



# Flareon SFN7004F Quad-Port 10GbE PCIe 3.0 Server I/O Adapter

Flareon™ SFN7004F quad-port 10G Ethernet SFP+ server adapter combines excellent performance and scalability with exceptional 10GbE value for data center and enterprise networks.

Flareon SFN7004F quad-port 10Gb Ethernet SFP+ server adapter provides the best overall performance with low CPU utilization for 10GbE networking with four 10GbE ports. 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, SFN7004F reduces CPU processing overhead for the most demanding network tasks in data center, enterprise, cloud, and network-attached storage networks. SFN7004F 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

SFN7004F'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. SFN7004F 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 performance and scalability. SFN7004F 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.

SFN7004F 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, SFN7004F performance scales as the number of CPU cores and VMs increase, supporting more applications per physical server, i.e., greater VM density. SFN7004F 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.

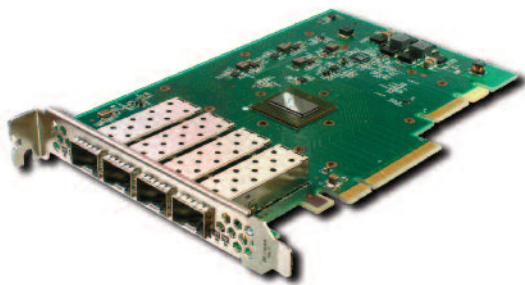
## Platform for Delivering Network Services

Flareon SFN7004F enables deploying servers for a wide range of applications with a single server adapter. SFN7004F with AppFlex™ technology provides the flexibility to selectively add and control services. With an OpenOnload® upgrade, SFN7004F 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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## Specifications

**Product Number**  
SFN7004F

### Standards & Compliance

IEEE 802.3ae  
IEEE 802.3ad  
IEEE 802.1Q  
IEEE 802.1p  
IEEE 802.3x  
RoHS Compliant

### Power

13W (typical)

### Operating Range

0° to 50° C  
300 LFM, Min.

### Physical Dimensions

L: 16.75 cm (6.6 in)  
W: 11.1 cm (4.37 in)  
End bracket height:  
PCI Express standard  
12.0 cm (4.725 in)

### Order Information

Flareon SFN7004F  
Quad-Port 10GbE PCIe 3.0  
Server I/O Adapter

### Options Order Information

SFS-OOL  
OpenOnload License  
  
SFS-PTP  
Precision Time License  
  
SFS-SSFE  
SolarSecure™ Filter Engine  
License  
  
SFS-SCL  
SolarCapture™ Live License

Regulatory product code: SR202

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## Advanced Features & Benefits

### I/O Virtualization

2048 guest OS protected vNICs; SR-IOV; 240 virtual functions;  
16 physical functions; 16 NIC partitions

### PCI Express

PCIe 3.0 x8 @ 8.0 GT/s

### SFN7004F

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; Linux KVM and Xen

### Operating Systems

RHEL 5, 6, 7, MRG; SLES 10, 11, 12, SLERT; Debian 6.0, 7.0;  
Ubuntu 12.04 LTS, 10.04 LTS, 14.10; other Linux; Windows  
Server 2008, 2008 R2, 2012, 2012 R2; XenServer 6.2, 6.5;  
FreeBSD 10.x

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