

# Product Brief

## Intel® PRO/1000 PF Quad Port Server Adapter

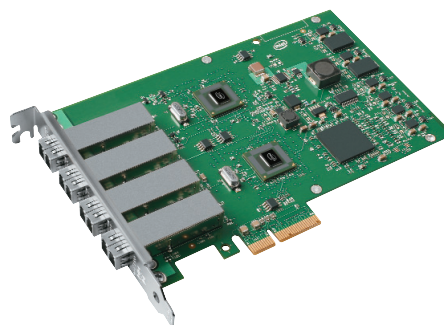
Network Connectivity



# Intel® PRO/1000 PF Quad Port Server Adapter

## Quad Port Fiber Gigabit Ethernet Server Adapter for PCI\* Express Slots

- Four high-performance PCI Express\* 1000 Mbps connections for slot-constrained servers requiring high bandwidth
- Multi-Gigabit Ethernet Scalability enhances and increases uptime through advanced server features
- Built on Intel® lead-free<sup>1</sup> technology



### Connectivity You Can Count On

Conserve valuable PCI Express (PCIe\*) server slots while adding multi-port Gigabit Ethernet capability with the Intel® PRO/1000 PF Quad Port Server Adapter. The dedicated input/output (I/O) bandwidth of PCIe ensures priority performance on each port – without bus sharing – for Gigabit Ethernet connectivity in fiber optic networks. The Intel PRO/1000 PF Quad Port Server Adapter improves

performance in multi-processor systems by balancing network loads across multiple central processing units (CPUs). Additionally, the Intel PRO/1000 PF Quad Port Server Adapter enables Intel® I/O Acceleration Technology (Intel® I/OAT)<sup>2</sup> for faster I/O processing on the new Dual-Core and Quad-Core Intel® Xeon® processor-based servers.

### Features

### Benefits

Two Intel® 82571GB Gigabit Controllers	Enables four Gigabit Ethernet connections on a single adapter, delivering increased bandwidth for slot-constrained servers and providing high performance, reliability, and two low-power integrated, dual port PCI Express Gigabit Ethernet controller chips
Load balancing on multiple CPUs	Increases performance on multi-processor systems by efficiently balancing network loads across CPU cores when used with Receive-Side Scaling from Microsoft or Scalable I/O on Linux*
Intel® I/OAT <sup>2</sup>	Accelerates I/O with higher throughput and lower CPU utilization by offloading processing overhead
Virtualization	Multi-port cards provide the platform with the port density required for virtualized environments
LC connectors	Small connector design is compatible with the latest fiber-optic cabling standards
1000BASE-SX multi-mode fiber	Ensures compatibility with fiber-optic cable lengths up to 275 meters
Support for most network operating systems (NOS)	Enables widespread deployment
Remote management support	Reduces support costs with remote management based on industry-wide standards
RoHS compliant <sup>3</sup> , lead-free <sup>1</sup> technology	Compliant with the European Union directive (effective as of July 2006) to reduce the use of hazardous materials
Intel® PROSet Utility for Windows*	Provides point-and-click power over individual adapters, advanced adapter features, connection teaming, and Device Manager virtual local area network (VLAN) configuration
Advanced cable diagnostics	Dynamically tests and reports network problems (error rate, cable length) and automatically compensates for cable issues (cross-over cable, wrong pin-out/polarity)
Intel backing	Backed by an Intel® limited lifetime warranty, 90-day money-back guarantee (U.S. and Canada), and worldwide support

The Intel PRO/1000 PF Quad Port Server Adapter represents the sixth generation of Intel® network adapters for Gigabit Ethernet over fiber optic cabling. For easy installation and management, all Intel® PRO Network Connections are supported by Intel® PRO

Intelligent Install and the new Intel® PROSet Utility for Windows\* Device Manager. Intel PROSet simplifies adapter installation and gives you point-and-click power to configure and manage all your Intel PRO Network Connections for connectivity you can count on.

## Specifications

### General

Product code	EXPI9404PF <sup>4</sup>
Connectors	Four LC Fiber optic connectors
IEEE standards/network topology	1000BASE-SX
Wiring	Multi-mode fiber (62.5 μm or 50 μm)

### Adapter Product Features

Intel® PROSet Utility and Intel® PRO Intelligent Install for easy installation	▪
Intel® lead-free <sup>1</sup> technology	▪
Plug and play specification support	Standard
Auto-negotiation, full-duplex capable	▪
Intel® I/OAT <sup>2</sup>	▪
Integrated media access control (MAC) and serdes	▪
Includes a full-height bracket	▪
RoHs <sup>3</sup>	▪
Cable distance	275 m at 62.5 μm; 550 m at 50 μm

### Network Management

Wired for Management (WfM) baseline v2.0 enabled for servers	▪
DMI 2.0 support, Windows Management Instrumentation (WMI) and SNMP-manageable SMBus support	▪
Remote Installation Services (RIS)	▪
Diagnostics (loopback, testability, PHY register access)	▪
Advanced configuration and power interface (ACPI) 1.0 power management	▪
Wake on LAN* support over PCI Express*	▪
PXE 2.0 enabled through boot read-only memory (ROM)	▪

