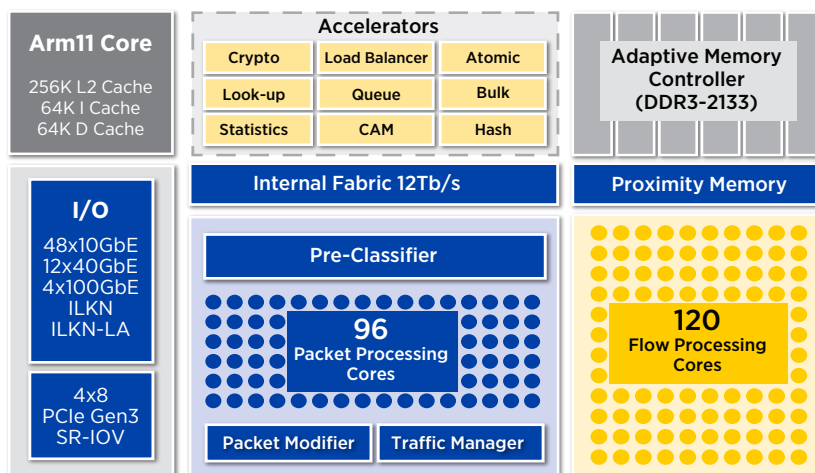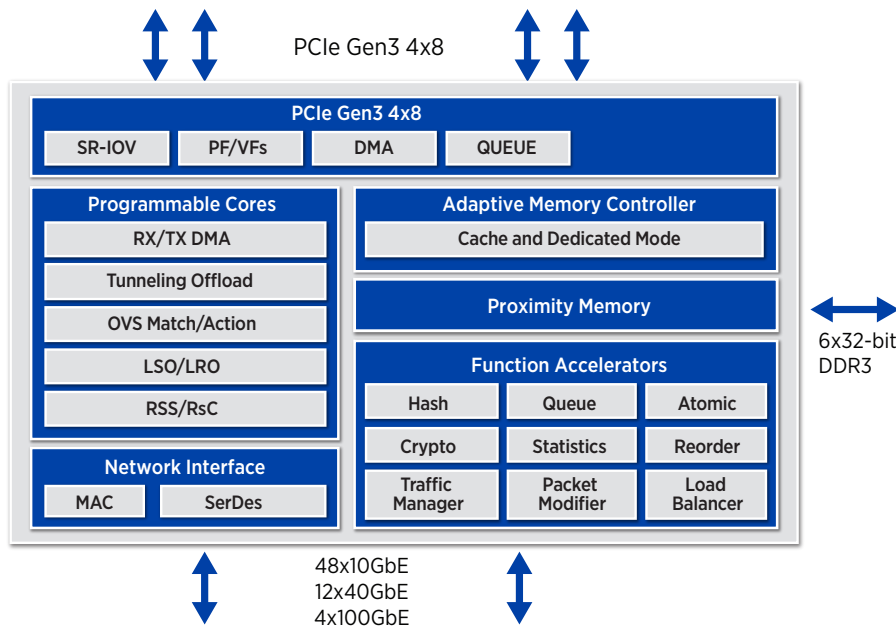# Netronome NFP-6000 Flow Processor

