



# Intel® PRO/1000 PF Dual Port Server Adapter

## Two Gigabit Fiber Server Connections in a Single PCI Express\* Slot

- Two high-performance PCI Express\* 1000BASE-SX connections for slot-constrained servers
- Multi-Gigabit scalability and increased 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 fiber-optic connectivity to enhance network performance with the Intel® PRO/1000 PF Dual Port Server Adapter. The dedicated input/output (I/O) bandwidth of PCIe ensures priority performance—without bus sharing—for Gigabit Ethernet connectivity in fiber-optic networks. Additionally, the Intel PRO/1000 PF Dual Port Server Adapter is designed to provide high performance in multi-processor systems by efficiently balancing network loads across multiple Central Processing Units (CPUs) when used with Receive-Side Scaling from Microsoft or Scalable I/O on Linux\*.

The Intel PRO/1000 PF Dual Port Server Adapter represents the fifth generation of Intel network adapters for Gigabit Ethernet, and features the high noise immunity and long-distance reach of fiber-optic connectivity. For easy installation and management, all Intel® PRO Network Connections are supported by Intel® PRO Intelligent Install and the new Intel® PROSet for Microsoft® Device Manager. Intel PROSet Utility 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.

### Features

### Benefits

Intel® 82571EB Gigabit Controller	• Enables two Gigabit connections in a single adapter, delivering increased bandwidth for slot-constrained servers and providing high performance, reliability, and low power use in a single, integrated, dual port PCI Express Gigabit Ethernet controller chip
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*
Interrupt moderation	• Delivers increased performance while significantly reducing CPU utilization
Compatible with x4, x8, and x16 full-height <sup>2</sup> PCI Express* slots	• Allows dual-port operation in almost any PCI Express server slot, except x1 slots, and allows each port to operate without interfering with the other
Support for most network operating systems (NOS)	• Enables widespread deployment
Remote management support	• Reduces support costs with remote management based on industry-wide standards
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
RoHS compliant <sup>3</sup> ; lead-free <sup>1</sup> technology	• Compliant with the new European Union directive (effective July 2006) to reduce the use of hazardous materials
Intel® PROSet Utility for Microsoft® Device Manager	• Provides point-and-click power over individual adapters, advanced adapter features, connection teaming, and virtual local area network (VLAN) configuration
Intel backing	• Backed by an Intel® limited lifetime warranty, 90-day, money-back guarantee (U.S. and Canada), and worldwide support

# Specifications: Intel® PRO/1000 PF Dual Port Server Adapter

## General

Product code	EXPI9402PF <sup>4</sup>
Connectors	LC
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	•
Integrated media access control (MAC) and physical layer (PHY)	•
Includes a full-height bracket	•
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* 5.x, 6.x	•
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>5</sup> (FEC)	•
Gigabit EtherChannel* <sup>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; 10 Gbps bi-directional
EEPROM-SPI and single EEPROM support	•
Interrupt levels	INTA
IEEE support	802.3z*
Hardware certifications	FCC B, UL, CE, VCCI, BSMI, CTICK, MIC
Controller-processor	Intel® 82571EB
Typical power consumption	3.3 W (3.3 V @ 1 A)
Operating temperature	0–55° C
LEDs	4 (1/port, link and speed) solid and blinking

## Physical Dimensions

Length	12.95 cm (5.1 in)
Width	2.16 cm (0.85 in)
Height of end bracket	12.0 cm (4.725 in)

## Order Code

Single Unit: EXPI9402PF<sup>4</sup>

## 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 [www.intel.com/support/9089.htm](http://www.intel.com/support/9089.htm) for the telephone number in your area. For additional product information on Intel® Networking Connectivity products, visit [www.intel.com/network/connectivity](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>Low-profile brackets will be included with this product in early 2006.

<sup>3</sup>Lead and other materials banned in RoHS Directive are either (1) below all applicable substance thresholds as proposed by the EU 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.

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. Intel products are not intended for use in medical, life saving, or life sustaining applications. Intel may make changes to specifications and product descriptions at any time, without notice.

\*Other names and brands may be claimed as the property of others.

Copyright © 2005 Intel Corporation. All rights reserved.

Intel, the Intel logo, and Intel Xeon are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

