

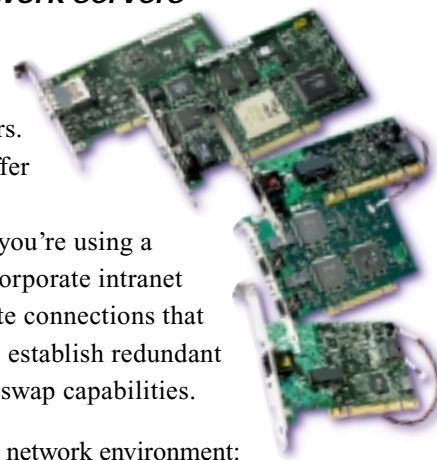
# Intel® Server Adapters

*Enhanced scalability and availability for network servers*

## ADAPTER FAMILY

- **SERVER ADAPTERS**  
[www.intel.com/network/products/server\\_adapters.htm](http://www.intel.com/network/products/server_adapters.htm)
- **DESKTOP ADAPTERS**  
[www.intel.com/network/products/desktop\\_adapters.htm](http://www.intel.com/network/products/desktop_adapters.htm)
- **MOBILE ADAPTERS**  
[www.intel.com/network/products/mobile\\_adapters.htm](http://www.intel.com/network/products/mobile_adapters.htm)

Give your servers fast, reliable, more secure network connections with Intel's award-winning line of server adapters. These Fast Ethernet and Gigabit Ethernet Server Adapters offer industry-leading performance plus advanced features to help reduce server bottlenecks and improve availability. Whether you're using a simple file server, a transaction-oriented database server, a corporate intranet server or an enterprise-wide application server, you can create connections that are more secure, aggregate bandwidth for higher throughput, establish redundant network links and enhance online serviceability through hot-swap capabilities.



Choose from a variety of Intel® Server Adapters to best fit your network environment:

**Intel® PRO/1000 Gigabit Server Adapter** – Industry-leading performance for connecting high-end corporate servers.

**Intel® PRO/100 Intelligent Server Adapter** – A boost for overloaded Web and file servers.

**NEW Intel® PRO/100 S Server Adapter** – Standards-based LAN security designed for e-Business with a network encryption co-processor plus advanced management features.

**Intel® PRO/100+ Server Adapter** – Enhanced scalability and availability for virtually all server environments, plus advanced management features for reducing support costs.

**Intel® PRO/100+ Dual Port Server Adapter** – Increased flexibility and scalable bandwidth for workgroup and departmental servers with limited PCI slots.

## Widespread Compatibility

Intel Server Adapters based on the powerful Intel® 82559 and 82558 controllers add another dimension of compatibility. Providing cross-platform driver compatibility with Intel's new generation of desktop and mobile adapters, Intel® SingleDriver™ technology saves LAN administrators time and money with uniform installation and administration across Intel® 10/100 network connections. In addition, the PRO/100 family is backwards compatible with legacy Intel adapters.

Features	Benefits
<b>An Award-Winning Family of Server Adapters</b>	Top performance, scalability and maximized uptime for a variety of server environments, from small workgroup servers to high-end corporate servers
<b>Widespread Compatibility</b>  Intel® SingleDriver™ Technology	Compatible with all major network operating systems, and offered by the world's top server manufacturers in their network-ready servers  The common set of drivers across Intel 10/100 adapters simplifies setup and maintenance, and decreases driver conflicts among new and legacy systems
<b>Scalable Bandwidth</b>  Adaptive Load Balancing Fast EtherChannel® or Intel Link Aggregation Gigabit EtherChannel® or Intel Link Aggregation	Alleviate server bottlenecks by balancing traffic among multiple adapters: <ul style="list-style-type: none"><li>■ Up to 400Mbps</li><li>■ Up to 800Mbps at full-duplex</li><li>■ Up to 8Gbps at full-duplex</li></ul>
<b>Adapter Fault Tolerance</b> Mixed Adapter Teaming  Preferred Primary	Increase uptime with automatic redundant links: <ul style="list-style-type: none"><li>■ Team any combination of Intel® Server Adapters and LAN-on-motherboard components for increased flexibility in failover solutions</li><li>■ Specify one adapter per team as the primary adapter</li></ul>
<b>PCI Hotplug</b>	Minimize downtime by replacing an adapter with the server running
<b>Standards-Based Management</b> Wired for Management (WfM) 2.0 Desktop Management Interface (DMI) 2.0 SNMP	Reduce support costs with remote management based on industry-wide standards



