

### Overview

## Networking Adapters for HP Workstations

### Models

#### Ethernet Networking

Intel® Ethernet I210-T1 PCIe NIC<sup>2</sup>

HP 361T PCIe Dual Port Gigabit NIC

Intel® Ethernet I350-T2 2-Port 1Gb NIC

HP X520 10GbE Dual Port Adapter <sup>1</sup>

Intel® X540-T2 10GbE Dual Port Adapter <sup>1</sup>

HP 10GbE SFP+ SR Transceiver <sup>1</sup>

#### Part Number

E0X95AA

C3N37AA

V4A91AA

C3N52AA

K4T75AA

C3N53AA

### Compatibility

HP Z240/Z440/Z640/Z840

HP Z440/Z640/Z840

HP Z240/Z440

HP Z240 CMT/Z440/Z640/Z840

HP Z440/Z640/Z840

HP Z240 CMT/Z440/Z640/Z840

#### Wireless Networking<sup>3</sup>

Intel® 7260 802.11 a/b/g/n PCIe WLAN NIC

Intel® 8260 802.11 a/b/g/n/ac with Bluetooth® 4.2 PCIe NIC

F2P07AA

N0S95AA

HP Z440/Z640/Z840

HP Z240/Z440

1. "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.
2. The Intel® Ethernet I210-T1 PCIe NIC is supported on the following operating systems: Windows 7 and Windows 8 32-bit and 64-bit versions Red Hat® Enterprise Linux® (RHEL) SLED 11
3. Wireless access point and internet service required. Availability of public wireless access points limited.

### Ethernet Networking

## Intel® Ethernet I210-T1 PCIe NIC(E0X95AA)

### Introduction

The Intel® Ethernet Controller I210 Family provides an ideal GbE solution for customers looking for a full-featured Gigabit Ethernet Media Access Control (MAC) and Physical-Layer (PHY) for Desktop Workstation applications. The Intel Ethernet Controller I210 Family supports advanced features such as Audio-Video Bridging (AVB), IEEE 802.1AS Precision Time Stamping, Error Correcting Code (ECC) Packet Buffers, and Enhanced Management Interface options.

### Performance and Features

#### 10/100/1000 PCI-Express (PCIe) x1 Connectivity

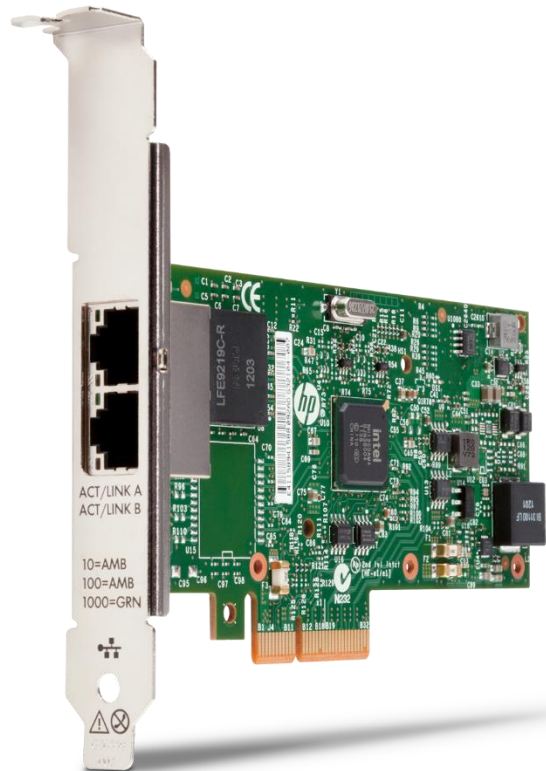
Single-port controllers use a PCIe v2.1 one lane (x1) interface operating at 2.5GT/s. The Intel® Ethernet Controller I210 Family provides fully integrated GbE MAC/PHY capabilities that can be configured for either 1000 Mb/s or 10/100 Mb/s modes of operation. The Intel® Ethernet Controller I210 Family enables a quick migration from custom interconnects to Ethernet.

