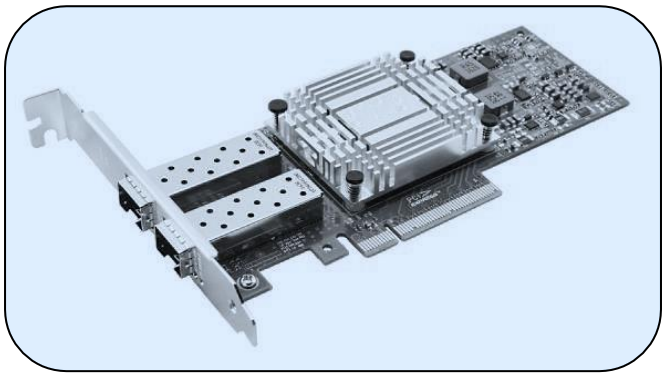
XEA-P283

PCI Express v3.0 x8 Dual Port SFP+ 10 Gigabit Server Adapter (Intel X710-BM2 Based)



Features

- Dual-port 10 GbE Server Adapter
- PCI Express* (PCIe) 3.0, x8
- Exceptional Low Power Adapters
- Network Virtualization offloads including Geneve, VXLAN and NVGRE
- Intel® Ethernet Flow Director for hardware based application traffic steering
- Intel® Data Plane Developer Kit (DPDK) optimized for efficient packet processing
- Excellent small packet performance for network appliances and Network Function Virtualization (NFV)
- Intelligent offloads to enable high performance with Intel® Xeon® processor-based servers
- I/O virtualization innovations for maximum performance in a virtualized server
- Unified networking providing a single wire support for LAN and storage: NAS (SMB, NFS) and SAN (iSCSI, FCoE)

Overview

XEA-P283 is XenOpt a new generation of high-performance server adapter, based on the Intel X710-BM2 controller. The Server Adapter addresses the demanding needs of the next generation agile data center by providing unmatched features for both server and network virtualization, flexibility for LAN and SAN networks and proven, reliable performance.

The XEA-P283 adapter delivers superior performance in a PCI Express v3.0 x8 slot. Optimized performance vectors and key uses include:

- Small Packet Performance:
  Achieves wire-rate throughput on smaller payload sizes (>64 Bytes for 10 GbE)
- Bulk Transfer Performance:
  Delivers line-rate performance with low CPU usage for large application buffers
- Network Virtualization:
  Network virtualization overlay offloads including Geneve, VXLAN, and NVGRE
- Storage Performance:
  Enables competitive performance with native OS drivers and intelligent offload for NAS (NFS, SMB), and SAN (iSCSI and FCoE)

A Complete, Unified Networking Solution

Converging data and storage onto one fabric eliminates the need for multiple adapters, cables and switches.

Furthermore 10 gigabit Ethernet provides the bandwidth to converge these multiple fabrics onto a single wire. A key capability that makes all this possible is traffic class separation provided by Data Center Bridging (DCB) —providing a one-wire solution with virtual pipes for the different classes of traffic:

- Data: Best effort delivery of standard LAN traffic
- Storage: Lossless network for FCoE and iSCSI
- Management: Guaranteed connectivity of data center IP management

Power Savings

Power efficiency is critical to IT specialists as energy consumption is a real OpEx concern.

- Lowest Power Consumption
  The new generation of XEA-P283 adapters are power misers.
- Energy Efficient Ethernet (EEE)
  Reduces power consumption during periods of low data activity. Energy is used to maintain the physical layer transmitters in a “ready state” to transmit data on the wire. During periods of low data traffic, EEE sends a low-power-idle signal to put the transmitters into a “low power state” saving power and cost. When data needs to be sent, EEE sends a normal idle signal to wake up the transmit system before data is due to be sent so there is no degradation of performance.