# Intel® PRO/100 S Server Adapter

## KEY FEATURES

- **High performance LAN security optimized for e-Business**
- **Advanced features alleviate server bottlenecks while maximizing uptime**
- **Intel® SingleDriver™ technology reduces network complexity**

*Trusted, managed 10/100 connections optimized for servers*

The new Intel® PRO/100 S Server Adapter helps to protect sensitive data traveling on the LAN with standards-based security while maintaining high performance. The Intel PRO/100 S Server Adapter combines IPSec encryption offloading with advanced management features found in the Intel® PRO/100+ Server Adapter.

### *Intel® 82594ED network encryption co-processor –*

*Offloads encryption from server's processor to help maximize network performance and free system resources for other critical server tasks.*

### *Intelligent controller –*

*Intel® Adaptive Technology dynamically tunes transmission rate to reduce collisions. Also enables software upgrades to the adapter microcode.*

### *Optimized for Windows® 2000 –*

*Developed in collaboration with Microsoft, the Intel® PRO/100 S Server Adapter is specifically designed for Windows® 2000 to run encryption on your network without compromising performance.<sup>††</sup>*

### *Scalable throughput and high availability –*

*Aggregates bandwidth up to 800Mbps, and establishes automatic redundant connections using any combination of Intel Server Adapters.*

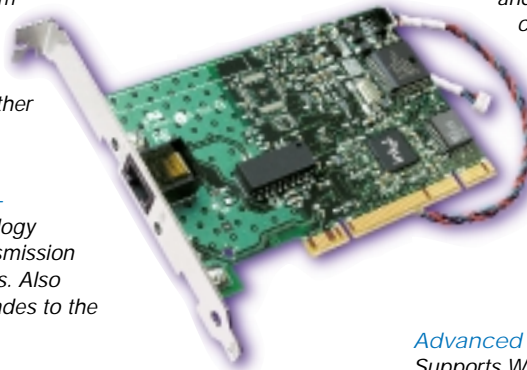
### *DES and 3DES*

### *encryption algorithms –*

*Uses the highest level of security widely available to protect data traveling on the LAN.*

### *Advanced remote management –*

*Supports WfM<sup>®</sup> 2.0, SNMP, DMI 2.0, and remote server configuration via Wake on LAN and an onboard Intel® Boot Agent.*



## What Standards-based Security Means to Your Network

Security breaches by people *inside* the network are more frequent than break-ins from the outside (55% versus 30%).<sup>†</sup>

Traditional LAN security safeguards, such as firewalls, may protect the “front door” of your network. But, according to an FBI<sup>†</sup> study, most security breaches – unauthorized access, fraud, theft and other abuses – occur within the LAN. The Intel® PRO/100 S Adapters help to protect sensitive data on the LAN by providing IPSec (Internet Protocol Security) encryption capabilities<sup>††</sup>. IPSec is an industry-standard that can run on any TCP/IP network, including corporate LANs. IPSec:

- Authenticates users to help prevent unauthorized access to data.
- Helps maintain data integrity during transport by preventing malicious attacks and tampering.
- Encrypts data packets to help ensure confidentiality.

But, the process of encrypting and decrypting data can slow down servers, forcing a trade-off between security and speed. Working with Microsoft, Intel developed a solution that gives you both security and performance: Security adapters that offload the encryption-decryption process to an onboard Intel® 82594ED network encryption co-processor, freeing the CPU to run at optimal speed. The result: the standards-based security of IPSec, combined with the industry-leading performance of Intel® Server Adapters – your key to creating trusted, secure workgroups.