### Key Features

- IEEE 802.1Qav Audio-Video Bridging (AVB) for customers requiring tightly controlled media stream synchronization, buffering and reservation
  - Hardware-based time stamping of IEEE 1588 and 802.1AS packets enabling high-precision time synchronization over Ethernet
  - Innovative power management features including Energy Efficient Ethernet (EEE) and DMA Coalescing for increased efficiency and reduced power consumption
  - Extended management support including MCTP, NC-SI or SMBus interfaces supporting IPMI pass-through and OS2BMC
-

### Ethernet Networking

#### HP 361T PCIe Dual Port Gigabit NIC (C3N37AA)



#### Introduction

The HP 361T PCIe Dual Port Gigabit NIC is a high performance PCI Express (PCIe) Gen 2.1 dual port, copper, gigabit network solution for HP Z-Workstation customers who demand the latest in dual port Gigabit Ethernet bandwidth and features. It offers two ports on a single PCI Express adapter, allowing customers to save valuable I/O slots for other uses. It is based upon the high performance Intel® Ethernet Controller I350 and offers a four lane (x4) PCI Express bus.

The 361T includes support for Wake-on-LAN (WOL). Pre-Boot Execution environment (PXE) is disabled as a default. Additionally, it ships with support for Jumbo Frames, Network Fault Tolerance, Load Balancing, and various offload capabilities such as Segmentation Offload and Large Send Offload (LSO) that offer further network throughput improvements. Additionally, it is easy to install in either standard or low profile slots with support for IPv6 packet transmit and receive.

361T offers support for the latest power management technologies such as Energy Efficient Ethernet (EEE) and DMA Coalescing. This latest dual-port adapter comes with IEEE 1588 Precision Time Stamping feature.

The HP 361T is positioned as the follow-on to the HP NC360T.

### Ethernet Networking

#### Performance and Features

10/100/1000 Mbps Ethernet transfer rate delivers outstanding network performance that improves response time and removes bottlenecks. Because the HP 361T supports both 10Mbps Ethernet and 100Mbps Fast Ethernet in addition to Gigabit Ethernet, users are guaranteed end-to-end protocol support across their enterprise.

- Dual port bandwidth, Gigabit PCI Express 2.1 NIC, with full height or low profile bracket
- New fully integrated (bridgeless) Intel® Ethernet I350 Controller, optimized for the new Integrated I/O and Data Direct I/O technologies
- Supports the IEEE 1588 Precision Time Stamping protocol and 802.1AS implementation
- Supports latest virtualization features including VMware NetQueue and Microsoft VMQ, plus power management technologies such as IEEE 802.3az and DMAC
- Support for 9.5K Jumbo Frames, TCP/IP Checksum Offload (TCO) & large send offload (LSO)
- Intel® Integrated I/O and Data Direct I/O for increased performance and reduced latency
- IPv6 packet transmit and receive (excluding all offload capabilities); IPv6 aware SNMPv1 agent for Windows
- The HP 361T supports cable runs up to 100 meters (328 feet).

**NOTE:** Support for Preboot eXecution Environment (PXE) is disabled as a default. Contact HP Technical Support for instructions to enable PXE.

---

#### Compatibility

The HP 361T PCIe Dual Port Gigabit NIC Card is PCIe 2.1 compliant and compatible with HP Z440, Z640 and Z840 Workstations.

#### Service and Support

Your Option Limited Warranty is a one (1) year (HP Option Limited Warranty Period) parts replacement warranty on any HP-branded or Compaq-branded options (HP Options). If your HP Option is installed in an HP Hardware Product, HP may provide warranty service either for the HP Option Limited Warranty Period or the remaining Limited Warranty Period of the HP Hardware Product in which the HP Option is being installed, whichever period is the longer but not to exceed three (3) years from the date you purchased the HP Option.

#### Network Management

The HP 361T provides Wake-on-LAN (WOL) support through the PCI Express bus. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

#### PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows a new or existing server to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

### Ethernet Networking

#### **LED Indicators**

Bracket LED indicators show link integrity, network activity, and speed on each port for easy troubleshooting.

