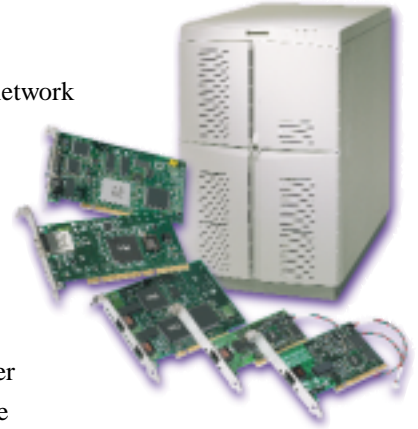# Intel® Server Adapters

Enhanced scalability and availability for network servers

Give your servers and workstations fast, reliable, more secure network connections with Intel's award-winning line of server adapters. The Fast Ethernet and Gigabit Ethernet adapters offer industry-leading performance plus advanced features to help reduce bottlenecks and improve availability. Whether you're using a simple file server, a transaction-oriented database server, a corporate intranet server or a workstation, 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® adapters to best fit your network environment:

NEW Intel® PRO/1000 F Server Adapter – Industry-leading Gigabit performance for connecting servers and workstations via fiber cabling.

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.

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

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 backward compatible with legacy Intel adapters.

Features	Benefits
An Award-winning Family of Server Adapters	Top performance, scalability and maximized uptime for a variety of server environments, from small workgroup servers to high-end corporate servers
Widespread Compatibility	Compatible with all major network operating systems, and offered by the world's top server manufacturers in their network-ready servers
Intel® SingleDriver™ technology	The common set of drivers across Intel 10/100 adapters simplifies setup and maintenance, and decreases driver conflicts among new and legacy systems
Scalable Bandwidth	Alleviate bottlenecks by balancing traffic among multiple adapters:
Adaptive Load Balancing	■ Up to 800Mbps
Fast EtherChannel*, Intel Link Aggregation or IEEE 802.3ad	■ Up to 1.6Gbps at full-duplex
Gigabit EtherChannel*, Intel Link Aggregation or IEEE 802.3ad	■ Up to 16Gbps at full-duplex
Adapter Fault Tolerance Mixed-adapter Teaming/Mixed-speed Teaming	Increase uptime with automatic redundant links: ■ Team any combination of Intel® PRO/100 and PRO/1000 Server Adapters or LAN-on-motherboard components for increased flexibility in failover situations
Preferred Primary	■ Specify one adapter per team as the primary adapter
PCI Hot Plug and Active PCI	Minimize downtime by installing, upgrading or replacing an adapter with the server running
Standards-based Management 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®

Intel® PRO/100 S Server Adapter

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.††*

Scalable throughput and high availability –
Aggregate bandwidth up to 1.6Gbps, and establish automatic redundant connections using any combination of Intel® PRO/100 and PRO/1000 Server Adapters or LAN-on-motherboard components.

DES and 3DES encryption algorithms –
Uses the highest level of security widely available to protect data traveling on the LAN.

Advanced remote management –
Supports Wired for Management (WfM) 2.0, SNMP, DMI 2.0, and remote server configuration via Wake on LAN and an onboard Intel® Boot Agent.

NEW! IPSec legacy support –
Intel® PRO/100 Packet Protect adds IPSec functionality and encryption offloading to Windows NT 4.0.*

What Standards-based Security Means to Your Network

Traditional LAN security safeguards, such as firewalls, may protect the "front door" of your network. But, according to an FBI† 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††. 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.

Security breaches by people *inside* the network are more frequent than break-ins from the outside (55% of companies reported internal breaches, while 30% reported external).†

† CSI/FBI Computer Crime and Security Survey, 1999.

Intel® PRO/100+ Server Adapter

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 1.6Gbps, and establish automatic redundant connections using any combination of Intel® PRO/100 and PRO/1000 Server Adapters or LAN-on-motherboard components.

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.

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

Advanced remote management –
Supports Wired for Management (WfM) 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 Hot Plug and Active PCI lets you swap out an adapter with the server online.
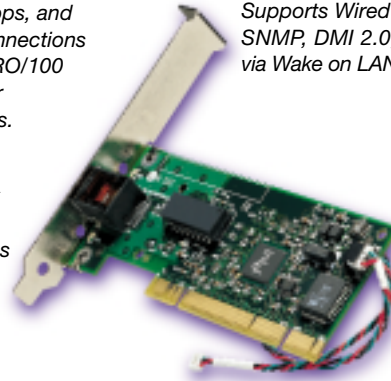
Get up to two connections per PCI slot –
Team with the Intel® 82559 or 82558 Onboard LAN controller[1] for an additional redundant connection.

