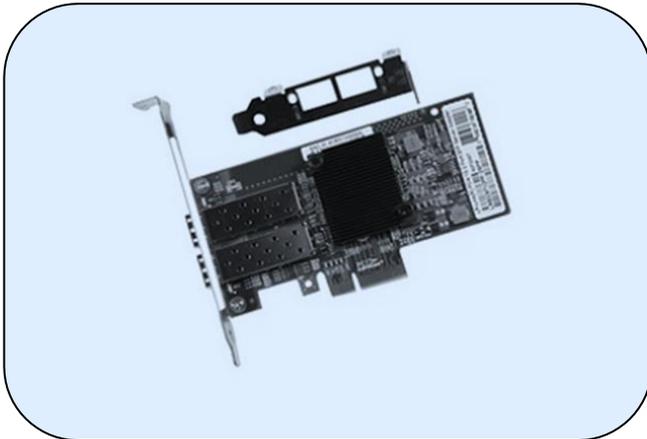


XE1-P241

PCI Express PCIe x4 Dual SFP Port Gigabit Server Adapter (Intel I350 Based)



XE1-P241

DUAL SFP port Gigabit Ethernet server adapters designed with performance enhancing features and new power management technologies.

Features

- Halogen-free dual-port Gigabit Ethernet adapters with fiber interface options
- Innovative power management features including Energy Efficient Ethernet (EEE) and DMA Coalescing for increased efficiency and reduced power consumption
- Flexible I/O virtualization for port partitioning and quality of service (QoS) of up to 32 virtual ports
- Scalable iSCSI performance delivering cost-effective SAN connectivity
- High-performing bridgeless design supporting PCI Express- Gen 2.1 5GT/s
- Reliable and proven Gigabit Ethernet technology from Intel Corporation

Description

The new XE1-P241 builds on Intel's history of excellence in Ethernet products. Intel continues its market leadership with this new generation of PCIe-GbE network adapters. Built with the bridgeless Intel Ethernet Controller I350, these adapters represent the next step in the Gigabit Ethernet (GbE) networking evolution for the enterprise and data center by introducing new levels of performance through industry-leading enhancements for both virtualized and iSCSI Unified Networking environments. This new family of adapters also includes new power management technologies such as Energy Efficient Ethernet (EEE) and DMA Coalescing (DMAC).

Flexible I/O Virtualization

The XE1-P241 includes Intel Virtualization Technology for connectivity (Intel VT-c) to deliver I/O virtualization and Quality of Service (QoS) features designed directly into the controller on the adapter. I/O virtualization advances network connectivity models used in today's servers to more efficient models by providing Flexible Port Partitioning (FPP), multiple Rx/Tx queues, and on-controller QoS functionality that can be used in both virtual and non-virtual server deployments.

By taking advantage of the PCI-SIG SR-IOV specification, Intel Ethernet products enable Flexible Port Partitioning (FPP). With FPP, virtual controllers can be used by the Linux- host directly and/or assigned to virtual machines. With this port partitioning, administrators can create up to eight dedicated connections on a single Ethernet port for use in bare metal and virtualized server deployments.

In a bare-metal Linux server, host processes can be assigned to dedicated network resources to provide traffic isolation and balanced bandwidth allocation.

In a virtualized environment, a VM can be assigned to a virtual controller to reduce the CPU overhead seen when using a software-based network bridge by offloading network traffic management to the controller.

Scalable iSCSI Performance

An XE1-P241 with native iSCSI initiators built into Microsoft- Windows-, Linux-, and VMware- ESX platforms provides a simple, dependable, cost-effective way to connect to iSCSI SANs. These native initiators are broadly tested using multiple generations of operating systems, storage systems, and OS tools to help ensure reliability and ease of use. Standardizing on Intel Ethernet Adapters for iSCSI enables administrators to use a single initiator, TCP/IP stack, and a common set of management tools and IT policies. In addition, Intel Ethernet Server Adapters include a number of hardware features designed to accelerate iSCSI traffic and enhance data processing.