### Network Operating Systems (NOS) Software Support

Microsoft Windows* Server 2003, Enterprise, Datacenter (32- and 64-bit)	▪
Microsoft Windows 2000	▪
Red Hat Linux* 2.4x or later (32- and 64-bit)	▪
FreeBSD* 4.x or later	▪
Novell Netware*	▪
Sun Solaris* x86, OS 8 and later	▪
SCO Open Server 5, OpenUNIX 8*	▪

### Intel Backing

Limited lifetime warranty	▪
90-day, money-back guarantee (U.S. and Canada)	▪

### Advanced Software Features

Adapter fault tolerance (AFT)	▪
Switch fault tolerance (SFT)	▪
Adaptive load balancing (ALB)	▪
Fast EtherChannel* <sup>4,5</sup> (FEC)	▪
Gigabit EtherChannel* <sup>4,5</sup> (GEC)	▪
Teaming support	Scales up to 8 connections
Multiple teams	Supports 4 separate teams, maximum
IEEE 802.3ad* (link aggregation control protocol) <sup>5</sup>	▪
Test switch configuration	Tested with major switch original equipment manufacturers (OEMs)
PCIe Hot Plug*/Active peripheral component interconnect (PCI)	▪
IEEE 802.1Q* VLANs	▪
IEEE 802.3* (z, ab, u, x) flow control support	▪
TCP checksum offload – transmission control protocol (TCP), user datagram protocol (UDP), Internet protocol (IP)	▪
IEEE 802.1p*	▪
TCP segmentation/large send offload	▪
Interrupt moderation	▪

### Technical Features

Data rate(s) supported per port	1000 Mbps
Bus type	PCI Express 1.0a
Bus width	x4 lane PCI Express, operable in x4, x8, x16 slots
Bus speed (x4, encoded rate)	10 Gbps uni-directional; 20 Gbps bi-directional
EEPROM-SPI and single EEPROM support	▪
Interrupt levels	INTA, INTB, INTC, INTD
IEEE support	802.3ab*
Hardware certifications	FCC B, UL, CE, VCCI, BSMI, CTICK, MIC
Controller-processor	Intel® 82571 GB
Typical power consumption	4.95 W (3.3 V @ 1.5 A)
Operating temperature	0–55° C
LEDs	4 (1/port, link and speed) solid and blinking

### Physical Dimensions

Length	16.76 cm (6.6 in)
Width	1.91 cm (0.75 in)
Height of end bracket	5.97 cm (2.35 in)

## Order Code

Single Unit: EXPI9404PF4

Bulk Pack: EXPI9404PFBLK (order 5, get 5)

## Companion Products

Consider these Intel® products in your server and network planning:

- Intel® PRO/1000 Server Adapters
  - Copper or fiber-optic network connectivity, up to four ports per card
  - Solutions for PCI Express, PCI-X\*, and PCI interfaces
- Intel® PRO/10GbE Server Adapters
  - CX4 offering for cost-effective 10 Gigabit-over-copper connections
  - Short-range and long-range connectivity solutions for fiber-optic cabling
- Intel® PRO/1000 Desktop Adapters for PCI Express and PCI interfaces
- Other Intel® PRO Desktop and Server Adapters
- Intel® Xeon® processors
- Intel® Server Boards

## Network-Ready PCs

Top PC and server manufacturers offer Intel® adapters in their new products. Specify or ask for Intel PRO Network Connections with your next PC, server, or mobile PC purchase. For a list of preferred suppliers, visit us at: [www.intel.com/network/connectivity/how\\_to\\_buy/index.htm](http://www.intel.com/network/connectivity/how_to_buy/index.htm).

## Customer Support

Intel® Customer Support Services offers a broad selection of programs including phone support and warranty service. For more information, contact us at <http://support.intel.com/support/network>. Service and availability may vary by country.

## For Product Information

To speak to a customer service representative regarding Intel products, please call 1-800-538-3373 (U.S. and Canada) or visit <http://www.intel.com/support/9089.htm> for the telephone number in your area. For additional product information on Intel® Networking Connectivity products, visit <http://www.intel.com/network/connectivity>.

To see the full line of Intel® PRO/1000 Network Adapters for PCI Express,  
visit [www.intel.com/network/connectivity](http://www.intel.com/network/connectivity)

<sup>1</sup>Lead has not been intentionally added, but lead may still exist as an impurity below 1000 ppm, or an approved RoHS exemption applies.

<sup>2</sup>Intel® I/O Acceleration Technology (Intel® I/OAT) requires an operating system that supports Intel I/OAT.

<sup>3</sup>Lead and other materials banned in RoHS Directive are either (1) below all applicable substance thresholds as proposed by the EU and China, or (2) an approved/pending exemption applies.

<sup>4</sup>Bulk packs also available for minimum order quantities of five adapters. One driver CD per order of five units.

<sup>5</sup>Available only when used with a capable switch.

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