

10 GIGABIT ETHERNET SERVER ADAPTER

FAMILY PRODUCT GUIDE

Solarflare's 10 Gigabit Ethernet (10GbE) server adapters enable high-performance, cost-effective and easily deployable solutions for next-generation applications. Combined with application-accelerated middleware that just works without modifying applications or running new protocols, Solarflare's 10GbE solutions make next-generation applications possible and affordable today.



Affordable, high-performance 10GbE enables higher productivity

Advances in server technology such as multi-core CPUs, virtualization, and higher speed buses enable IT and data center departments to support more users performing more tasks and processing more information on a given server farm. Additionally, this higher horsepower hardware accelerates applications, which facilitates higher productivity for each increasing workload. These higher powered servers require more I/O bandwidth, driving the need for greater networking performance.

10GbE solves today's requirements to achieve more output with limited shared resources, while rapidly driving down the cost of the network infrastructure.

General enterprise data center applications directly benefiting from 10GbE today include:

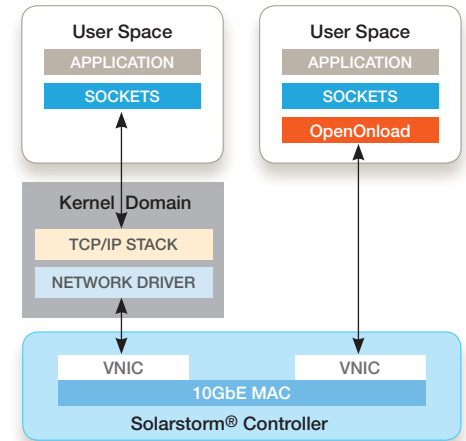
- Server virtualization requiring I/O acceleration direct to the guest application
- NFS and iSCSI storage requiring high bandwidth to prevent applications from stalling
- Multicore platforms requiring high bandwidth to scale out high-end computing environments
- All applications requiring low CPU utilization to accelerate applications
- Cloud computing requiring all the above

Financial services and high-performance computing (HPC) applications see particular benefits from 10GbE today including:

- High frequency trading requiring low latency messaging and high transaction rates
- Financial services data centers requiring 1000BASE-T backwards compatibility
- High performance computing (HPC) requiring near-Infiniband performance at Gigabit Ethernet prices

OpenOnload® application acceleration middleware further lowers latency

Solarflare server adapters deliver the lowest kernel latency performance on the market, and OpenOnload significantly improves that latency advantage.



Low latency requires more than just receiving data into host memory at tremendous speed; it necessitates delivering data through the network stack to the application in the shortest possible time. When combined with Solarflare's OpenOnload application accelerator middleware, Solarflare 10GbE server adapters can deliver sub-4 microsecond TCP/UDP application to application latencies—all while supporting message rates in the millions, reducing latency jitter, and bringing a greater level of predictability to message processing latency. OpenOnload is binary compatible with the BSD sockets API, requires no modification of the end user's application, and because it is completely compatible with TCP/IP and Ethernet, requires no new wire protocols nor upgrades to the network.

OpenOnload is available in open source format or as a fully supported enterprise license from Solarflare.



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Solarflare 10GbE server adapters exceed customers' needs providing the best technology

Solarflare currently delivers the highest-performance, lowest-power 10GbE server adapters on the market. Featuring hypervisor bypass and SR-IOV, Solarflare server adapters alleviate I/O bottlenecks and allow IT managers to allocate server I/O resources directly to applications. Solarflare's scalable, hardware-assisted virtualized architecture supports thousands of vNICs for accelerated application networking.

Solarflare server adapters have demonstrated performance leadership by providing the most scalable architecture, and the highest possible line-rate performance in the most demanding applications, including virtualized environments, cloud networking, financial services, and a wide range of performance-sensitive HPC applications. Solarflare server adapters also accelerate NFS and iSCSI enabling data center storage to accelerate compute clusters.

Additionally, Solarflare server adapters have the lowest power consumption in the industry, making them cost effective to operate and ideal for dense server environments with demanding cooling requirements.

Solarflare server adapters are supported by a full range of operating system drivers:

- Microsoft Windows Server 2003, 2008, 2008 R2 (Hyper-V)
- Linux RHEL4/5/6; SLES9/10/11, Solaris 10, FreeBSD
- VMware ESX3.5, vSphere 4.x
- Citrix XenServer 5.x

Solarflare's family of 10GbE SFP+ and 10GBASE-T server adapters

Solarflare offers a family of single- and dual-port 10GbE server adapters that deliver high bandwidth, industry leading low-latency and power-efficiency, with stateless offloads that minimize CPU utilization. The Solarflare family supports both SFP+ and 10GBASE-T media. SFP+ supports optical modules or direct attach copper twin-ax cables, while 10GBASE-T supports Category 6A, 6, 5E cables which are compatible with existing data center infrastructures for distances up to 100 meters.

Solarflare server adapters meet a broad range of 10GbE networking needs. Enterprise server adapters are targeted at applications demanding the lowest latency, and most scalable virtualization. Midrange server adapters combine excellent performance and exceptional value for data center, enterprise, SMB, cloud computing, and HPC environments.

› **SFN4112F** – enterprise single-port SFP+ delivering high performance, ultra low latency, and accelerated virtualization with maximum scalability

› **SFN5122F** – enterprise dual-port SFP+ delivering the highest performance, ultra low latency, and accelerated virtualization with maximum scalability

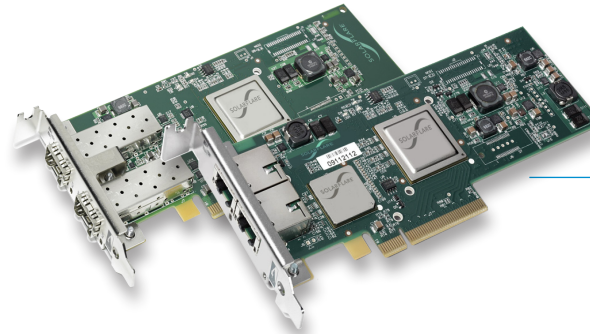
› **SFN5121T** – enterprise dual-port 10GBASE-T delivering the highest performance, ultra low latency, and accelerated virtualization with maximum scalability

› **SFN5152F** – midrange single-port SFP+ delivering high-performance, low latency, low power, and scalable virtualization

› **SFN5162F** – midrange dual-port SFP+ delivering high-performance, low latency, low power, and scalable virtualization

› **SFN5151T** – midrange single-port 10GBASE-T delivering high performance, low latency, low power and scalable virtualization

› **SFN5161T** – midrange dual-port 10GBASE-T delivering high-performance, low latency, low power, and scalable virtualization



Part number	ENTERPRISE			MIDRANGE			
	SFN4112F	SFN5122F	SFN5121T	SFN5152F	SFN5162F	SFN5151T	SFN5161T
# OF PORTS	1	2	2	1	2	1	2
PCIe x8 PERFORMANCE	2.5GT/s (Gen1.1)	5.0GT/s (Gen2)	5.0GT/s (Gen2)	5.0GT/s (Gen2)	5.0GT/s (Gen2)	5.0GT/s (Gen2)	5.0GT/s (Gen2)
CONNECTOR	SFP+	SFP+	RJ45	SFP+	SFP+	RJ45	RJ45
CABLING	DA, MMF	DA, MMF	UTP, STP	DA, MMF	DA, MMF	UTP, STP	UTP, STP
POWER (TYP.)	4.5W	4.9W	12.9W	4.0W	4.9W	7.9W	12.9W
DIRECT GUEST ACCESS	✓	✓	✓				
SR-IOV		✓	✓				
OpenOnload	✓	✓	✓				
# OF vNICs	4096	2048	2048	64	128	64	128

Solarflare 10GbE server adapters support a common set of features:

- › Flexible, scalable hardware-assisted virtualization acceleration enabling high performance scale out architectures
- › Fully supports all leading hypervisors
- › Ultra-low latency and low power
- › Data integrity and large packet offloads minimize CPU utilization freeing up processor cycles for customer applications
- › Compatible with Energy Star requirements for server system power consumption
- › Supports both data networking and Ethernet storage networking: NFS, iSCSI and NAS