Intel® PRO/100+ Dual Port Server Adapter

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 800Mbps with two adapters, up to 1.6Gbps with four adapters; 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.

On-line serviceability –
PCI Hot Plug and Active PCI let you swap out an adapter with the server online.

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, 802.1p Prioritization.

Intel® PRO/1000 F Server Adapter

The Fiber Gigabit connection for your most demanding servers and workstations

Servers and workstations need higher bandwidth connections to meet increasing data traffic demands. This 64 bit/66MHz PCI adapter is Intel's second-generation Gigabit solution, eliminating bottlenecks with industry-leading Gigabit performance while integrating easily into your existing Ethernet infrastructure.

SC Fiber connector for 1000BASE-SX

Industry-leading Gigabit performance –
Featuring the second-generation Intel® 82543GC Gigabit Controller. This adapter optimizes bus architecture for maximum performance from servers and workstations with 64-bit/66MHz PCI slots.

Broad interoperability –
Supports IEEE 802.3z Gigabit Ethernet standard for easy integration and interoperability with existing Ethernet and Fast Ethernet infrastructures.

Reduced support costs –
Driver is backward compatible to work with existing Intel® PRO/1000 Gigabit Server Adapters. Supports Wired for Management (WfM) 2.0, SNMP and DMI 2.0.

Scalable throughput –
Aggregate bandwidth up to 16Gbps using Adaptive Load Balancing, Gigabit EtherChannel*, Intel Link Aggregation or IEEE 802.3ad.

High availability and on-line serviceability –
PCI Hot Plug and Active PCI enable you to replace a failed adapter without interrupting service, as traffic automatically diverts to other adapters. Adapter Fault Tolerance provides redundant link or workstation protection, should one of the links to the server or workstation fail.

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 1.6Gbps, and establish automatic redundant connections using any combination of Intel PRO/100 and PRO/1000 Server Adapters or LAN-on-motherboard connections.

Free your server for faster processing –
The onboard i960® processor and 1MB RAM 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.