---

### Ethernet Networking

#### Technical Specifications

<b>Connector</b>	Two RJ-45
<b>Controller</b>	Intel® Ethernet I350 Controller
<b>Data Rates Supported</b>	10/100/1000 Mbps, Half- and full-duplex
<b>Compliance</b>	802.3, 802.3u, 802.3x, 802.3ab, 802.3ad, 802.1p, 802.1Q, 802.3az, IEEE 1588 PCIe v2.0 standard RoHS (6 of 6) FCC (U.S. only) Class B DOC (Canada) Class B CE EN 55024, EN55022 Class B VCCI Class II UL 1950 CSA 950 EN 60950 CE ACPI 1.1a Microsoft WHQL (Windows Hardware Quality Labs)
<b>Data Path Width</b>	Four lane (x4) PCI Express compatible with x4, x8, and x16 PCI Express slots
<b>Power Requirement</b>	4.1W idle without EEE link partner 3.2W idle with EEE link partner 4.2W maximum
<b>Network Transfer Rate</b>	10BASE-T (half-duplex) 10 Mb/s 10BASE-T (full-duplex) 20 Mb/s 100BASE-TX (half-duplex) 100 Mb/s 100BASE-TX (full-duplex) 200 Mb/s 1000BASE-T (full-duplex) 2000 Mb/s
<b>Operating Temperature</b>	32° to 131° F (0° to 55° C )
<b>Operating Humidity</b>	10% to 95% non-condensing
<b>Dimensions (H x W x D)</b>	5.3 x 2.5 in (13.50cm x 6.4 cm) (without brackets)
<b>Operating System Driver Support</b>	Windows 7 Professional 32-bit and 64-bit. Red Hat® Enterprise Linux® (RHEL) WS4, 5, 6 Desktop/Workstation Novell SLED 10 & SLED 11
<b>Kit Contents</b>	HP 361T PCIe Dual Port Gigabit NIC PCA with a standard height bracket attached to it (the low profile bracket is included in the clamshell that the PCA ships in) Product Warranty statement and the Quick Install Card (QIC).

### Ethernet Networking

#### Intel® Ethernet I350-T2 2-Port 1Gb NIC (V4A91AA)



#### Introduction

The new Intel® Ethernet Server Adapter I350 family builds on Intel's history of excellence in Ethernet products. Intel continues its market leadership with this new generation of PCIe\* gigabit Ethernet (GbE) network adapters. Built with the bridgeless Intel® Ethernet Server Adapter I350, these adapters represent the next step in the 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 and direct memory access coalescing.

#### Performance and Features

10/100/1000 Mbps Ethernet transfer rate delivers outstanding network performance that improves response time and removes bottlenecks. Because the Intel® I350-T2 supports both 10Mbps Ethernet and 100Mbps Fast Ethernet in addition to Gigabit Ethernet, users are guaranteed end-to-end protocol support across their enterprise.

- Dual port bandwidth, Gigabit PCI Express 2.1 NIC, with full height or low profile bracket
- New fully integrated (bridgeless) Intel® Ethernet I350 Controller, optimized for the new Integrated I/O and Data Direct I/O technologies
- Supports the IEEE 1588 Precision Time Stamping protocol and 802.1AS implementation
- Supports latest virtualization features including VMware NetQueue and Microsoft VMQ, plus power management technologies such as IEEE 802.3az and DMAC
- Support for 9.5K Jumbo Frames, TCP/IP Checksum Offload (TCO) & large send offload (LSO)
- Intel® Integrated I/O and Data Direct I/O for increased performance and reduced latency
- IPv6 packet transmit and receive (excluding all offload capabilities); IPv6 aware SNMPv1 agent for Windows
- Support for Preboot eXecution Environment (PXE)
- Supports cable runs up to 100 meters (328 feet).

#### Compatibility

### Ethernet Networking

The Intel® I350-T2 PCIe Dual Port Gigabit NIC Card is PCIe 2.1 compliant and compatible with HP Z240 and Z440 Workstations.

#### **Service and Support**

The Option Limited Warranty is a one (1) year (HP Option Limited Warranty Period) parts replacement warranty on any HP-branded options (HP Options). If your HP Option is installed in an HP Hardware Product, HP may provide warranty service either for the HP Option Limited Warranty Period or the remaining Limited Warranty Period of the HP Hardware Product in which the HP Option is being installed, whichever period is the longer but not to exceed three (3) years from the date you purchased the HP Option.

#### **Network Management**

The Intel® I350-T2 provides Wake-on-LAN (WOL) support through the PCI Express bus. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

#### **PXE Support**

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows a new or existing server to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

#### **LED Indicators**

Bracket LED indicators show link integrity, network activity, and speed on each port for easy troubleshooting.

