

LREC9212PT

PCI Express x1 Dual Port Copper Gigabit Ethernet Server Adapter (Intel 82576 Based)



High-performing, 10/100/1000 Ethernet connection
Reliable and proven Gigabit Ethernet technology from Intel Corporation

Scalable PCI Express interface provides dedicated I/O bandwidth for I/O-intensive networking applications
Optimized for virtualized environments

Flexibility with iSCSI Boot

The LREC9212PT Dual port Server Adapter is PCIe GbE network adapters. Built with the Intel 82576 Gigabit Ethernet Controller, these new adapters showcase the next evolution in GbE networking features for the enterprise network and data center. These features include support for multi-core processors and optimization for server virtualization.

Designed for Multi-Core Processors

The I/O technologies on a multi-core platform make use of the multiple queues and multiple interrupt vectors available on the network controller. These queues and interrupt vectors help in load balancing the data and interrupts amongst themselves in order to lower the load on the processors and improve overall system performance. For example, depending upon the latency sensitivity of the data, the low level latency interrupts feature can bypass the time interval for specific TCP ports or for flagged packets to give certain types of data streams the least amount of latency to the application.

Optimized for Virtualization

The LR-LINK LREC9212PT Dual port Server Adapter showcase the latest virtualization technology called Intel® Virtualization Technology for Connectivity (Intel® VT for Connectivity). Intel VT for Connectivity is a suite of hardware assists that improve overall system performance by lowering the I/O overhead in a virtualized environment. This optimizes CPU usage, reduces system latency, and improves I/O throughput. Intel VT for Connectivity includes:

- Virtual Machine Device Queues (VMDq)
- Intel® I/O Acceleration Technology1 (Intel® I/OAT)

Use of Dual port adapters in a virtualized environment is very important because of the need to provide redundancy and data connectivity for the applications/workloads in the virtual machines. Due to slot limitations and the need for redundancy and data connectivity, it is recommended that a virtualized physical server needs at least six GbE ports to satisfy the I/O requirement demands.

Virtual Machine Device queues (VMDq)

VMDq reduces I/O overhead created by the hypervisor in a virtualized server by performing data sorting and coalescing in the network silicon. 2 VMDq technology makes use of multiple queues in the network controller. As data packets enter the network adapter, they are sorted, and packets traveling to the same destination (or virtual machine) get grouped together in a single queue. The packets are then sent to the hypervisor, which directs them



to their respective virtual machines. Relieving the hypervisor of packet filtering and sorting improves overall CPU usage and throughput levels.

These dual-port adapters provide high-performing, Dual port Gigabit connectivity in a multi-core platform as well as in a virtualized environment. In a multi-core platform, the adapters support different technologies such as multiple queues, receive-side scaling, MSI-X, and Low Latency Interrupts, that help in accelerating the data across the platform, thereby improving application response times.

LR-LINK LREC9212PT PCIe Gigabit adapter provides improved performance with the next-generation VMDq technology, which includes features such as loop back functionality for inter-VM communication, priority-weighted bandwidth management, and doubling the number of data queues per port from four to eight.

It now also supports multicast and broadcast data on a virtualized server.

Intel I/O Acceleration Technology

Intel I/O Acceleration Technology (Intel I/OAT) is a suite of features that improves data acceleration across the platform, from networking devices to the chipset and processors, which help to improve system performance and application response times. The different features include multiple queues and receive-side scaling, Direct Cache Access (DCA), MSI-X, Low-Latency Interrupts, Receive Side Scaling (RSS), and others. Using multiple queues and receive-side scaling, a DMA engine moves data using the chipset instead of the CPU. DCA enables the adapter to pre-fetch data from the memory cache, thereby avoiding cache misses and improving application response times. MSI-X helps in load-balancing I/O interrupts across multiple processor cores, and Low Latency Interrupts can provide certain data streams a non-modulated path directly to the application. RSS directs the interrupts to a specific processor core based on the application's address.

Single-Root I/O Virtualization (SR-IOV)

For mission-critical applications, where dedicated I/O is required for maximum network performance, users can assign a dedicated virtual function port to a VM. The controller provides direct VM connectivity and data protection across VMs use SR-IOV. SR-IOV technology enables the data to bypass the software virtual switch and provides near-native performance. It assigns either physical or virtual I/O ports to individual VMs directly.

This technology is best suited for applications that demand the highest I/O throughput and lowest-latency performance such as database, storage, and financial applications.

The PCI-SIG SR-IOV capability is a mechanism for devices to advertise their ability to be directly assigned to multiple virtual machines. This technology enables the partitioning of a PCI function into many virtual interfaces for the purpose of sharing the resources of a PCI Express* (PCIe) device in a virtual environment. These virtual interfaces are called Virtual Functions. Each virtual function can support a unique and separate data path for I/O- related functions within the PCI Express hierarchy. Use of SR-IOV with a networking device, for example, allows the bandwidth of a single port (function) to be partitioned into smaller slices that may be allocated to specific VMs, or guests, via a standard interface.

End-to-end Wired Security

The LREC9212PT Dual port Server Adapter is PCIe adapters to provide authentication and encryption for IPsec and LinkSec. LinkSec is already designed into the network adapter hardware. These adapters are future-proof and prepared to provide LinkSec functionality when the ecosystem supports this new technology.