<sup>†</sup> FBI/CBI Computer Crime and Security Survey, 1999.

# Intel® PRO/100+ Server Adapter

## KEY FEATURES

- **Scalable performance**  
(up to 800Mbps)  
reduces server  
bottlenecks
- **Redundant  
connections maximize  
server uptime**
- **Remote Server  
Management helps  
increase IT  
staff efficiency**

"Intel has gone even further with its server adapter line, offering great performance and advanced bonding capabilities that can literally rock your world."

InternetWeek, April, 1998



September  
1998



Product of the  
Year Award 1998

## The fast, manageable 10/100 adapter optimized for server uptime

The Intel® PRO/100+ Server Adapter can help alleviate server bottlenecks and increase uptime in a wide variety of server environments. Based on Intel's powerful 82559 controller, it incorporates a variety of features for even faster throughput, increased flexibility and reduced support costs.

**Scalable throughput and high availability –**  
Aggregate bandwidth up to 800Mbps, and establish automatic redundant connections using any combination of Intel Server Adapters.

**Wide compatibility –**  
Compatible with all major network and server operating systems. Using the same core driver suite as Intel's newest desktop and mobile adapters, Intel® SingleDriver™ technology provides uniform installation and administration throughout the network.

**Get up to two connections  
per PCI slot –**

Team with the Intel® 82559 or 82558 Onboard LAN controller<sup>1</sup> for an additional redundant connection.

**Advanced remote management –**

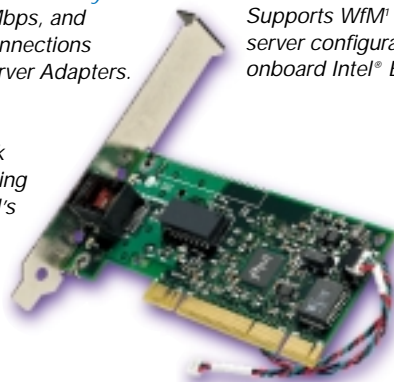
Supports WfM<sup>2</sup> 2.0, SNMP, DMI 2.0, and remote server configuration via Wake on LAN and an onboard Intel® Boot Agent.

**Improved server efficiency –**  
Intel's Adaptive Technology, TCP checksum offloading, and Adaptive Performance Tuning work together to enhance server performance.

**On-line serviceability –**

PCI Hotplug lets you swap out an adapter with the server online.

**High performance and flexibility –**  
10/100 and full-duplex auto-negotiation, 802.1Q VLANs, 802.3x flow control.



# Intel® PRO/100+ Dual Port Server Adapter

## KEY FEATURES

- **Two 10/100Mbps  
ports on one card**
- **Server bandwidth  
scales to 800Mbps**
- **High-link availability  
through Adapter Fault  
Tolerance**

## Two 10/100Mbps ports for added server flexibility

Scale bandwidth and increase availability for your departmental and workgroup servers that don't have PCI slots to spare. With two 10/100 ports, each adapter delivers up to 400Mbps, so you get twice the bandwidth per server slot.

**Scalable throughput and high availability –**

Aggregate bandwidth up to 400Mbps with one adapter, up to 800Mbps with two; and establish automatic redundant connections to help increase availability.

**Simultaneous 10Mbps  
and 100Mbps –**  
Run each port independently to support network segments at different speeds.

**Up to three connections  
per PCI slot –**

Team with the Intel® 82559 or 82558 Onboard LAN controller for an additional resilient connection.

**Intel® SingleDriver™ technology –**

Manage your Intel 10/100 PC, notebook, and server connections as one with a common set of network drivers.

**Intelligent controller –**  
Intel® Adaptive Technology dynamically tunes transmission rate to reduce collisions. Also enables software upgrades to the adapter microcode.

**High performance and  
flexibility –**

10/100 and full-duplex auto-negotiation, 802.1Q VLANs, 802.3x flow control.

