SOLARFLARE®

SFN7002F

Flareon SFN7002F Dual-Port 10GbE PCIe 3.0 Server I/O Adapter

FlareonSFN7002F

Flareon™SFN7002F dual-port 10G Ethernet SFP+ server adapter combines excellent performance and scalability with exceptional 10GbE value for data center and enterprise networks.

Flareon SFN7002F provides the best overall performance with low CPU utilization for 10GbE networking. With a PCIe 3.0 host interface, an all new internal data-path micro-architecture, the addition of a hardware switch fabric, and featuring a full set of stateless offloads, SFN7002F reduces CPU processing overhead for the most demanding network tasks in data center, enterprise, cloud, and network-attached storage networks. SFN7002F also accelerates database, social networking, email and other storage-intensive applications with high bandwidth and low latency network access to SAN and NAS environments.

Unique Application Performance

SFN7002F's unique hardware-accelerated virtualized NIC (vNIC) architecture provides concrete benefits to multi-core computing. In many cases, network traffic that is directed to a single CPU core can overload the core and create a performance bottleneck. SFN7002F can use up to 2048 vNICs and 240 virtual functions to implement Receive Side Scaling (RSS) and accelerate Receive Flow Steering (RFS) to distribute network traffic across multiple cores. These technologies allow the networking I/O processing to be spread across the available CPU cores, eliminating processing bottlenecks and dramatically improving application perform-ance and scalability. SFN7002F also improves data intensive key value storage applications such as NoSQL, memcached, Couchbase and other big data applications by accelerating throughput and reducing latency for compute and Ethernet storage.

SFN7002F also features hardware acceleration to optimize packet delivery, such as integrated layer 2 switching capability and VLAN insertion/removal, along with TCP segmentation offload (TSO) to reduce CPU load.

Scalable, Hardware-Assisted Virtualization

With 10x the number of vNICs and virtual PCIe functions than the competition, SFN7002F performance scales as the number of CPU cores and VMs increase, supporting more applications per physical server, i.e., greater VM density. SFN7002F also supports NetQueue, VMQ, and SR-IOV used to accelerate guest applications in leading hypervisors, such as ESXi, Hyper-V, KVM, and Xen. This relieves network I/O bottlenecks dedicating full network bandwidth directly to VMs while maintaining full hypervisor management services. Sixteen physical PCIe functions enable finer granularity and greater scalability when allocating Quality of Service for optimized bandwidth utilization as I/O dynamically fluctuates.

Platform for Delivering Network Services

Flareon SFN7002F enables deploying servers for a wide range of applications with a single server adapter. SFN7002F with AppFlex™ technology provides the flexibility to selectively add and control services. With an OpenOnload® upgrade, SFN7002F can bypass kernel and networking overheads to deliver unmatched message rates with ultra low latency and low jitter. Upgrades for packet capture and precision time synchronization (PTP) with hardware time stamping are also available.

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www.solarflare.com

Specifications

Product Number
SFN7002F

Standards & Compliance
IEEE 802.3ae
IEEE 802.3ad
IEEE 802.1Q
IEEE 802.1p
IEEE 802.3x
RoHS Compliant

Power
5.9W (typical)

Operating Range
0º to 65º C
100 LFM, Min.

Physical Dimensions
L: 13.4 cm (5.3 in)
W: 6.9 cm (2.7 in)
End bracket height:
PCI Express standard
12.0 cm (4.725 in)
PCI Express low-profile
7.92 cm (3.12 in)

Order Information
Flareon SFN7002F
Dual-Port 10GbE PCIe 3.0
Server I/O Adapter

Options Order Information
SFS-OOL
Flareon SFN7000 Series
OpenOnload License

SFS-PTP
Flareon SFN7000 Series
Precision Time Synchronization
with Hardware Time Stamping
License

SFS-SCP
Flareon SFN7000 Series
SolarCapture Pro License

Regulatory product code: S7120

Advanced Features & Benefits

I/O Virtualization
2048 guest OS protected vNICs; 240 virtual functions;
16 physical functions

PCI Express
PCIe 3.0 x8 @ 8.0 GT/s

SFC9120 10G Ethernet Controller
Supports high-performance 10GbE

SFP+ Support
Supports optical & copper SFP/SFP+ modules; Direct-Attach,
Fiber (10G or 1G), 1G/10G combo

1000BASE-T SFP Support
Supports 1G 1000BASE-T SFP modules

Low Latency
Cut-through architecture/intelligent interrupt coalescing

Receive Side Scaling (RSS)
Distributes IPv4, IPv6 loads across all CPU cores;
MSI-X minimizes interrupt overhead

Hardware Offloads
TSO, LRO, GSO; IPv4/IPv6; TCP, UDP checksums

Adapter Teaming/Link Aggregation
LACP for redundant links & increased bandwidth
(compatible with MLAG)

Jumbo Frames
9216 byte MTU for performance

Enhanced Tuning
Adaptive interrupt moderation

IP Flow Filtering
Hardware directs packets based on IP, TCP, UDP headers

Advanced Packet Filtering
4096 multicast filters; 4096 VLANs/port; adaptive TCP/UDP/IP,
MAC, VLAN, RSS, RFS filtering; Accelerated Receive Flow
Steering (RFS)

Intel QuickData™
Uses host DMA engines to accelerate I/O

Remote Boot
PXE, iSCSI boot; unattended installation

Management
SNMP, ACPI v3.0

Virtualization Support*
VMware ESXi; Microsoft Hyper-V; XenServer; Linux KVM;
SR-IOV

Operating Systems
RHEL 5,6, MRG; SLES 10, 11, SLERT; other Linux; Windows
Server*

*Future support. Please refer to the driver release notes at www.solarflare.com
for feature availability.

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