Flareon SFN7042Q Dual-Port 40GbE QSFP+ PCIe 3.0 Server I/O Adapter

Flareon™ SFN7042Q dual-port 40G Ethernet QSFP+ server adapter combines excellent performance and scalability with exceptional 40GbE and 10GbE value for data center and enterprise networks.

Flareon SFN7042Q provides the best overall performance with low CPU utilization for dual-port 40GbE and quad-port 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, SFN7042Q reduces CPU processing overhead for the most demanding network tasks in data center, enterprise, cloud, and network-attached storage networks. SFN7042Q 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 Accelerated Performance

SFN7042Q'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. SFN7042Q can use up to 2048 vNICs to implement Receive Side Scaling and Solarflare Accelerated Receive Side Scaling (SARFS) 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. SFN7042Q 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.

SFN7042Q 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, SFN7042Q 40GbE server adapter's performance scales as the number of CPU cores and VMs increase, supporting more applications per physical server. SFN7042Q also supports NetQueue, VMQ and SR-IOV used to accelerate guest applications in leading hypervisors, such as ESXi, KVM and Hyper-V. This relieves network I/O bottlenecks dedicating full network bandwidth directly to VMs. 16 physical PCIe functions enable finer granularity and greater scalability when allocating Quality of Service (QoS) for optimized bandwidth utilization as I/O dynamically fluctuates.

Platform for Delivering Network Services

Flareon SFN7042Q enables deploying servers for a wide range of applications with a single server adapter. SFN7042Q with AppFlex™technology provides the flexibility to selectively add and control services. With an OpenOnload® upgrade, SFN7042Q can bypass kernel and networking overheads to deliver unmatched message rates with ultra low latency and low jitter. Upgrades for packet capture, security, networking monitoring, and precision time synchronization (PTP) with hardware time stamping are also available.

Specifications
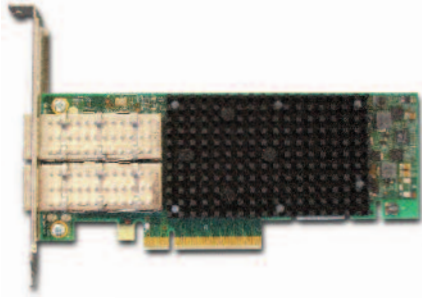
Product Number
SFN7042Q

Standards & Compliance
IEEE 802.3ba
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: 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 Ultra SFN7042Q
Dual-Port 40GbE QSFP+
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

SFS-SCP-2x10G
SolarCapture Pro License for
SFN7x42Q

SOLR-PPS-DP40G
40GbE 1PPS Cable Kit

Regulatory product code: SR200

Advanced Features & Benefits

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

PCI Express
PCIe 3.0 x8 @ 8.0 GT/s

SFC9140 10/40G Ethernet Controller
Supports high-performance 40GbE and 10GbE

QSFP+ Support
Supports optical QSFP+ modules including Solarflare
SFM40G-SR4, Direct-Attach Copper, Solarflare QSFP+ to
SFP+ copper DAC cables (SOLR-QSFP2SFP-1M & -3M)

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 10GbE links (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; other Linux;
Windows Server 2008 R2, 2012, 2012 R2

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