**On-line serviceability –**  
PCI Hotplug lets you swap out an adapter with the server online.



# Intel® PRO/1000 Gigabit Server Adapter

*The high performance Gigabit Server Adapter*

As Fast Ethernet migrates to the desktop, a higher bandwidth link is needed to handle increasing demands on high-end corporate servers. Along with the Intel® Express Gigabit Switch, this 32- or 64-bit PCI adapter provides a next-generation, high-speed Gigabit solution that can eliminate bottlenecks and integrate easily with your Ethernet and Fast Ethernet infrastructure.

*Top performing Gigabit adapter –*  
"No other adapter comes as close to delivering 1000Mbps throughput."

– LANQuest Labs Report  
August, 1998

*SC Fiber connector for 1000BASE-SX*

*Scalable throughput and high availability –*  
Aggregate bandwidth up to 8Gbps, and establish automatic redundant connections using any combination of Intel® Server Adapters.



*Broad interoperability –*  
Compatible with industry-standard switches in Windows NT®, Novell®, UNIX®, and Linux® environments.

*Supports industry standards –*  
– 802.3z Gigabit Ethernet  
– 802.1Q VLANs and 802.3x flow control for advanced traffic management.

*Reduce support costs with remote management –*  
Supports Wired for Management (WfM) 2.0, SNMP and DMI 2.0.

*On-line serviceability –*  
PCI Hotplug technology complements Adapter Fault Tolerance, enabling a failed adapter to be replaced without interrupting server operation.

## KEY FEATURES

- **Industry-leading performance with a highly integrated Intel® controller**
- **Increased server availability through Adapter Fault Tolerance and PCI Hotplug**
- **Scalable throughput with Adaptive Load Balancing and Gigabit EtherChannel\***

"If speed is what you need, look no further. The Intel PRO/1000 Gigabit Server Adapter is leaps and bounds ahead of the competition."  
Network Computing, September, 1998



September 1998

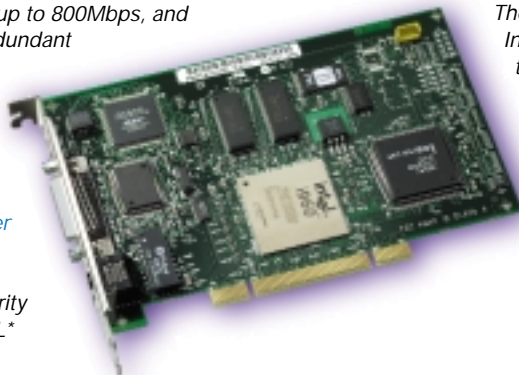
# Intel® PRO/100 Intelligent Server Adapter

*The 10/100Mbps adapter optimized for servers*

This adapter can significantly improve performance and scale bandwidth for high-demand servers operating in NetWare®, UNIX® or Windows® environments. Busy Web servers will benefit most from the added power of the onboard i960® processor.

*Scalable throughput and high availability –*  
Aggregate bandwidth up to 800Mbps, and establish automatic redundant connections using any combination of Intel Server Adapters.

*Reallocate server resources for greater network flexibility –*  
Improve network performance and security with up to 63 Cisco ISL\* Virtual LANs (VLANs).



*Free your server for faster processing –*  
The onboard i960® processor offloads Interrupt Service Routines (ISRs) so the server CPU can handle more transactions per second.

*Adaptive technology –*  
Dynamically tunes transmission rate to help reduce collisions, and enable software upgrades to the adapter microcode.

*10/100Mbps and full-duplex auto-negotiation –*  
Supports the easiest possible migration to high performance network environments.