For example, TCP segmentation offload and checksum offload capabilities help reduce processor usage, increase throughput, and deliver exceptional iSCSI performance. Finally, using native OS initiators, an XE1-P241 supports the CRC-32 digest instruction set included with Intel Xeon processor products, which improves transmission reliability and delivers an enterprise-class iSCSI solution.

Power Management Technologies

Today, companies everywhere are looking for ways to decrease energy consumption across the enterprise to reduce costs and environmental impact, while at the same time solving increasingly important power density challenges. That's why Intel has introduced new, advanced Power Management Technologies (PMTs) with the XE1-P241 that enable enterprises to configure power options on the adapter and more effectively manage their power consumption.

Energy Efficient Ethernet (EEE)

The XE1-P241 supports the IEEE802.3az Energy Efficient Ethernet (EEE) standard so that, during periods of low network activity, EEE reduces the power consumption of an Ethernet connection by negotiating with a compliant EEE switch port to transition to a low power idle (LPI) state. This reduces the controller power to approximately 50% of its normal operating power, saving power on the network port and the switch port. As soon as increased network traffic is detected, the controller and the switch quickly come back to full power to handle the increased network traffic. EEE is supported for both 100BASE-T and 100BASE-TX.

DMA Coalescing

Another power management technology that can reduce power on the server platform is DMA Coalescing (DMAC). Typically, when a packet arrives at a server, DMA calls are made to transfer the packet within the server. These calls wake up the processor, memory and other system components from a lower power state in order to perform the tasks required to handle the incoming packet.

Based on the configurable DMAC settings, incoming packets are buffered momentarily before any DMA calls are made. This enables the controller to intelligently identify opportunities to batch multiple packets together so that when components are awakened from lower power states they can efficiently handle the batched packets at the same time. This enables platform components to remain in lower power states longer, which can dramatically reduce platform energy consumption. DMAC synchronizes DMA calls across all controller ports to ensure maximum power savings.

Software Tools and Management

Intel Advanced Network Services (Intel ANS) include new teaming technologies and techniques such as Virtual Machine Load-Balancing (VMLB) for Hyper-V environments. Today, Intel ANS includes a variety of teaming configurations for up to eight adapters, support for mixed vendors server adapters teaming and includes support for 802.1q VLANs, making Intel ANS one of the most capable and comprehensive tools for supporting server adapter teaming.

Additionally, Intel PROSet for Windows- Device Manager and PROset CL extends driver functionality to provide additional reliability and Quality of Service features and configuration.

Specifications

General Features

Intel Ethernet Controller I350
With PCI Express- V2.1 (5 GT/s) Support
Low-Profile and Standard height full

Ethernet Features

IEEE- 802.3 auto-negotiation
1Gb/s Ethernet IEEE 802.3, 802.3u, 802.3ab PHY specifications Compliant
Integrated PHY for 10/100/1000 Mb/s for multispeed, full, and half-duplex
IEEE 802.3x and 802.3z compliant flow control support with software-controllable Rx thresholds and Tx pause frames
Automatic cross-over detection function (MDI/MDI-X)
IEEE 1588 protocol and 802.1AS implementation

Power Management and Efficiency

<1W S0-Max (state) 1000BASE-T Active 90oC (mode)
<400mW S0-Typ (state) 100BASE-T Active (mode)
IEEE802.3az - Energy Efficient Ethernet (EEE)
DMA Coalescing
Smart Power Down (SPD) at S0 no link / Sx no link
ActiveStatePower Management (ASPM) Support
LAN disable function
Full wake up support
Advanced Power Management (APM) Support (formerly Wake on LAN)
Advanced Configuration and Power Interface (ACPI) specification v2.0c
Magic Packet- wake-up enable with unique MAC address
ACPI register set and power down functionality supporting D0 and D3 states
MAC Power Management controls
Low Power Link Up - Link Speed Control
Power Management Protocol Offload (Proxying)
Latency Tolerance Reporting (LTR)