PURPOSE-BUILT PROCESSORS FOR INTELLIGENT NETWORKING

Netronome's 6th generation NFP-6000 multi-threaded, multicore flow processor targets intelligent data plane processing at higher performance, with lowest power and cost, while enabling the capability to adapt quickly to new networking features. The optimized match/action-based flow processing architecture enables per tenant, per VM, per application policies at scale to support microsegmentation. In security applications, the built-in, high-performance bulk cryptography acceleration delivers secure data access at cloud scale.
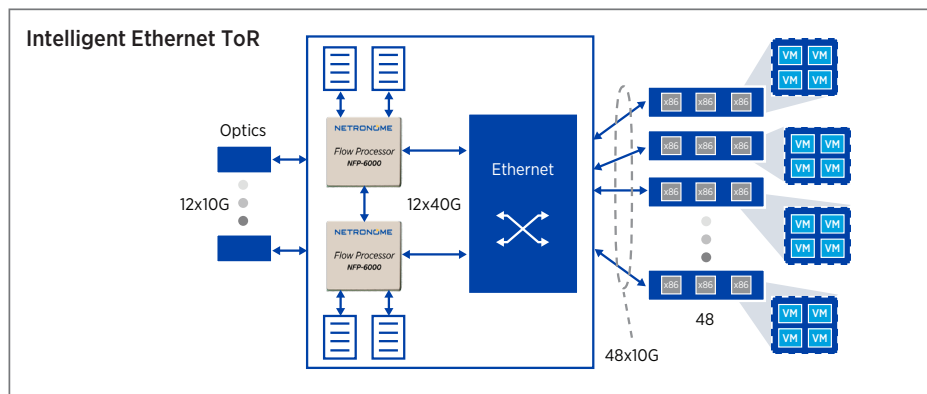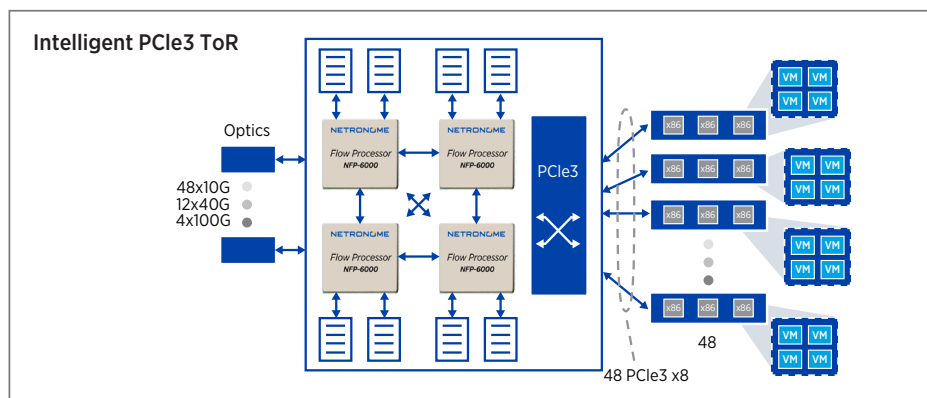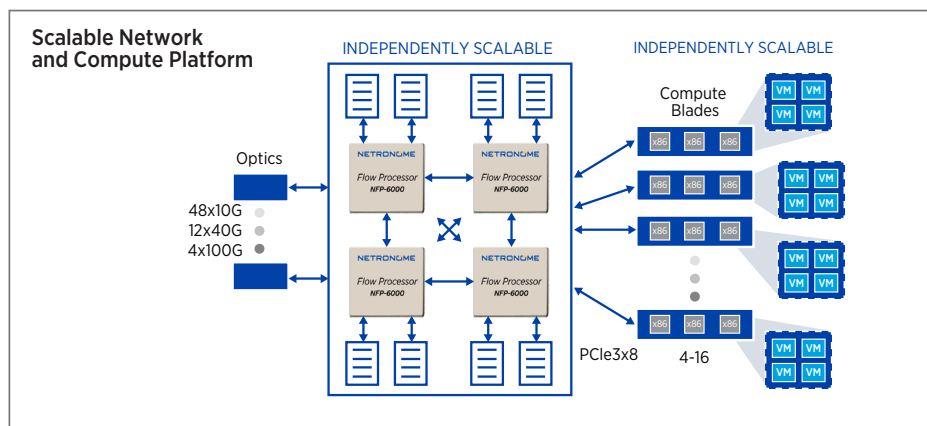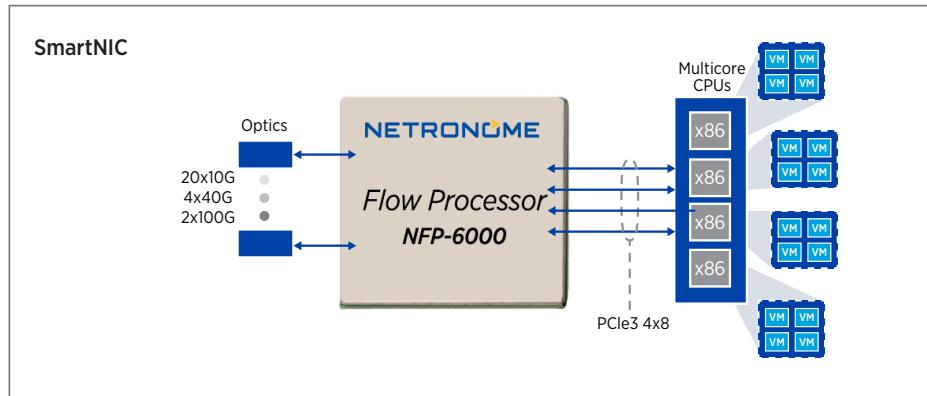
FEATURES