## KEY FEATURES

- **On-board i960® processor delivers low CPU utilization**
- **Server bandwidth scales up to 800Mbps**
- **High-link availability through Adapter Fault Tolerance**

"If you're aiming to build the fastest, most scalable BorderManager® server, Novell recommends the Intel PRO/100 [Intelligent] Server Adapter..."<sup>3</sup>



April 1998



SPECIFICATIONS		Intel® Server Adapters			
	Intel® PRO/100 S Server Adapter	Intel® PRO/100+ Server Adapter	Intel® PRO/100+ Dual Port Server Adapter	Intel® PRO/100 Intelligent Server Adapter	Intel® PRO/1000 Gigabit Server Adapter
<b>IEEE STANDARD/ NETWORK TOPOLOGY</b>	10BASE-T, 100BASE-TX	10BASE-T, 100BASE-TX	10BASE-T, 100BASE-TX	10BASE-T, 100BASE-TX, 100BASE-FX	1000BASE-SX
<b>WIRING AND CONNECTORS</b>	Cat5, 2pr; RJ-45	Cat5, 2pr; RJ-45	Cat5, 2pr; two, RJ-45	Cat5, 2pr; RJ-45, MII	Multi-mode Fiber (62.5-50µm); SC connector
<b>PRODUCT CODE</b>	PILA8474B: (DES) PILA8474BUS: (3DES)*	PILA8470B	PILA8472	PILA8480	PWLA8490
<b>ADAPTER PRODUCT FEATURES</b> Intel® SingleDriver™ Technology Intel® Adaptive Technology Plug and Play Specification Support Easy Installation, Intel® PROSet Utility Auto-negotiation, Full-duplex Capable	■ ■ Standard ■ ■	■ ■ Standard ■ ■	■ ■ Standard ■ ■	■ ■ Standard ■ ■	Standard ■ ■
<b>NETWORK MANAGEMENT</b> WiM Baseline v2.0 Enabled for Servers DMI 2.0 Support, WMI & SNMP-manageable Offline Diagnostics Intel® Boot Agent ACPI Power Management Wake on LAN*	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■
<b>NOS SOFTWARE SUPPORT**</b> Microsoft Windows* 2000 Microsoft Windows NT* 3.51, 4.0 Microsoft Windows* 95, 98 Novell NetWare* 3.x, 4.11, 4.2 & 5 SunSoft Solaris* 2.6, 7.0 SCO UnixWare* 2.1.2, 2.1.3, 7 Linux* 2.2.5 or Later	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ (except 3.11) ■	■ ■ ■ (except 3.11) ■ ■
<b>ADVANCED SOFTWARE FEATURES²</b> Adapter Fault Tolerance Adaptive Load Balancing Fast EtherChannel*(when used with a Fast EtherChannel-enabled switch) Gigabit EtherChannel* (when used with a Gigabit EtherChannel-enabled switch) Intel Link Aggregation (when used with Intel® Express Switches) PCI HotPlug and Active PCI* 802.1Q VLANs Cisco ISL* VLANs 802.3x Flow Control TCP Checksum Offload Intel® Priority Packet, 802.1p Adaptive Performance Tuning	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■ 802.1p ■	■ ■ ■ ■ ■ ■ ■ ■ 802.1p
<b>TECHNICAL FEATURES</b> Data Rate(s) Supported Per Port Onboard Memory Interrupt Levels IEEE Support Data Path Width Hardware Certifications Data Transfer Mode Controller - Processor Power Requirement Operating Temperature Operating Humidity	10 & 100Mbps 18K cache INTA 802.2 & 802.3 32-bit PCI FCC B, CE Bus-master DMA Intel® 82559C 380mA @+5VDC 0-55°C 85% at +55°C	10 & 100Mbps 6K cache INTA 802.2 & 802.3 32-bit PCI FCC B, CE Bus-master DMA Intel® 82559C 134mA @+5VDC 0-55°C 85% at +55°C	10 & 100Mbps 12K cache INTA & INTB 802.2 & 802.3 32-bit PCI FCC B, CE Bus-master DMA two, Intel® 82558 1.3A @+5VDC 0-55°C 85% at +55°C	10 & 100Mbps 1MB INTA 802.2 & 802.3 32-bit PCI FCC A, CE Bus-master DMA Intel® 82557 & i960 RD processor 3A @+5VDC +10-55°C 85% at +55°C	1000Mbps 64KB INTA 802.2 & 802.3z 32-bit and 64-bit PCI FCC B, CE Bus-master DMA Intel® 82542 1A @+5VDC 0-55°C 85% at +55°C
<b>SECURITY FEATURES**</b> IPSec Standard (Windows* 2000) Intel® 82594ED Encryption Co-processor Encryption* DES (56 bit) 3DES (168 bit)  Authentication Algorithms SHA-1 MD5 Authentication Method Preshared Key Entrust/PKI*	■ ■ PILA8474B PILA8474BUS Availability subject to export regulations  ■ ■ ■ ■ ■				
<b>INTEL BACKING</b> Limited Lifetime Warranty 90-day Money-back Guarantee	■ ■	■ ■	■ ■	■ ■	■ ■