Server Virtualization

With Intel Virtualization Technology (VT), the XEA-P283 deliver outstanding I/O performance in virtualized server environments. They reduce I/O bottlenecks by providing intelligent offloads for networking traffic per virtual machine (VM), enabling near-native performance and VM scalability. The host-based virtualization technologies supported by Intel VT include:

- VMDq for Emulated Path:
  Adapter-based VM Queue sorting enabling efficient hypervisor-based switching
- SR-IOV for Direct Assignment:
  Adapter-based isolation and switching for various virtual station instances enabling optimal CPU usage in virtualized environments. Additionally, XEA-P283 provide Virtual Bridging support that delivers both host-side and switch-side control and management of virtualized I/O as well as the following modes of virtualized operation:
  VEPA: IEEE 802.1Qbg support for Virtual Ethernet Port Aggregator
  VEB: Virtual Ethernet Bridge support via Intel® VT

Network Virtualization

Network virtualization is the next big trend in creating an agile data center. The LERC9812BF-2SFP+ adapter is ready to help you take that next step.

- VXLAN, NVGRE, GENEVE Offloads:
  These stateless offloads preserve application performance for overlay networks. With these offloads it is possible to distribute network traffic across CPU cores. At the same time X710 offloads LSO, GSO, and check-sum from the host software reducing CPU overhead.

Intel® Ethernet Flow Director

Flow Director is an advanced traffic steering capability built into the X710 controller. It consists of a large number of flow affinity filters that direct receive packets by their flows to queues for classification, load balancing, and matching between flows and CPU cores. It eliminates context switching required within the CPU. As a result, Flow Director significantly increasing the number of transactions per second and reduces latency for cloud applications like Memcached.

Intelligent Offloads

The Intel Xeon processor family has demonstrated increased computing performance and increased integration of key server subsystems generation after generation. To offload is to leverage the ever-escalating computing power of the Xeon processor where appropriate and implementing complementary accelerations in the network controller—this is what Intel refers to as ”intelligent offloads.” By employing a balanced hybrid of compute and offload, intelligent offloads are able to achieve the optimized point of performance and efficiency. This is most notably observed in the following usage models:

- TCP Stateless Offloads:
  Demonstrates leading performance vs. TOE solutions without restricting feature usage (TOE usage usually requires that key features be disabled). Supported stateless offloads include Checksum, TSO, VMDq, and RSS.
- Host iSCSI /FCoE Initiators:
  Providing exceptional performance without the need for full-offload HBA2 methods.
- Flow Classification:
  Trafficking data flows across multiple consumers and connections.

Manageability

XEA-P283 also incorporate the manageability required by IT personnel for remote control and alerting. Communication to the Board Management Controller (BMC) is available either through an on-board SMBus port or the DMTF-defined NC-SI, providing a variety of management protocols, including IPMI, BMC Pass-thru, OS2BMC, and MCTP/SMBus and MCTP/PCIe.

FEATURES

General

Intel® X710-BM2 10 Gigabit Ethernet Controller SFP+ Connectivity
Low-profile
Full-height
Load balancing on multiple CPUs
iSCSI remote boot support
Fibre Channel over Ethernet (FCoE) support
Support for most network operating systems
RoHS-compliant
Intel® PROSet Utility for Windows*Device Manager
Time Sync (IEEE 1588*, 802.1as)

I/O Features for Multi-core Processor Servers

Intel® Flow Director
MSI-X support
Multiple Queues: 1,536 Tx and Rx queues per port
Tx/Rx IP, SCTP, TCP, & UDP checksum offloading (IPv4, IPv6) capabilities

Virtualization Features

Next-Generation VMDq
Up to 256 maximum VMDq VMs supported
PCI-SIG SR-IOV Implementation (128 per device)
Virtual Machine Load Balancing(VLMB)
Advanced Packet Filtering
VLAN support with VLAN tag insertion, stripping and packet filtering for up to 4096 VLAN tags
VXLAN and NVGRE Support

Manageability Features

Preboote Xecution Environment (PXE) Support
Simple Network Management Protocol (SNMP) and Remote
Network Monitoring (RMON) Statistic Counters
iSCSI Boot
Watchdog Timer

