Intel® PRO/10GbE CX4 Server Adapter

10 Gigabit Performance for Short-distance CX4 Copper

- 10 Gigabit performance in CX4 cable lengths up to 15 meters
- Cost-effective, high-speed network connection with low latency
- 64-bit Peripheral Component Interconnect Extended (PCI-X*) interface running up to 133 MHz

Connectivity You Can Count On

The Intel® PRO/10GbE CX4 Server Adapter—part of the second-generation 10-Gigabit Ethernet (10GbE) adapters from Intel—represents the first 10GbE-over-copper connection from Intel. It provides enterprises with a highly affordable, low-latency 10GbE network connection for CX4 cable distances up to 15 meters, depending on wire gauge. This makes the Intel PRO/10GbE CX4 Server Adapter an ideal solution for high-bandwidth network connections in high-performance computing clusters and for short distances within wiring closets.

Built around the highly integrated Intel® 82597EX 10-Gigabit Ethernet Controller for 64-bit PCI-X connections running up to 133 MHz, the Intel PRO/10GbE CX4 Server Adapter is ideal for bandwidth-intensive applications. High-speed server connectivity—once reserved for costly, proprietary technologies such as high-performance computing clusters and grid-based computing—can now be achieved with the standardized connectivity of the Intel PRO/10GbE CX4 Server Adapter. Wide testing for interoperability with switches from major original equipment manufacturers further helps to ensure that the Intel PRO/10GbE CX4 Server Adapter will provide connectivity you can count on.

The Intel PRO/10GbE CX4 Server Adapter helps improve network productivity and eliminate costly proprietary networking topologies while enabling deployment of standards-compliant Ethernet connectivity based on the IEEE 802.3ak 10 Gigabit Ethernet standard for CX4 copper cable.

10GBASE-CX4 Applications and Advantages

The Intel PRO/10GbE CX4 Server Adapter is an immediate, lower-cost solution for a wide range of data-center applications, including:

- High-performance computing clusters
- Consolidated LAN and iSCSI traffic
- Database link to backup storage and NAS
- Digital editing, scientific and commercial simulation, and collaboration
- Scaled-up consolidated servers
- Real-time video streaming on web servers

By using the Intel PRO/10GbE CX4 Server Adapter on critical server and storage applications, you can:

- Increase performance and bandwidth
- Consolidate multiple GbE connections
- Improve video streaming
- Scale up by consolidating servers
- Converge your networks by combining LAN and storage traffic
- Enable low-cost HPC clusters with low-cost, high-bandwidth interconnects
Features

<table>
<thead>
<tr>
<th>Feature Details</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>Intel® 82597EX 10GbE PCI-X* 133-MHz, 64-bit media access control (MAC) controller</td>
<td>High performance on widely adopted second-generation PCI host-bus interface</td>
</tr>
<tr>
<td>CX4 copper cable support through CX4 XPAK module</td>
<td>Allows 10GbE connectivity over CX4 copper cable lengths up to 15 m, depending on American Wire Gauge (AWG) cable ratings</td>
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<tr>
<td>IEEE 802.3ak* 10GBASE CX4 compliant</td>
<td>Supports industry-wide 10 Gigabit Ethernet standard</td>
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<tr>
<td>Jumbo frames supported up to 16 KB</td>
<td>Increases performance through reduced overhead</td>
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<tr>
<td>Transmission control protocol/internet protocol (TCP/IP) segmentation and TCP checksum offload in receive (Rx) and transmit (Tx)</td>
<td>Provides efficiency for host processing</td>
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<tr>
<td>256 KB Rx and 32 KB Tx data first-in, first-out (FIFO) buffer</td>
<td>Enhanced Tx and Rx logic with minimum buffer requirements</td>
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<tr>
<td>Parity protection for Rx FIFO buffer</td>
<td>Data integrity</td>
</tr>
<tr>
<td>Mechanisms for delaying/reducing Tx and Rx frame interrupts</td>
<td>Reduces processor utilization</td>
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<tr>
<td>PCI-X 1.0a and PCI 2.3</td>
<td>Wide compatibility</td>
</tr>
<tr>
<td>Flow control 802.3x*</td>
<td>Supports industry-wide networking standard</td>
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<td>PCI 2.2 message signalled interrupts</td>
<td>Improves system interrupt handling</td>
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<tr>
<td>Intel® PROSet Utility for Microsoft® Device Manager</td>
<td>Provides point-and-click power over individual adapters, advanced adapter features, connection teaming, and virtual local area network (VLAN) configuration</td>
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<tr>
<td>Built on Intel® lead-free1 technology for RoHS2 compliance</td>
<td>Compliant with the new European Union directive (effective July 2006) to reduce the use of hazardous materials</td>
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Order Code

