Intel® PRO/1000 Gigabit Adapters

10/100/1000Mbps Copper Connections for Servers and Desktops

Now, for the first time, Intel® network adapters enable you to deploy Gigabit Ethernet end-to-end. Quickly and inexpensively increase the speed on your existing network infrastructure all the way to the desktop. Intel's Gigabit-over-copper adapters let you migrate servers and demanding PCs to Gigabit speeds without costly cable replacement. They run on the same Category-5 cable that makes up most of the network infrastructure in buildings today.

- More than 85% of companies are running their networks on Cat-5 cable[1]
- An estimated 90% of these existing installations already meet the requirements for Gigabit throughput[2]

And, because Intel® server adapters are designed with advanced features such as link aggregation, you can easily scale your servers to multi-Gigabit speeds to accommodate Gigabit performance on your desktops.

The Intelligent Way To Connect

Intel delivers industry-leading[3] Gigabit Cat-5 server adapter performance, and has now extended high-performance Gigabit-over-copper to the desktop using the same third-generation Intel® controller. Intel® Gigabit-over-copper solutions have been adopted by leading Original Equipment Manufacturers (OEMs).

Features	Benefits	Intel® PRO/1000 XT Server Adapter	Intel® PRO/1000 T Desktop Adapter
Intel® 82544 Controller	■ High performance, reliability	■	■
10/100/1000Mbps	■ Easy migration to faster networks ■ Run now at 10/100Mbps while future-proofing for 1000Mbps ■ Will automatically begin running at Gigabit speeds with minimal reconfiguration by IT staff – saves time, money and downtime	■	■
Cat-5 Cabling	■ Using pre-existing cabling saves money from costly re-wiring	■	■
Compatible with Fast Ethernet	■ Helps reduce training costs and enables faster rollout	■	■
IEEE 802.3ab	■ Standards interoperability	■	■
SNMP/DMI, WfM	■ Manageability; lowers TCO	■	■
Support for many NOSs	■ Enables widespread deployment	■	■
Connection supports 32/33, 32/66	■ Designed for high performance on desktop bus architectures	■	■
Server connection supports 64/66, 64/100, 64/133	■ Designed for high performance on server bus architectures	■	
Fault Tolerance, Load Balancing, GEC, FEC, Intel® Link Aggregation, IEEE 802.3ad	■ Allows scalable network connections and helps reduce downtime	■	
Mixed Adapter Teaming	■ Flexibility and compatibility ■ Team any combination of Intel® PRO/1000 Server Adapters ■ Team with Intel® PRO/100 Server Adapter, and LOM on your server board; Cost-effective fail over	■	
PCI HotPlug*/Active PCI*	■ Online serviceability	■	■
Driver Backward Compatibility, one driver works with all current Gigabit products	■ Reduces support costs and training, saves IT staff time	■	■

Intel® PRO/1000 XT Server Adapter

Industry-leading 10/100/1000Mbps Performance Over Copper

Today, with more than 85% of desktops running at 100Mbps, virtually every server needs at least one Gigabit connection.[4] Designed to help alleviate bottlenecks wherever you need extra bandwidth, the Intel® PRO/1000 XT Server Adapter can also be installed now to accommodate future growth. Intel server adapters are designed to sense when the infrastructure has been upgraded and automatically begin running at Gigabit speeds. This easy-to-scale network bandwidth uses standard cabling so the additional expense of installing new wire is not required.

Providing the PCI-X advantage for your next-generation network
High network performance and flexibility via PCI-X bus at 64 bit/133MHz

The architecture of the Intel PRO/1000 XT Server Adapter is designed to deliver both high performance and PCI/PCI-X bus efficiency. With the latest bus standard, PCI-X, it is now possible to scale bandwidths of up to 8Gbps. The Intel PRO/1000 XT Server Adapter helps maximize your ability to use this extra bandwidth by automatically sensing the capabilities of the connected server and running at the highest speed possible. It also helps increase bus performance by caching up to 64 packet descriptors in a single burst for increased efficiency. The Intel PRO/1000 XT Server Adapter is also available in a low-profile version, with a shortened bracket for space-constrained system designs. The low-profile version of the Intel PRO/1000 XT Server Adapter represents the industry's first Gigabit Ethernet adapter to achieve compliance with the low-profile PCI specification.

