

Overview

Intel X540-T2 10GbE Dual Port Adapter

Models

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K4T75AA

Introduction

The Intel X540 10Gb Ethernet Dual port adapter is a 10GBASE-T adapter in a PCIe 2.1 compliant form factor. It delivers full line-rate performance, utilizing CAT 6A UTP cabling (or better) with distances up to 100 meters. Providing high performance Ethernet connectivity, it is ideal for use in workstation, virtual workstation and cloud computing environments. It supports enterprise class features (VLAN tagging, adaptive interrupt coalescing, MSI-X, NIC teaming (bonding), Receive Side Scaling (RSS), jumbo frames, PXE boot) and virtualization features (VMware NetQueue and Microsoft VMQ).

Performance and Features

- Industry-leading throughput and latency performance
- Operates at 1Gbps/10Gbps, auto-negotiation, on both ports
- 10GBASE-T connectivity supporting up to 100 meters with CAT 6A cabling (or better)
- Up to 40Gb/s bi-directional near line rate throughput
- Hardware acceleration TCP/IP/UDP stateless offloads Superior small packet performance
- Low profile design shipping with standard height and low-profile brackets
- SR-IOV capable in hardware (requires server FW, SW and OS support)
- Active Health System support
- PXE, Jumbo Frames, Checksum & Segmentation Offload, IPv6 and RSS (PXE allows the server to boot over the network and download software residing in the network.)
- Field replaceable and upgradeable
- Support for Preboot eXecution Environment (PXE)
- IEEE 1588 (Time Synchronization) ready

Compatibility

The Intel X540 10Gb Ethernet Dual port adapter is compatible with the HP Z840, Z640 and Z440 Workstations. Additional support for other platforms including Z820, Z620, Z420, and Z230 is planned for near term release. Check with HP for details.

Service and Support

Max warranty of the HP Workstation in which it is installed, up to 3-years. Minimum one year warranty.

Dual-port 10 Gigabit Ethernet Throughput

The Intel X540 10Gb Ethernet Dual port adapter delivers 20 Gbps full duplex Ethernet transfer rate per port, providing the network performance needed to improve response times and alleviate bottlenecks that impact performance of next generation data centers. 10Gb Ethernet bandwidth is ideal for high performance workstation computing, virtual workstations, database access, and more.

Jumbo Frames

The Intel X540 10Gb Ethernet Dual port adapter supports jumbo frames (also known as extended frames), permitting up to a 9.5K byte (KB) transmission unit (MTU) when running Ethernet I/O traffic. This is over 5X the size of a standard 1500-byte Ethernet frame. With jumbo frames, networks can achieve higher throughput performance and improve CPU utilization. These attributes are particularly useful for database transfer and tape backup operations.

TCP/IP Stateless Offloading

TCP, IP, UDP checksum offload, Large Send Offload (LSO), TCP Segmentation Offload (TSO). These features optimize host efficiency, leaving the CPU available for other duties. The Intel X540 10Gb Ethernet Dual port adapter offers TCP/IP stateless offloading capability.

Overview

MSI and MSI-X

Message Signaled Interrupt (Extended) provides performance benefits for multi-core servers by load balancing interrupts between CPUs/cores. The Intel X540 10Gb Ethernet Dual port adapter supports MSI and MSI-X.

802.1Q VLANs

IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of the Intel X540 10Gb Ethernet Dual port adapter to be separated into multiple virtual NICs for added network segmentation and enhanced security and performance. VLANs increase security by isolating traffic between users. Limiting the broadcast traffic to within the same VLAN domain also improves performance. The Intel X540 10Gb Ethernet Dual port adapter provides support for 802.1Q (VLAN)

Optimized for Virtualization

I/O Virtualization support for VMware NetQueue and Microsoft VMQ help meet the performance demands of consolidated virtual workloads.

Compliant with Single-Root I/O Virtualization (SR-IOV), accommodating multiple Virtual Machines (VMs) to share single PCIe resources. The Intel X540 10Gb Ethernet Dual port adapter is SR-IOV ready, requiring firmware, software and OS support.

checksum & Segmentation Offload

Normally the TCP Checksum is computed by the protocol stack. By selecting one of the "Checksum Offload" parameters, the checksum can be computed by the adapter.

Segmentation Offload is technique for increasing outbound throughput of high-bandwidth network connections by reducing CPU overhead. The technique is also called TCP segmentation offload (TSO) when applied to TCP, or generic segmentation offload (GSO). The Intel X540 10Gb Ethernet Dual port adapter has Checksum and Segmentation Offload capabilities.

IPv6

RSS resolves the single-processor bottleneck by allowing the receive side network load from a network adapter to be shared across multiple processors. RSS enables packet receive-processing to scale with the number of available processors. The Intel X540 10Gb Ethernet Dual port adapter has RSS capabilities.

Receive Side Scaling (RSS)

IPv6 uses 128-bit addressing allowing for more devices and users on the Internet. IPv4 supported 32-bit addressing. The Intel X540 10Gb Ethernet Dual port adapter supports IPv6.

Time Synchronization implementation (PTP)

Synchronization of system clocks throughout a network, achieving clock accuracy in the sub-microsecond range, making it suitable for measurement and control systems. The Intel X540 10Gb Ethernet Dual port adapter supports Precision Time Protocol-ready (PTP).

Network Adapter Teaming

The Intel X540 10Gb Ethernet Dual port adapter provides support for NIC teaming, which helps IT administrators increase network fault tolerance and increased network bandwidth, The team of adapters can work together as a single virtual adapter. The Intel X540 10Gb Ethernet Dual port adapter provides support for several different types of teaming enabling IT administrators to optimize availability, improve performance and help reduce costs.

Technical Specifications

Operating Temperature	32° to 131° F (0° to 55° C)
Operating Humidity	5% to 95% non-condensing
Dimensions (H x W x D)	Standard PCIe with full height bracket installed, half height bracket included. 0.7 x 2.7 x 6.0 in
Operating System Driver Support	The HP driver drop is a unified package that includes the X540-T2 driver. It is the same driver as is used for the 561T. Currently, it includes drivers for Win7-32, Win7-x64, Win8-x64, and Win81-x64.
Kit Contents	Intel X540 10Gb Ethernet Dual port adapter, Installation guide, Warranty card. Windows Server 2012 R2, Windows Server 2012, Windows 8, Windows Server 2008 R2, Windows 7, Windows Server 2008 SP2, Windows Vista SP2, Windows Server 2003 R2, Windows Server 2003 SP2, Linux Stable Kernel version 3.x, 2.6.x, Red Hat Enterprise Linux 5, 6, SUSE Linux Enterprise Server 10, 11, FreeBSD 9, VMware ESX/ESXi. Note: Not all OS's supported on all HP Z Workstations.

Summary of Changes

Date of change:	Version History:		Description of change:
		Changed	
		Added	
		Removed	

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