 GBPS NETWORK FLOW PROCESSING SOLUTION



- 4-port 10 Gigabit Ethernet and 12-port Gigabit Ethernet Load Balancing Interface Modules
- Netronome Flow Engine NFE-i8000
- Netronome Flow Manager

## Acceleration for Network and Security Applications

To accommodate the complexity and breadth of applications and services that run over today's high-speed backbones, network appliances need to be increasingly protocol-, content- and application-aware at high speeds to achieve the combined requirements for network I/O, packet capture performance, deep packet inspection (DPI) and security processing. Existing solutions based on standard servers are not adequate to meet these L2-L7 packet processing requirements at such sustained line rates and require specialized coprocessing. Netronome's 40 Gigabit network flow processing solutions enable communications equipment providers to quickly deliver high-performance networking and security applications and products based on accelerated multicore x86 platforms.

Netronome's PCIe-based solution offers dense front-facing Ethernet I/O options specifically designed for the Kontron IP Network Server, NCS2U, and a SuperMicro system equipped with four hex-core Xeon® CPUs. The 4-port SFP+ 10 GigE short-reach optical, and 12-port 10/100/1000 BaseT deliver high performance and low latency with integrated high availability via software-configurable fail-to-open/close support. Tightly coupled with the Netronome Flow Engine NFE-i8000 acceleration hardware and Netronome Flow Manager (NFM) software, the solution scales to 40 Gbps and provides improved server and appliance performance by delivering unmatched visibility and control of traffic at L2-L7.



Netronome's Network Flow Processing solutions deliver high-performance packet processing with intelligence, security and virtualization for millions of simultaneous flows through several unique features, including:

- Hardware-based flow processing with line-rate packet capture of network traffic, enabling lossless deep-packet inspection applications with granular application- and content-specific policy control;
- Flow-aware dynamic load balancing to exploit multicore CPU parallelism and an efficient zero-copy driver, combine to quickly and evenly distribute 10 Gbps of network traffic, maximizing host CPU performance;
- Up to 40 Gbps of total throughput for real-world traffic patterns, with variable packet sizes and protocol mixes, to support the increasing bandwidth requirements of enterprise and service provider networks;
- Less than 40 microseconds of delay, far exceeding industry-standard requirements for latency in 1 Gbps and 10 Gbps in-line network and security appliances;
- High-availability network interfaces, including integrated bypass, necessary for resilient deployment in in-line network topologies; and
- Support for clustered configurations, allowing for up to 60 Gbps of intelligent flow processing.

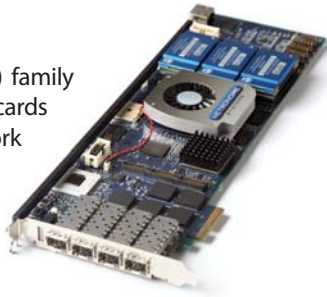
*Netronome's flow processors and network acceleration products offer a highly programmable heterogeneous coprocessing environment that tightly couples the packet processing of the Netronome Flow Engine (NFE) microengine cores with the performance and ubiquity of general-purpose multicore (x86) systems.*

**Intelligent  
to the Core™**

*For more information about other Netronome products, please visit [netronome.com](http://netronome.com).*

## Netronome Flow Engine

The Netronome Flow Engine (NFE) family of multi-gigabit PCIe interface cards enables the acceleration of network and security applications in a highly scalable manner. Featuring high-performance flow processing delivered from multiple micro-engine cores, the NFEs utilize several techniques to improve network I/O workloads, including deep packet inspection and classification, flow analysis, load-balancing flows to multiple CPU cores to parallelize application processing, and zero-copy libpcap library support.



## Features and Benefits

### Granular Flow Processing and Deep Packet Inspection

- Libpcap support to quickly integrate with custom-developed or open source packet capture applications
- Fully programmable flow management API
- Classification and flow analysis on a robust set of L2-L7 protocols
- Flow filtering and cut-through
- Adaptive flow/load balancing to x86 CPU cores

### Open Architecture

- Acceleration solution based on IA/x86 and standard Linux distributions

### High Performance

- Up to 40 Gbps total throughput
- Up to 10 Gbps network/security application performance
- Up to 250,000 new flows per second and 2,000,000 total flows (up to 500,000/4,000,000 in clustered configurations)
- Low Latency
  - 40µs of delay (cut-through)
  - <150µs (in-line)

### Integrated Flow Load Balancing

- Flexible interface to NFE load balancing configurations
- 2-tuple, 3-tuple or 5-tuple hashing modes
- Programmable TCAM rules

### Integrated Bypass

- High availability via optical failover switches (10 GigE) or magnetic failover switches (1 GigE)
- Fail-open/close on configuration, loss of power, system and application hangs
- Software-configurable bypass API
- Configurable on-board watch dog timer
- Independent per-port pair failover relays

## Load Balancing Interface Module Versions

### LBIM-12x1 GigE

Network Ports	Twelve Gigabit Ethernet ports (front-facing)
High Availability	Integrated fail-to-wire support
Media Type	RJ45
Port Speeds	10/100/1000 Mbps
Connectors	RJ-45

### LBIM-4x10 GigE

Network Ports	Four 10 Gigabit Ethernet ports (front-facing)
High Availability	Integrated fail-to-wire support
Media Types	Short Reach optical
Port Speeds	10 Gbps
Connectors	SFP+

## Network Flow Processing Configurations

### LBIM – 12x1 GigE or 4x10 GigE HE/LE Assemblies

- 12-port 10/100/1000 BaseT interfaces or 4-port SFP+ 10 GigE short-reach optical
- Load-balancing accelerator card
- Integrated-fail-to-wire support
- (1) NFE-i8000 accelerator card (LE Assembly) or (2) NFE-i8000 accelerator cards (HE Assembly)



## Supported Platforms

### Kontron NCS2U

- (2) Quad Core 2.83 Ghz Xeon CPU (E5540)
- 16 GB DDR2
- 73 GB SAS HDD (minimum)
- Integrated SAS controller (Raid 1)

### SuperMicro

- (4) Hex Core 2.44 Ghz Xeon CPU
- (4) 4GB DDR2 667 FB DIMMS
- 3U chassis
- Front panel display and keypad



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Netronome has operations in:

USA (Pittsburgh [HQ], Santa Clara & Boston), UK (Cambridge), Malaysia (Penang), South Africa (Centurion) and China (Shenzhen, Hong Kong)

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