1000BASE-T Gigabit Ethernet over copper
Alleviate server bottlenecks with Gigabit connectivity using your existing Cat-5 cabling.

Flexible 10/100/1000 connectivity
Deliver Ethernet, Fast Ethernet and Gigabit Ethernet connectivity to match the devices in an evolving network environment. These autosensing adapters make it easy to migrate your infrastructure in manageable increments. With multiple Intel PRO/1000 XT Server Adapters installed, you can make one a Gigabit connection now, and use autosensing to upgrade the other connections later.

Maximize server performance and reliability
Aggregate bandwidth up to 16Gbps using Adaptive Load Balancing, Gigabit EtherChannel*, Intel® Link Aggregation or IEEE 802.3ad. Automatic failover, PCI HotPlug*, Active PCI* and Adapter Fault Tolerance let you replace a failed adapter without taking a server offline, and provides redundant protention should a link fail.

Intel® PRO/1000 T Desktop Adapter

10/100/1000Mbps Copper Connection for your High-Performance Desktops

The Intel® PRO/1000 T Desktop Adapter is essential for realizing important productivity gains that are possible in today's desktop environment, where multiple high-bandwidth applications are open simultaneously and large files are routinely shared. If your plans include upgrading to powerful systems with the Intel® Pentium® 4 processor and the new Windows* XP operating system, then you need desktop connectivity that will help you make the most of them.

Advanced offloading frees up your server and desktop CPUs
More power for demanding applications and Windows XP capabilities*

Both the Intel PRO/1000 XT Server Adapter and the Intel PRO/1000 T Desktop Adapter provide TCP/IP segmentation offload capabilities that improve performance by reducing the amount of processing that needs to be completed by the computer's operating system. When a large block of data is requested, the OS normally must break the block into packet-sized pieces, and then further process these pieces into packets that can be transmitted on the network.

With Intel® TCP/IP offload, most of this task is moved onto specialized silicon located on the Intel adapter. Using hardware acceleration, the adapter performs several of the most bandwidth-intensive steps in the process, steps that would otherwise have to be performed by the host OS. Since TCP/IP offload uses regular standards-based frames, no special network enablement is needed, thus saving IT costs.

Selectively upgrade your network
Meet the needs of high-demand workgroups now and upgrade the rest over time. Future-proof your networked PCs by installing Intel PRO/1000 T Desktop Adapters today. As you migrate your network infrastructure, the adapters will automatically sense the change and adjust speed.

Turn up the speed on existing cabling
Standards-based 1000BASE-T connectivity lets you go to Gigabit speeds without re-wiring to fiber cable. Save time and money by deploying Gigabit to your desktops over the copper infrastructure you already have in place.

The cost-effective choice
The cost delta between 100Mbps and Gigabit Ethernet technology is rapidly shrinking, making this an ideal time to build scalability into your network infrastructure and reduce future upgrade costs.