---



### Ethernet Networking

#### Technical Specifications

<b>Connector</b>	Two RJ-45
<b>Controller</b>	Intel® Ethernet I350 Controller
<b>Data Rates Supported</b>	10/100/1000 Mbps, Half- and full-duplex
<b>Compliance</b>	802.3, 802.3u, 802.3x, 802.3ab, 802.3ad, 802.1p, 802.1Q, 802.3az, IEEE 1588 PCIe v2.1 standard RoHS (6 of 6) FCC (U.S. only) Class B DOC (Canada) Class B CE EN 55024, EN55022 Class B VCCI Class II UL 1950 CSA 950 EN 60950 CE ACPI 1.1a Microsoft WHQL (Windows Hardware Quality Labs)
<b>Data Path Width</b>	Four lane (x4) PCI Express compatible with x4, x8, and x16 PCI Express slots
<b>Power Requirement</b>	4.4W (typical)
<b>Network Transfer Rate</b>	10BASE-T (half-duplex) 10 Mb/s 10BASE-T (full-duplex) 20 Mb/s 100BASE-TX (half-duplex) 100 Mb/s 100BASE-TX (full-duplex) 200 Mb/s 1000BASE-T (full-duplex) 2000 Mb/s
<b>Operating Temperature</b>	32° to 131° F (0° to 55° C)
<b>Operating Humidity</b>	10% to 95% non-condensing
<b>Dimensions (H x W x D)</b>	5.3 x 2.5 in (13.50cm x 6.4 cm) (without brackets)
<b>Operating System Driver Support</b>	Windows 7 32-bit and 64-bit; Windows 10 32-bit and 64-bit; Red Hat® Enterprise Linux® (RHEL) WS4, 5, 6 Desktop/Workstation Novell SLED 10 & SLED 11
<b>Kit Contents</b>	Intel® I350-T2 PCIe Dual Port Gigabit NIC PCA with a standard height bracket attached to it (the low profile bracket is included in the clamshell that the PCA ships in) Product Warranty statement and the Installation Guide.

### Ethernet Networking

#### HP X520 10GbE Dual Port Adapter (C3N52AA)



#### Introduction

The HP X520 10GbE Dual Port Adapter is based on Intel's third generation 10GbE controller, Intel® 82599.

The HP X520 10GbE Dual Port Adapter is ideal for high performance workstation computing, workstation virtualization, security, consolidation, and other applications requiring the highest throughput. The total aggregate, full-duplex throughput of 40Gb/s meets the needs for customers desiring flexible and scalable I/O solutions to meet the rigorous requirements of mission-critical applications in virtualized environments.

#### Performance and Features

- Industry-leading throughput and latency performance
- Up to 40Gb/s bi-directional near line rate throughput
- Hardware acceleration TCP/IP/UDP stateless intelligent offloads
- No firmware updates required --> less management and downtime
- Low profile design ships with standard height bracket only for use in desktop workstations
- Support for Preboot eXecution Environment (PXE), Jumbo Frames, Checksum & Segmentation Offload, IPv6 and RSS
- Integrated PHY and MAC
- IEEE 1588 (Time Synchronization)
- Supports MSI and MSI-X (Message Signaled Interrupt (Extended))

#### Compatibility

HP X520 Adapters with SFP+ connections support 10GBASE-SR, 10GBASE-LR, and SFP+ Copper Direct Attach physical media.

#### Service and Support

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

### Ethernet Networking

#### Intel® X540-T2 10GbE Dual Port Adapter (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 Z440, Z640 and Z840 Workstations.

##### Service and Support

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

##### Network Management

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.

##### PXE Support

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.

##### LED Indicators

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.

### Ethernet Networking

#### **Roaming**

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).

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.

---

### Ethernet Networking

#### Technical Specifications

<b>Operating Temperature</b>	32° to 131° F (0° to 55° C)
<b>Operating Humidity</b>	5% to 95% non-condensing
<b>Dimensions (H x W x D)</b>	Standard PCIe with full height bracket installed, half height bracket included. 0.7 x 2.7 x 6.0 in
<b>Operating System Driver Support</b>	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.
<b>Kit Contents</b>	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.

---

### Ethernet Networking

#### HP 10GbE SFP+ SR Transceiver (C3N53AA)



#### Introduction

A 10-Gigabit transceiver in SFP+ form-factor that supports the 10-Gigabit SR standard, providing 10-Gigabit connectivity up to 300m on multimode fiber.

#### Compatibility

This transceiver is compatible with the HP X520 10GbE Dual Port Adapter. Additional transceivers are also compatible with the HP X520 10GbE Dual Port Adapter, including LR.