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

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

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 F Server Adapter
IEEE STANDARD/ NETWORK TOPOLOGY	10BASE-T, 100BASE-TX	10BASE-T, 100BASE-TX	10BASE-T, 100BASE-TX	10BASE-T, 100BASE-TX, 100BASE-FX	1000BASE-SX
WIRING AND CONNECTORS	Cat-5, 2 pair; RJ-45	Cat-5, 2 pair; RJ-45	Cat-5, 2 pair; two, RJ-45	Cat-5, 2 pair; RJ-45, MII	Multi-mode Fiber (62.5-50µm); SC connector
PRODUCT CODE	PILA8474B: (DES) PILA8474BUS: (3DES)[4]	PILA8470B	PILA8472	PILA8480	PWLA8490SX
ADAPTER PRODUCT FEATURES					
Intel® SingleDriver™ technology	■	■	■		
Intel® Adaptive Technology	■	■	■	■	
Plug and Play Specification Support	Standard	Standard	Standard	Standard	Standard
Easy Installation, Intel® PROSet Utility	■	■	■	■	■
Auto-negotiation, Full-duplex Capable	■	■	■	■	■
PCI Buses Supported	32/33	32/33	32/33	32/33	64/66, 64/33, 32/66, 32/33
NETWORK MANAGEMENT					
WfM Baseline v2.0 Enabled for Servers	■	■	■		■
DMI 2.0 Support, WMI & SNMP-manageable	■	■	■	■	■
Offline Diagnostics	■	■	■		
Intel® Boot Agent	■	■			
ACPI Power Management	■	■	■		■
Wake on LAN*	■	■			
NOS SOFTWARE SUPPORT††					
Microsoft Windows* 2000	■	■	■	■	■
Microsoft Windows NT* 3.51, 4.0	■	■	■	■	■
Microsoft Windows 95, 98	■	■	■		■
Novell NetWare* 3.x, 4.11, 4.2 & 5	■	■	■	■ (except 3.11)	■ (except 3.11)
SunSoft Solaris* 2.6, 7.0	■	■	■		■
SCO UnixWare* 2.1.2, 2.1.3, 7	■	■	■	■	■
Linux* 2.2.5 or Later	■	■	■		■
ADVANCED SOFTWARE FEATURES²					
Adapter Fault Tolerance	■	■	■	■	■
Adaptive Load Balancing	■	■	■	■	■
Fast EtherChannel* (when used with a capable switch)	■	■	■	■	
Gigabit EtherChannel (when used with a capable switch)					■
Intel Link Aggregation (when used with a capable switch)	■	■	■	■	■
IEEE 802.3ad (when used with a capable switch)	■	■	■	■	■
PCI Hot Plug and Active PCI	■	■	■	■	■
802.1Q VLANs	■	■	■	■	■
Cisco ISL* VLANs				■	
802.3x Flow Control	■	■	■		■
TCP Checksum Offload	■	■	■		■
Intel® Priority Packet, 802.1p	■	■	■		802.1p
Adaptive Performance Tuning	■	■	■	■	
TECHNICAL FEATURES					
Data Rate(s) Supported Per Port	10 & 100Mbps	10 & 100Mbps	10 & 100Mbps	10 & 100Mbps	1000Mbps
Onboard Memory	18KB cache	6KB cache	12KB cache	1MB	64KB
Interrupt Levels	INTA	INTA	INTA & INTB	INTA	INTA
IEEE Support	802.2 & 802.3	802.2 & 802.3	802.2 & 802.3	802.2 & 802.3	802.2 & 802.3z
Data Path Width	32-bit PCI	32-bit PCI	32-bit PCI	32-bit PCI	32-bit and 64-bit PCI
Hardware Certifications	FCC B, CE	FCC B, CE	FCC B, CE	FCC A, CE	FCC B, CE
Data Transfer Mode	Bus-master DMA	Bus-master DMA	Bus-master DMA	Bus-master DMA	Bus-master DMA
Controller - Processor	Intel® 82559C	Intel® 82559	two, Intel® 82558	Intel® 82557 & i960® RD processor	Intel® 82543GC
Power Requirement	380mA @+5VDC	134mA @+5VDC	1.3A @+5VDC	3A @+5VDC	1A @+5VDC
Operating Temperature	0-55°C	0-55°C	0-55°C	+10-55°C	0-55°C
Operating Humidity	85% at +55°C	85% at +55°C	85% at +55°C	85% at +55°C	85% at +55°C
SECURITY FEATURES††					
IPSec Standard (Windows 2000)	■	■	■	■	■
IPSec Standard (Windows NT 4.0) with Intel® PRO/100 Packet Protect	■	■	■		
Intel® 82594ED Encryption Co-processor	■				
Encryption³					
DES (56 bit)	Hardware offload	Software only	Software only	Software only	Software only
3DES (168 bit)	Hardware offload	Software only	Software only	Software only	Software only
Authentication Algorithms					
SHA-1	Hardware offload	Software only	Software only	Software only	Software only
MD5	Hardware offload	Software only	Software only	Software only	Software only
Authentication Method					
Preshared Key	■	■	■		
Entrust/PKI*	■	■	■		
INTEL BACKING					
Limited Lifetime Warranty	■	■	■	■	■
90-day Money-back Guarantee	■	■	■	■	■

FOR PRODUCT INFORMATION

To speak to a customer service representative regarding Intel products, please check **www.intel.com/support/9089.htm** for the telephone number in your area. For additional product information on the Intel Networking and Communication products, visit **www.intel.com/network**

ON-LINE DOCUMENTS

For the latest product information, visit us on the World Wide Web at www.intel.com/**network**

For more detailed information on Wired for Management (WfM), visit www.intel.com/eBusiness

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

ORDER CODES

Intel® PRO/1000 F Server Adapter	PWLA8490SX
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)[3]	PILA8474BUS

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

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** Service and availability may vary by country.

COMPANION PRODUCTS

Consider these related Intel® products in your network planning.

- Intel® PRO/100 Desktop Adapters
- Intel® PRO/100 Mobile Adapters
- Intel® Server Boards
- Intel® NetStructure™ Switches
- Intel® Express Switches
- Intel® Express Hubs

0600/OC/EW/AO/PP/10K   Please Recycle   NP1454.02