SPECIFICATIONS

Product Name	Intel® PRO/1000 T Desktop Adapter	Intel® PRO/1000 XT Server Adapter
IEEE Standard/Network Topology	10BASE-T, 100BASE-TX, 1000BASE-T	10BASE-T, 100BASE-TX, 1000BASE-T
Wiring and Connectors	Cat-5, 4 pair; RJ-45	Cat-5, 4 pair; RJ-45
Product Code	PWLA8390T	PWLA8490XT
ADAPTER PRODUCT FEATURES		
Intel® SingleDriver™ technology[5]	■	■
Plug and Play Specification Support	Standard	Standard
Easy Installation, Intel® PROSet II Utility	■	■
Auto-negotiation, Full-duplex Capable	■	■
Bus Type	PCI 2.2	PCI 2.2, PCI-X 1.0
Bus Speed	32/33, 32/66	32/33, 32/66, 64/66, 64/100, 64/133
NETWORK MANAGEMENT		
Wired for Management (WfM) Baseline v2.0	■	■
DMI 2.0, WMI & SNMP-manageable	■	■
Offline Diagnostics	■	■
Intel® Boot Agent	■	■
ACPI Power Management	■	■
Wake on LAN*	■	■
NOS SOFTWARE SUPPORT[6]		
Microsoft Windows* 2000, and XP	■	■
Microsoft Windows NT* 4.0	■	■
DOS and DOSODI	■	■
Novell NetWare* 4.11, 4.2 & 5.X		■
SunSoft Solaris* 2.6, 7 & 8[7]		■
UnixWare* 7.x, and OpenUNIX* 8		■
Linux* 2.2.5 or Later		■
ADVANCED SOFTWARE FEATURES[8]		
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 HotPlug* and Active PCI*	■	■
IEEE 802.1Q VLANs	■	■
IEEE 802.3x Flow Control	■	■
TCP Checksum Offload	■	■
IEEE 802.1p, Packet Prioritization	■	■
TECHNICAL FEATURES		
Data Rate(s) Supported Per Port	10, 100 & 1000Mbps	10, 100 & 1000Mbps
Integrated Memory	64KB	64KB
Interrupt Levels	INTA	INTA
IEEE Support	802.2 & 802.3ab	802.2 & 802.3ab
Data Path Width	32-bit PCI	32-bit and 64-bit PCI-X
Hardware Certifications	FCC B, CE, BSMI B, VCCI B	FCC B, CE, BSMI B, VCCI B
Data Transfer Mode	Bus-master DMA	Bus-master DMA
Controller - Processor	Intel® 82544GC	Intel® 82544EI
Typical Power Consumption	1.3A @+5VDC	1.3A @+5VDC
Operating Temperature	0-55°C	0-55°C
Operating Humidity	85% at +55°C	85% at +55°C
INTEL BACKING		
Limited Lifetime Warranty	■	■
90-day Money-back Guarantee (U.S. and Canada)	■	■

PERFORMANCE TEST

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel® products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel® products, reference **www.intel.com/procs/perf/limits.htm** or call (U.S.) 1-800-628-8686 or 1-916-356-3104.

CUSTOMER SUPPORT

For Customer Support information, contact us on the World Wide Web at **http://support.intel.com**. Service and availability may vary by country.

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 on the World Wide Web: **www.intel.com/network/how_to_buy/oem.htm**

ORDER CODES

Intel® PRO/1000 XT Server Adapter	PWLA8490XT
Intel® PRO/1000 XT Server Adapter - Low Profile	PWLA8490XTL
Intel® PRO/1000 F Server Adapter	PWLA8490SX
5-packs also available, add "PAK5" to Order Code	
Intel® PRO/1000 T Desktop Adapter	PWLA8390T
20-packs also available, add "PAK20" to Order Code	

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** for the telephone number in your area. For additional product information on the Intel® Networking and Communication products, visit **www.intel.com/network/connectivity**

[1] Sage Research, Inc., "Network Cabling 2001: A Quantitative Analysis," May 2001
[2] Gigabit Ethernet Alliance, "Running 1000BASE-T: Gigabit Ethernet Over Copper Whitepaper," September 1999
[3] Network World, 6/2001
[4] Infonetics Research, Inc., "User Plans for High Performance LANs 2000," April 2000
[5] Only one driver needed for all Intel® PRO/1000 Network Adapters
[6] Go to www.intel.com/network/os for latest OS/NOS support
[7] SunSoft Solaris is only supported on Intel® x86 architecture
[8] Note: Advanced Server Adapter features are supported on all server OSs except Solaris