PXA8591CX4 (Single Pack)

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
  - 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® Itanium® 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.

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 for the telephone number in your area. For additional product information on Intel® Networking and Communication products, visit www.intel.com/network/connectivity.
## Specifications: Intel® PRO/10GbE CX4 Server Adapter

### General

<table>
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<tr>
<th>Product code</th>
<th>PXLA8591CX4</th>
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<tr>
<td>Connector</td>
<td>CX4 XPAK module</td>
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<tr>
<td>IEEE standards/network topology</td>
<td>10GBASE CX4</td>
</tr>
<tr>
<td>Wiring</td>
<td>CX4 cable</td>
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</table>

### Adapter Product Features

- Plug and Play specification support
- Easy installation with Intel® PROSet Utility and Intel® PRO Intelligent Install
- RoHS compliant
- Auto-negotiation, full-duplex capable
- Cable distance: To 15 meters, depending on cable gauge and parameters (AWG 24, 29 m; AWG 26, 15 m; AWG 28, 11 m)

### Network Management

- Wired for Management (WfM) baseline v2.0 enabled for servers
- Desktop Management Interface (DMI) 2.0 support, Windows Management Instrumentation (WMI), and Simple Network Management Protocol (SNMP)-manageable
- Advanced configuration and power interface (ACPI) 1.0 power management
- Preboot execution environment (PXE)—enabled through boot read-only memory (ROM)

### Network Operating Systems (NOS) Software Support

- Linux® 2.4, 2.6
- FreeBSD 5.3 kernel

### 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® (FEC)
- Gigabit EtherChannel™ (iGEC)
- Teaming support
- Multiple teams
- Test switch configuration: Tested with major switch original equipment manufacturers (OEMs)
- Jumbo frames (up to 16 KB)
- IEEE 802.1Q* VLANs
- IEEE 802.3* support
- TCP checksum offload (Rx/Tx TCP, IPv4)
- On now/instantly available PCI initiative
- TCP segmentation/large send offload
- Interrupt moderation

### Technical Features

- Throughput performance: 5-7 Gbps full-duplex Ethernet performance
- Bus type: PCI-X* 1.0, PCI local bus interface 2.3
- Bus width: 32- and 64-bit
- Bus mastering
- Bus speed (MHz): 33, 66, and 133 MHz
- Plug and play support
- PCI hot plug/active PCI
- Hardware certifications: FCC Class A, UL, CE, VCCI, BSMI, CTICK, MIC
- Controller-processor: Intel® 82597EX Controller
- Typical power consumption: <10 W (5 V main, 3.3 V main)
- Operating temperature: 0–55° C
- LEDs: 4 (green): Tx, Rx, link, port identify

### Physical Dimensions

- Length: 16.8 cm (6.6 in)
- Width: 10.7 cm (4.2 in)
For additional information on the Intel® PRO/10GbE CX4 Server Adapter and Intel's complete line of 10GbE adapters, visit
www.intel.com/network/connectivity/products/10GbE.htm

1 Lead has not been intentionally added, but lead may still exist as an impurity below 1000 ppm, or an approved RoHS exemption applies.
2 Lead and other materials banned in the RoHS Directive are either (1) below all applicable substance thresholds as proposed by the EU or (2) an approved/pending exemption applies.
3 Available only when used with a capable switch.
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