I/O Virtualization Features

Eight transmit (Tx) and receive (Rx) queue pairs per port
Flexible Port Partitioning:
32 Virtual Functions on Quad-port or 16 Virtual Functions on Dual-port
Support for PCI-SIG SR-IOV specification
Rx/Tx Round-Robin Scheduling
Traffic Isolation
Traffic Steering
VM to VM Packet forwarding (Packet Loopback)
MAC and VLAN anti-spoofing
Malicious driver detection
Storm control

Per-pool statistics, offloads, and jumbo frames support
Independent Function Level Reset (FLR) for Physical and Virtual Functions
IEEE 802.1q Virtual Local Area Network (VLAN) support with VLAN tag insertion, stripping and packet filtering for up to 4096 VLAN tags
IEEE 802.1q advanced packet filtering
Mirroring rules
Support for Simple VEPA
VF Promiscuous modes

Stateless Offloads/Performance Features

TCP/UDP, IPv4 checksum offloads (Rx/Tx/Large-send); Extended Tx descriptors for more offload capabilities
IPv6 support for IP/TCP and IP/UDP receive checksum offload
Tx TCP segmentation offload (IPv4, IPv6)
Transmit Segmentation Offloading (TSO)
Interrupt throttling control
Legacy and Message Signal Interrupt (MSI) Modes
Message Signal Interrupt Extension (MSI-X)
Intelligent interrupt generation
Receive Side Scaling (RSS) for Windows environment
Scalable I/O for Linux environments (IPv4, IPv6, TCP/UDP)
Support for packets up to 9.5K Bytes (Jumbo Frames)
Low Latency Interrupts
Header/packet data split in receive
PCIe v2.1 TLP Processing Hint Requester
Descriptor ring management hardware for Transmit and Receive

Remote Boot Options

Preboot eXecution Environment (PXE) flash interface support
Intel Ethernet iSCSI Remote Boot for Windows, Linux, and VMware
Intel Boot Agent software:
Linux boot via PXE or BOOTP, Windows- Deployment Services, or UEFI

Manageability Features

Management Component Transport Protocol (MCTP)
Firmware Based Thermal Management
IEEE 802.3 MII Management Interface
MAC/PHY Control and Status
Watchdog timer
Extended error reporting
Controller Memory Protection
Vital Product Data (VPD) Support

Adapter Product Features

Plug and play specification support

Intel I/O Acceleration Technology (Intel I/OAT)

Ships with full-height bracket installed; low-profile bracket included in package

Technical Features

Data rate supported per port: 1000 Mbps

Bus type: PCI Express- 2.1 (5 GT/s)

Bus width: 4-lane PCI Express; operable in x4, x8 and x16 slots

Interrupt levels: INTA, INTB, INTC, INTD, MSI, MSI-X

Controller-processor: Intel Ethernet Controller I350

Power consumption (typical): 6.0 W

Storage temperature: -40 to 70 Centigrade

Operating temperature :0 to 55 Centigrade

Storage humidity: 90% non-condensing relative humidity at 35 Centigrade

Network Operating Systems (NOS) Software Support

DOS, Novell ODI

Windows XP 32-bit(64-bit)

Windows Server 2003 32-bit(64-bit)

Windows Vista 32-bit(64-bit)

Windows 7 32-bit(64-bit)

Windows 8 32-bit(64-bit)

Windows 8.1 32-bit(64-bit)

Windows Server 2008 32-bit(64-bit)

Windows Server 2008 R2 32-bit(64-bit)

Windows Server 2012

Windows Server 2012 R2

Linux 2.4 series kernel,2.6.x,3.x

FreeBSD 7.x or most of FreeBSD

UnixWare / Open Unix 8

Sun Solaris x86

VMware

Xen4

Ordering information¹

PN	Description
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Notes:

¹ Specification may change without notice. For accurate specification please contact XenOpt reseller before placing an order. The content of this document is subject to change without notice. Please specify any compatibility requirements at time of ordering. Standard MSA compatible pluggable components may not work or some function of these components may not be available in devices that require customized compatible devices. Pluggable components compatible with one type of communications equipment may not work in other type of communications equipment.

Important Notice

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