Flareon Ultra SFN8542-Plus Server Adapter
Dual-Port 40GbE QSFP+

The PLUS variant of the Flareon Ultra SFN8542 Dual-Port 40GbE QSFP+ Server I/O Adapter adds a suite of enabled software capabilities that provide out-of-the box support for ultra-low-latency Onload-accelerated sockets as well as PPS and PTP time synchronization support.

The SFN8542-PLUS is capable of associating a hardware time-stamp with every incoming and outgoing Ethernet frame for application troubleshooting or performance monitoring. These features make the SFN8542-PLUS the ultra-low-latency Ethernet adapter of choice to deploy as a key component throughout Financial Trading infrastructures where either one or two ports of 40GbE or four ports of 10GbE are required.

CPU-Efficient Networking

The Flareon Ultra SFN8542-PLUS dual-port 40G Ethernet QSFP+ server adapter delivers faster, more efficient processing of network traffic to accelerate a wide range of applications. The SFN8542-PLUS has 16 lanes of PCIe 3.1 minimizing latency and maximizing bus throughput between the adapter and the host. The SFN8542-PLUS can can also be configured as a quad-port 10GbE adapter with one QSFP+ port operating as four 10GbE ports.

Flexibility in Operation

Configured either in 40GbE or 10GbE mode, in a virtualized environment the adapter supports hypervisor bypass via SR-IOV providing virtualized guests with near bare-metal network performance. Multiple physical functions are also available enabling the ports to be partitioned when connected to 802.1Q trunked switch ports with a logical interface per VLAN being presented to the operating system.

Ports on the same adapter or across multiple adapters may be bonded for redundant operation. This redundancy support also extends to Onload™ with accelerated sockets capable of running across both Active-Passive and Active-Active LACP-enabled links.

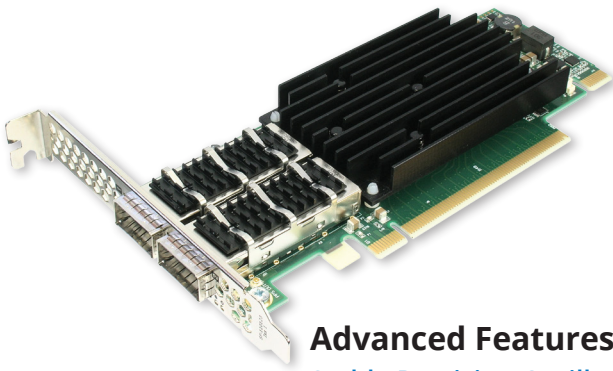The SFN8542-PLUS provides the following licensed features enabled:

Ultra-Low Latency

The Flareon Ultra SFN8542 offers fast and efficient hardware that optimizes packet flow to and from the user application. The SFN8542-PLUS unlocks unrivaled sub-microsecond latency both at Layer 2 and TCP and UDP via Onload.

Onload

Onload is Solarflare's industry's leading fully RFC-compliant kernel-bypass user-space TCP/IP stack. Unrivaled application-to-application TCP and UDP latency is available with no modification to the applications being accelerated. Applications may communicate via Onload to any other RFC-compliant TCP/IP stack with seamless interoperability.

Precision Time

The SFN8542 is equipped with a Stratum 3 oscillator providing class-leading clock stability. The SFN8542-PLUS enables the use of sfptpd, Solarflare's time synchronization daemon, which leverages the adapter's ability to apply hardware time-stamps to incoming and outgoing Ethernet frames to synchronize its oscillator either via the PTPv2 protocol or a combination of PPS and NTP. Sfptpd also enables the Linux real-time clock to be synchronized to the external timing reference via the adapter clock. Any time-stamps obtained from either packet events or via the Linux time API may now be correlated directly with the external timing source. These features allow users to implement event traceability that exceeds the MIFID II requirements.

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; 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 Fiber-Optic 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-PLUS