Adapter Product Features

Intel® PROSet Utility
Plug and play specification support
Receive Side Scaling

Advanced Software Feature

Adapter fault tolerance (AFT)
Switch fault tolerance (SFT)
Adaptive load balancing (ALB)
Teaming support
IEEE 802.3ad (link aggregation control protocol)
PCIe Hot Plug*/Active Periphera component interconnect (PCI)
IEEE 802.1Q* VLANs
IEEE 802.3 2005* flow control support
Tx/Rx IP, TCP, & UDP checksum offloading (IPv4, IPv6) capabilities (Transmission control protocol (TCP), user datagram protocol (UDP), Internet protocol (IP) IEEE 802.1p*
TCP segmentation large send offload
MSI-X supports Multiple Independent Queues Interrupt moderation
Ipv6 offloading — Checksum and segmentation capability extended to new standard packet type

Network Operating Systems (NOS) Software Support

Windows Server 2016;
Windows Server* 2012 R2;
Windows Server 2012 R2 Core;
Windows Server 2012;
Windows Server 2012 Core;
Windows Server 2008 R2;
Windows Server 2008 R2 Core;
Linux* Stable Kernel version 2.6.32/3x;
Linux* RHEL 6.5 and RHEL 7.0;
Linux* SLES 11 SP3 and SLES 12;
FreeBSD* 9 and FreeBSD* 10;
UEFI* 2.1;
UEFI* 2.3;
VMware ESXi 5.1 (Limited Functionality);
Vmware ESXi 5.5

Table 1 Physical Characteristics

General	
Connections	Dual SFP+ cages for: • SFP+ SR fiber-optic transceivers • SFP+ LR fiber-optic transceivers • SFP+ Direct Attach cables
Network Standard	IEEE 802.3
Physical Layer Interface	10GBASE-SR (LRXP8510-X3ATL) 10GBASE-LR (LRXP1310-10ATL) SFF-8431: 10GSFP+ DAC (Direct Attach Copper)
Technical Features	
Data rate supported per port	• Optical: 1 GbE/10 GbE • Direct Attach: 10 GbE
Bus type	PCI Express 3.0 (8 GT/s)
Bus Width	x8 PCI Express
Interrupt levels	INTA, MSI, MSI-X
Hardware certifications	FCC, CE
Controller-processor	Intel® Ethernet Controller X710-BM2
Power Consumption	
Dual-port 10GBASE-SR	Typical Power 4.3 W; Maximum Power 4.8 W
Dual-port 1000BASE-SX	Typical Power 4.0 W; Maximum Power 4.3 W
Dual-port 10GBASE-LR	Typical Power 4.5 W; Maximum Power 5.1 W
Dual-port Direct Attach (Twinax)	Typical Power 3.3 W; Maximum Power 3.7 W
Air Flow	Minimum of 1 50 LFM required
Operating temperature	0 °C to 55 °C (32 °F to 131 °F)
Storage temperature	-40 °C to 70 °C (-40 °F to 158 °F)
Storage humidity	Maximum: 90 % non-condensing relative humidity at 35°C
LED Indicators	LINK (solid) and ACTIVITY (blinking) LINK SPEED (green=10 Gbps; yellow=1 Gbps)

Ordering information[1]

PN	Description
NIC	
XEA-P283	PCI Express v3.0 x8 Dual Port SFP+ 10 Gigabit Server Adapter (Intel X710-BM2 Based)
Pluggables	
XTM85A-M3LY	SFP+ Duplex 10 Gbps 3.3 V Multi-Mode Transceiver, 850 nm, 0.3 km
XTS31A-10LY	SFP+ Duplex 10 Gbps 3.3 V Single-Mode Transceiver, 1310 nm, 10 km
Cables	
XCD-SFSFNgg	Cable 10 G SFP+ DAC (Direct Attach Cable), 1M, 3M, 5M

Notes:

[1] For accurate order specification please contact XenOpt reseller before placing an order. The content of this document is subject to change without notice.

Please specify any host device compatibility requirements at the 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 pluggable devices. Pluggable components that are compatible with one type of communications equipment may not work in other type of communications equipment.

To find out more, please contact: