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 Ultra SFN7042Q provides the best overall performance with low CPU utilization for 40GbE or 10GbE networking. SFN7042Q can be configured as a dual-port 40GbE or quad-port 10GbE adapter as each 40GbE QSFP+ port can also operate as dual 10GbE SFP+ ports by using breakout cables including the Solarflare SOLR-QSFP2SFP-1M & -3M QSFP+ to 2 SFP+ copper DAC cables.

With a PCIe 3.0 host interface, an all new internal data-path microarchitecture, 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**
- 0º to 50º C
- 300 LFM, Min.

**Physical Dimensions**
- L: 16.75 cm (6.6 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

## Advanced Features & Benefits

**Stable Precision Oscillator**
Stratum 3 compliant

**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; Debian 6.0, 7.0;
- Ubuntu 12.04 LTS, 14.04 LTS, 14.10; other Linux; Windows Server 2008 R2, 2012, 2012 R2; XenServer 6.2, 6.5