

# XtremeScale™ SFN8542

## Dual-Port 40GbE QSFP+ PCIe Server Adapter



The new XtremeScale™ SFN8000 adapter family provides Solarflare's best performance yet, with higher bandwidth, lower latency and higher packet rate. The SFN8000 family adapters are based on a common hardware platform, enabling customers to configure the features and performance they want to meet the particular needs of each application. Capabilities such as ultra-low latency, Onload® kernel bypass, class leading clock synchronization accuracy providing MIFID II readiness, ServerLock® Filter Engine, SolarCapture® Pro and more can be enabled to run on any SFN8000 adapter on the network, making this the one Ethernet adapter to deploy across your data center or cloud infrastructure.

### CPU-Efficient Networking

The XtremeScale SFN8542 dual-port 40G Ethernet QSFP+ server adapter delivers faster, more efficient processing of network traffic to accelerate a wide range of applications. The SFN8542 has 16 lanes of PCIe 3.1 making it an ideal workhorse for 40GbE data center and cloud workloads, providing high-bandwidth, high packet rate and CPU-efficient processing of network traffic. The SFN8542 can be configured as a dual-port 40GbE or a quad-port 10GbE adapter as one QSFP+ port can also operate as four 10GbE SFP+ ports.

### Configurable Software

When configured with Solarflare software licenses, the SFN8542 can address ultra-low latency applications, highly accurate clock synchronization and hardware time stamping, packet filtering, packet capture and more. Adapters can be purchased pre-configured with popular software bundles, or configured on-site with software options.

### Ultra-Low Latency

The platform's hardware optimizes packet flow to and from the user application. When licensed for ultra-low latency, it delivers unrivaled sub-microsecond TCP and UDP latency. With Onload, the industry's best application-to-application performance is enabled via Solarflare's unique and patented kernel bypass techniques.

### Accelerating Applications

The SFN8542 is ideal for scale-out cloud, web and CDN application environments. Solarflare adapters are used in a wide range of use cases, including Software-defined networking (SDN), Network functions virtualization (NFV), web content optimization, DNS acceleration, web firewalls, load balancing, NOSQL databases, caching tiers (Memcached), web proxies, video streaming and storage networks. The SFN8542 also provides the ideal link between fast NVMe storage and the network. In addition when used with Onload, the SFN8542 further reduces host processing overhead and accelerates web and cloud traffic. When used with ServerLock Filter Engine, the SFN8542 provides an additional layer of defense against DDoS attacks at the network ingress point to the server. Attacks can be absorbed without degradation of "good" traffic, enabling a 3 to 4x improvement in packet-level filtering server headroom.\*

### Scalable, High-Performance Virtualization

Solarflare is the proven leader in VM density and performance, and the SFN8542 raises the bar with 2048 vNICs, SR-IOV, overlay network acceleration e.g. VXLAN, NVGRE. In addition, the SFN8542 supports kernel bypass running in a guest VM, so users can run ultra-low latency Onload or SolarCapture Pro in a virtualized or cloud environment.

The SFN8542 is also fully flow-aware, providing flexible layer 2-4 flow processing and flow steering natively. The benefits are efficient flow acceleration in almost every environment from the data center to the stock exchange.

## Advanced Features and Benefits

### Stable Precision Oscillator

- Stratum 3 compliant

### I/O Virtualization

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

### PCI Express

- PCIe 3.1 x16 @ 8.0 GT/s
- SFC9240 10G/40G Ethernet controller
- Supports high-performance
- 10GbE/40GbE

### QSFP+ Support

- Supports optical QSFP+ modules including Solarflare SFM40G-SR4, Direct-Attach Copper, Active Optical Cables, QSFP+ to SFP+ copper DAC cables

### Low Latency

- Cut-through architecture/intelligent interrupt coalescing

### Packet Rate

- 60Mpps TX & RX sustained line rate with all packet sizes

### Receive Side Scaling (RSS)

- Distributes IPv4, IPv6 loads across all CPU cores; MSI-X minimizes interrupt overhead

### Hardware Offloads

- TSO, LRO, GSO, IPv4/IPv6 and TCP/UDP checksums

### 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 RFS

### Remote Boot

- PXE; unattended installation; UEFI; Solarflare secure boot

### Management

- SNMP, ACPI v3.0

### Overlay Network Acceleration

- VXLAN, NVGRE, GENEVE

### Switching Support

- Integrated Layer 2 Ethernet switch, VEB/Virtual switch

### Virtualization Support

- VMware ESXi 5.x,6.0; Microsoft Hyper-V; Linux KVM

### Operating Systems

- RHEL 6, 7, MRG; SLES 11, 12, SLERT; Debian 7.x, 8.x; Ubuntu 14.04 LTS, 14.10, 15.04; other Linux; Windows Server
- 2008 Regulatory product code: S7120 R2, 2012, 2012 R2

## Specifications

### Standards & Compliance

- IEEE802.3-2012 Ethernet base standard, including 802.3bx, 802.3bd, 802.3x 802.3ba (40G/s), 802.3ae (10 Gigabit Ethernet over fiber)
- 802.3z (1000BASE-X Gbit/s Ethernet over fiberoptic at 1Gbit/s (125 MB/s)
- 1000BASE-X
- 10GBASE-CR -SR -LR
- 40GBASE-CR4 -SR4 -LR4
- Dual QSFP+ (SFF-8683) connectors
- RoHS compliant

### Power

- 10W (typical)

### Operating Range

- 0° to 50° 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)

### Ordering Information

- SFN8542
- SFN8542-G (TAA-Compliant)

For more information please visit: [solarflare.com](http://solarflare.com)

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