IPsec provides data protection between the end-point devices of a network communication session. The IPsec offload feature is designed to offload authentication and encryption of some types of IPsec traffic and still delivers near line-rate throughput and reduced CPU utilization.

LinkSec is an IEEE industry-standard feature that provides data protection in the network. The IEEE 802.3ae and IEEE 802.3af protocols provide hop-to-hop data protection between two network devices in the transaction line between the host and destination. The two network devices must support the LinkSec technology. The network devices could be servers, switches, and routers.

Features

General

- Intel 82576 Gigabit Ethernet Controller
- Low-profile
- iSCSI remote boot support
- Load balancing on multiple CPUs
- Compatible with x1, x4, x8, and x16 standard and low-profile PCI Express* slots
- Dual port design
- Support for most network operating systems (NOS)
- Intel PROSet Utility for Windows Device Manager
- RoHS-compliant3

I/O Features for Multi-Core Processor Servers

- Multiple queues & receive-side scaling
- MSI-X support
- Low Latency Interrupts
- Header splits and replication in receive
- Multiple queues: 8 queues per port
- Tx/Rx IP, SCTP, TCP, and UDP checksum offloading (IPv4, IPv6) capabilities
- Tx TCP segmentation offload (IPv4, IPv6)
- Receive and Transmit Side Scaling for Windows* environment and Scalable I/O for Linux* environments (IPv4, IPv6, TCP/UDP)
- IPsec Offload
- LinkSec

Virtualization Features

- Virtual Machine Device queues2 (VMDq)
- Next-generation VMDq
- IPv6 offloading
- Advanced packet filtering
- VLAN support with VLAN tag insertion, stripping and packet filtering for up to 4096 VLAN tags
- PC-SIGSR-IOV Implementation (8 virtual functions per port)

Manageability Features

- On-board microcontroller
- Advanced filtering capabilities
- Preboot execution Environment (PXE) Support
- Simple Network Management Protocol (SNMP) and Remote Network Monitoring (RMON) Statistic Counters
- Wake-on-LAN support
- iSCSI boot
- Watchdog timer
- IEEE 1588 precision time control protocol

Network Operating Systems (NOS) Software Support

- Windows 2000
- Windows XP
- Windows Vista 32-bit (64-bit)
- Windows 7 32-bit (64-bit)
- Windows 8 32-bit (64-bit)
- Windows Server 2003 32-bit (64-bit)
- Windows Server 2008 32-bit (64-bit)
- Windows Server 2008 R2 32-bit (64-bit)
- Windows Server 2012 R2 32-bit (64-bit)
- Novell Netware 5.x, 6.x
- Linux kernel version 2.6.x, 3.x or greater (x86_64) (w/ SR-IOV support)
- FreeBSD 7.x or later
- DOS
- Novell ODI
- OS 8 or later
- SCO Open Server
- UnixWare / OpenUnix 8
- Sun Solaris x86
- OS Independent
- Vmware ESX

Ordering Information

M/N	Description
LREC9212PT	PCI Express x1 Dual Port Copper Gigabit Ethernet Server Adapter (Intel 82576 Based)

PS: The above details are only for reference, if there are any changes, no inform will have.

COMPANION PRODUCTS

Fiber NIC

- LR-LINK PCI 100FX Desktop Adapter
- LR-LINK PCIe 100FX Desktop Adapter
- LR-LINK PCI 1000BASE-SX/LX Desktop Adapte
- LR-LINK PCIe 1000BASE-SX/LX Desktop Adapter
- LR-LINK PCIe 1000BASE-SX/LX Server Adapter
- LR-LINK PCIe 10GBASE-SR/LR Server Adapter
- LR-LINK PCIe 40GBASE-SR/LR Server Adapter

Copper NIC

- LR-LINK PCI 10/100Mbps Desktop Adapter
- LR-LINK PCIe 10/100Mbps Desktop Adapter
- LR-LINK PCI 10/100/1000Mbps Desktop Adapter
- LR-LINK PCIe 10/100/1000Mbps Desktop Adapter
- LR-LINK PCIe 10/100/1000Mbps Server Adapter
- LR-LINK PCIe 100/1Gbps/10Gbps Server Adapter

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PRODUCT QUICK GUIDE

To know the network card basic knowledge to choose the suitable NIC you need, please visit us at: <http://www.lr-link.com/product.html>

CUSTOMER SUPPORT

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A professional supplier of high-quality NIC:PCI,PCI-X,PCI-Express;SC,ST,LC,SFP,SFP+; 100M,1G,10G,40G;single,dual,quad ports. all series fiber and copper NIC with nearly 150 specifications which can meet demands of various applications, continuously creates value for customers and partners as well as OEM/ODM services provided.

DECLARATION

Shenzhen Lianrui Electronics Co., Ltd is an efficient Ethernet adapter design company with independent research and development, using Intel,Broadcom, Mellanox, Marvell, VIA, Realtek and other manufacturers Ethernet controller, developed by our company's independent R & D design team,manufacturedby our company workshop, and then sell.

Our products specifications come from modifying the chip manufacturer's specifications released. Product features, technical parameters, technology right, intellectualproperty rights and brand names etc.mentioned in specifications are just referenced only. There is no infringement meaning.If there is any important andsensitive content related, please contact our Lianrui company, we'll delete them, thank you.

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