

NIC-PCIE-1SFP-PLU

PCIe x1 1000Base Single Port Fibre Ethernet Adapter
(Intel 82576 Based) (SC, SFP, LC Connector available)



NIC-PCIE-1SFP-PLU is a typical model of 1000base-SX/LX Ethernet adapter, based on the Intel 82576 Ethernet Controller. This optical Fibre Ethernet adapter is widely applied in Fibre To The Desktop (FTTD), the setup of an optical Fibre LAN network, optical Fibre connection with life expectancy of 30 years, not subject to electromagnetic interference and lightning resistant. This adapter has very high data security, high reliability, stability and compatibility.

General Features:

- Intel 82576 Gigabit Ethernet Controller
- Low-profile
- iSCSI remote boot support
- Load balancing on multiple CPUs
- Compatible with x4, x8, and x16 standard and low-profile PCI Express slots
- Multi-port design
- Support for most network operating systems (NOS)
- Intel PROSet Utility for Windows Device Manager
- RoHS-compliant3

Designed for Multi-Core Processors

These single-port Adapter provide high-performing, single-port Gigabit connectivity in a multi-core platform as well as in a virtualized environment. In a multi-core platform, the adapters support different technologies such as multiple queues, receive-side scaling, MSI-X, and Low Latency Interrupts, that help in accelerating the data across the platform, thereby improving application response times.

The I/O technologies on a multi-core platform make use of the multiple queues and multiple interrupt vectors available on the network controller. These queues and interrupt vectors help in load balancing the data and interrupts amongst themselves in order to lower the load on the processors and improve overall system performance. For example, depending upon the latency sensitivity of the data, the low level latency interrupts feature can bypass the time interval for specific TCP ports or for flagged packets to give certain types of data streams the least amount of latency to the application.

Optimized for Virtualization

The PLUSOPTIC NIC-PCIE-1SFP-PLU Single-Port Ethernet Adapter showcases the latest virtualization technology called Intel Virtualization Technology for Connectivity (IntelVTfor Connectivity). IntelVT for Connectivity is a suite of hardware assists that improve overall system performance by lowering the I/O overhead in a virtualized environment. This optimizes CPU usage, reduces system latency, and improves I/O through-put. IntelVT for Connectivity includes:

Virtual Machine Device Queues (VMDq)
Intel I/O Acceleration Technology

Use of multi-port adapters in a virtualized environment is very important because of the need to provide redundancy and data connectivity for the applications/workloads in the virtual machines. Due to slot limitations and the need for redundancy and data connectivity, it is recommended that a virtualized physical server needs at least six GbE ports to satisfy the I/O requirement demands.

Virtual Machine Device queues (VMDq)

VMDq reduces I/O overhead created by the hypervisor in a virtualized server by performing data sorting and coalescing in the network silicon. VMDq technology makes use of multiple queues in the network controller. As data packets enter the network adapter, they are sorted, and packets traveling to the same destination (or virtual machine) get grouped together in a single queue. The packets are then sent to the hypervisor, which directs them to their respective virtual machines. Relieving the hypervisor of packet filtering and sorting improves overall CPU usage and throughput levels.

PLUSOPTIC NIC-PCIE-1SFP-PLU PCIe Gigabit adapter provides improved performance with the next-generation VMDq technology, which includes features such as loop back functionality for inter-VM communication, priority-weighted bandwidth management, and doubling the number of data queues per port from four to eight. It now also supports multicast and broadcast data on a virtualized server.

Intel I/O Acceleration Technology

Intel I/O Acceleration Technology (Intel I/OAT) is a suite of features that improves data acceleration across the platform, from networking devices to the chipset and processors, which help to improve system performance and application response times. The different features include multiple queues and receive-side scaling, Direct Cache Access (DCA), MSI-X, Low-Latency Interrupts, Receive Side Scaling (RSS), and others. Using multiple queues and receive-side scaling, a DMA engine moves data using the chipset instead of the CPU. DCA enables the adapter to pre-fetch data from the memory cache, thereby avoiding cache misses and improving application response times. MSI-X helps in load-balancing I/O interrupts across multiple processor cores, and Low Latency Interrupts can provide certain data streams a non-modulated path directly to the application. RSS directs the interrupts to a specific processor core based on the applications address.

End-to-end Wired Security

The PLUSOPTIC NIC-PCIE-1SFP-PLU Single-Port Ethernet Adapter is PCIe adapters to provide authentication and encryption for IPsec and LinkSec. LinkSec is already designed into the network adapter hardware. These adapters are future-proof and prepared to provide LinkSec functionality when the ecosystem supports this new technology.

IPsec provides data protection between the end-point devices of a network communication session. The IPsec offload feature is designed to offload authentication and encryption of some types of IPsec traffic and still delivers near line-rate throughput and reduced CPU utilization.

LinkSec is an IEEE industry-standard feature that provides data protection in the network. The IEEE 802.3ae and IEEE 802.3af protocols provide hop-to-hop data protection between two network devices in the transaction line between the host and destination. The two network devices must support the LinkSec technology. The network devices could be servers, switches, and routers.

I/O Features for Multi-Core Processor Servers

Multiple queues & receive-side scaling
MSI-X support
Low Latency Interrupts
Header splits and replication in receive
Multiple queues: 8 queues per port
Tx/Rx IP, SCTP, TCP, and UDP checksum offloading (IPv4, IPv6) capabilities
Tx TCP segmentation offload (IPv4, IPv6)
Receive and Transmit Side Scaling for Windows- environment and Scalable I/O for Linux- environments (IPv4, IPv6, TCP/UDP)
IPsec Offload
LinkSec

Virtualization Features

Virtual Machine Device queues2 (VMDq)
Next-generation VMDq
IPv6 offloading
Advanced packet filtering
VLAN support with VLAN tag insertion, stripping and packet filtering for up to 4096 VLAN tags
PC-SIG SR-IOV Implementation (8 virtual functions per port)

Manageability Features

On-board microcontroller
Advanced filtering capabilities
Preboot execution Environment (PXE) Support
Simple Network Management Protocol (SNMP) and Remote Network Monitoring (RMON) Statistic Counters
Wake-on-LAN support
iSCSI boot
Watchdog timer
IEEE 1588 precision time control protocol

Network Operating Systems (NOS) Software Support

Windows 10
Windows 2000
Windows XP
Windows Vista 32-bit(64-bit)
Windows 7 32-bit(64-bit)
Windows 8 32-bit(64-bit)
Windows Server 2003 32-bit(64-bit)
Windows Server 2008 32-bit(64-bit)
Windows Server 2008 R2 32-bit(64-bit)
Windows Server 2012 R2 32-bit(64-bit)
Novell Netware 5.x,6.x
Linux kernel version 2.6.30 or greater (x86_64) (w/ SR-IOV support)
FreeBSD 7.x OR later
DOS
Novell ODI
OS 8 or later
SCO Open Server
UnixWare / OpenUnix 8
Sun Solaris x86
OS Independent
VMware ESX

Ordering Information:

M/N	Description
NIC-PCIE-1SFP-PLU	PCIe x1 1000Base SFP Port Fibre NIC (Intel 82576 based)