- 120 programmable flow processing cores

- 96 packet processing cores

- PCIe Gen3 4x8 interface (4PF/64VF each)

- SR-IOV with 256 hardware queues

- Adaptive buffer management

- Configurable 6x32-bit or 3x64-bit ECC protected DDR3-2133

- Over 31MB of on-chip memory

- 48 KR capable SerDes supporting:
    - Ethernet - 10Gb/40Gb/100Gb
    - Interlaken - up to 100Gb

- 12Tb/s credit-based internal fabric connecting processing and memory resources.

- Hardware-based, in-line bulk cryptography support for all major cypher suites

- 100 dedicated accelerators for Deep Packet Inspection (DPI)

- Traffic management, security processing and bulk cryptography

- Arm11 Core (L1 (64K), L2 (256K))

NFP-6000 Flow Processor Block Diagram

Sample Designs

SmartNIC

NETRONOME
Flow Processor
NFP-6000

Optics

20x10G
4x40G
2x100G

Multicore CPUs

x86
x86
x86
x86

VM VM
VM VM

PCIe3 4x8

Scalable Network and Compute Platform

INDEPENDENTLY SCALABLE   INDEPENDENTLY SCALABLE

NETRONOME *Flow Processor* NFP-6000

Optics

48x10G
12x40G
4x100G

Compute Blades

PCIe3x8   4-16

Intelligent PCIe3 ToR

NETRONOME *Flow Processor* NFP-6000

PCIe3

Optics

48x10G
12x40G
4x100G

48

48 PCIe3 x8

Intelligent Ethernet ToR

NETRONOME *Flow Processor* NFP-6000

Ethernet

Optics

12x10G

12x40G

48

48x10G

Benefits

- Fully programmable 200Gb/s L2-L7 processor
- 384 million packets per second
- Over 256Gb/s wire-speed stateful flow and packet processing
- Support for custom tunnel types: VXLAN, NVGRE, MPLS
- Millions of exact match and wild card flows
- Stateless and stateful load balancing
- Hardware flow tracking for cut-through acceleration
- 100K+ tunnel encapsulation and de-encapsulation

Target Applications

- Security appliances
- Intrusion Detection Systems (IDS)
- Intrusion Prevention Systems (IPS)
- Next Generation Firewall (NGFW)
- Routers
- Load balancers
- Packet brokers
- Data center applications
- Carrier SDN and NFV appliances
- Advanced services blades
- Data center virtualized appliances
- Open Compute Platforms
- Test and measurement equipment
- Network probes and monitors
- Aerospace and automotive
- Industrial control

Software Support

• SDK

• Drivers up-streamed to RHEL

• P4

• BPF, eBPF offload

• Open vSwitch (OVS 2.0) acceleration and offload

• SDN Support

• OpenFlow 1.3 support with 42 match fields

• KVM hypervisor support

• Intel DPDK poll mode driver and zero-copy to Linux user space

• Profile and performance tools

Specifications

• 6/6 RoHS compliant

Package

• 1,932 Ball (45x45mm) Flip Chip BGA, 1mm solder ball pitch

NETRONOME

Netronome Systems, Inc.
3159 Unionville Road, Suite 100
Cranberry Twp., PA 16066
Tel: 724.778.3290 | Fax: 724.778.3295
www.netronome.com