## FOR PRODUCT INFORMATION

World Wide Web	<a href="http://www.intel.com/network">www.intel.com/network</a>
U.S. and Canada	800-538-3373
Europe	+44-1793-431-155
Japan	+81-298-47-0800
Hong Kong, Taiwan, Korea, Singapore and ASEAN	+65-735-3811
Australia	+61-2-9937-5800

## ORDER CODES

Intel® PRO/1000 Gigabit Server Adapter	PWLA8490
Intel® PRO/100 Intelligent Server Adapter	PILA8480
Intel® PRO/100+ Dual Port Server Adapter	PILA8472
Intel® PRO/100+ Server Adapter	PILA8470B
Intel® PRO/100 S Adapter (DES)	PILA8474B
Intel® PRO/100 S Adapter (3DES) <sup>4</sup>	PILA8474BUS

Also available in 5-packs, add PAK5 to Order Code

## COMPANION PRODUCTS

**Consider these related Intel® products in your network planning.**

- Intel® Express Gigabit Switch
- Intel® PRO/100 Desktop Adapters
- Intel® PRO/100 Mobile Adapters
- Intel® Server Boards

## CUSTOMER SUPPORT

Intel® Customer Support Services offers a broad selection of programs including extended phone support, upgrades, parts replacement, on-site services and installation. For more information, contact us on the World Wide Web at [support.intel.com/support/network](http://support.intel.com/support/network). Service and availability may vary by country.

## ON-LINE DOCUMENTS

For the latest product information, visit us on the World Wide Web at [www.intel.com/network](http://www.intel.com/network)

For more detailed information on WfM, visit [www.intel.com/eBusiness/computing/wfm.htm](http://www.intel.com/eBusiness/computing/wfm.htm)

## NETWORK READY PCs

Top PC and server manufacturers offer Intel® adapters in their new products. Specify or ask for Intel networking technology with your next PC, server or notebook purchase.

For a list of preferred suppliers, visit us on the World Wide Web: [www.intel.com/network/how\\_to\\_buy/oem.htm](http://www.intel.com/network/how_to_buy/oem.htm)

<sup>11</sup> Go to [www.intel.com/network/os](http://www.intel.com/network/os) for latest OS/NOS support.

<sup>1</sup> Intel® 82558 Onboard LAN controller is available on Intel® T440BX and Intel® N440BX Server Boards. Check with your server vendor or reseller for other server boards that specify the Intel 82559 and 82558 controllers.

<sup>2</sup> Note: Advanced Server Adapter features are supported by Windows NT\* 4.0 (and above) and NetWare\* 4.1 (and above). See Web for details [http://www.intel.com/network/products/server\\_adapters.htm](http://www.intel.com/network/products/server_adapters.htm)

<sup>3</sup> From A Quick Guide to Web Server Acceleration on the Novell Web site at [www.novell.com/bordermanager/prpt1.html](http://www.novell.com/bordermanager/prpt1.html)

<sup>4</sup> Unlawful to export encryption outside the U.S. or Canada except under an approved Department of Commerce export license or applicable license exception. For more information on export restrictions, visit [www.bxa.doc.gov/encryption](http://www.bxa.doc.gov/encryption)

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