---

### Ethernet Networking

#### Technical Specifications

<b>Operating Temperature</b>	0°C to 45°C (32°F to 113°F)
<b>Operating Humidity</b>	0% to 85%, noncondensing
<b>Dimensions (H x W x D)</b>	0.47(h) x 0.54(w) x 2.19(d)inches (1.19 x 1.38 x 5.57 cm)

---

### Wireless Networking

#### **Intel® 7260 802.11 a/b/g/n PCIe WLAN NIC (F2P07AA)**

#### **Introduction**

The Intel® Dual Band Wireless-N 7260 802.11 a/b/g/n, dual band, 2x2 Wi-Fi adapter delivers faster speeds (up to 300Mbps), greater range and more reliability for a great experience. Combined 4th Gen Intel® Core™ processors and exceptional Intel wireless innovations, the Intel® Dual Band Wireless-N 7260 reshapes your connected experience for wireless connections.

#### **Performance and Features**

- 802.11 a/b/g/n with up to 300Mbps speed
  - 2x2, Dual band 5GHz performance
  - 2x2, Dual band 5GHz performance
  - optimized power modes for low power during inactivity
  - optimized power modes for low power during inactivity
-



### Wireless Networking

#### Technical Specifications

<b>Operating Humidity</b>	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
<b>Dimensions (H x W x D)</b>	Native HMC: 26.8 x 30.0 x 2.4 mm Carrier Card Assembly 3.3 x 4.7 in (84 x 119 mm)
<b>Kit Contents</b>	PCIe x1 card with full height bracket, rf antenna, antenna cable, separate low profile bracket, software CD and warranty.

#### NOTES:

1. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.
  2. Check latest software/driver release for updates on supported security features.
  3. Maximum output power may vary by country according to local regulations.
  4. In Power Save Polling mode and on battery power.
  5. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
-

### Wireless Networking

#### Intel® 8260 802.11 a/b/g/n/ac with Bluetooth® 4.2 PCIe NIC (N0S95AA)



#### Introduction

The Intel® Dual Band Wireless-AC 8260 is Intel's 3rd Generation 802.11 ac, dual band, 2x2 Wi-Fi + Bluetooth® 4.1 adapter. It's engineered to deliver lower power consumption, improved RF coexistence, and complete Microsoft Windows 10 support. Combined with Intel® Core™ processors and exceptional Intel wireless innovations like Dynamic Regulatory Solution, the Intel® Dual Band Wireless-AC 8260 dramatically reshapes your connected experience at home, work or on the go.

#### Performance and Features

- 802.11 a/b/g/n/ac, Dual band 2x2 with up to 867Mbps speed; 3x faster than 802.11n, with up to 3x more bandwidth per stream
- Dual mode Bluetooth® 4.2 enables BR/EDR-Low Energy devices to act as a Bluetooth® Smart Ready Hub and Bluetooth® Smart peripheral at the time.
- Full support for latest Microsoft Windows 10 OS with HCI drivers.

#### Compatibility

The Intel® 8260 WLAN+BT Card is compatible with the HP Z240, Z440, Z640, and Z840 Workstations.

NOTE: Not all models are available in all regions.

#### Service and Support

The Intel® 8260 WLAN+BT Card has a one-year Limited Warranty or the remainder of the warranty of the HP supported product in which it is installed. Technical support is available seven days a week, 24 hours a day, by phone, as well as online support forums. Certain restrictions and exclusions apply.

### Wireless Networking

#### **Network Management**

Supported

#### **PXE Support**

Microsoft Windows 7, Microsoft Windows 8.1, Microsoft Windows 10, RHEL 6,7; SUSE 11,12; Ubuntu 14.04

#### **LED Indicators**

IEEE 802.11abgn, 802.11ac, 802.11d, 802.11e, 802.11i, 802.11h, 802.11w

#### **Roaming**

Supports seamless roaming between respective access points (802.11b, 802.11g, 802.11a/b/g, 802.11a/b/g/n, and 802.11ac)

Dual Mode Bluetooth® 2.1, 2.1+EDR, 3.0, 4.0, 4.1, BLE, 4.2

---

### Wireless Networking

#### Technical Specifications

**Operating Temperature** 0 to 80°C

**Operating Humidity** Non-operating 50% to 90% RH non-condensing (at temperatures of 25°C to 35°C)

**Kit Contents** WLAN module with PCIe x1 card, Dual band antenna, USB cable for internal Bluetooth® connection, installation guide, warranty card

---

### Summary of Changes

Date of change:	Version History:		Description of change:
	From v1 to v2		

© 2016 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein. Intel and Core are trademarks of Intel Corporation in the U.S. and other countries. Microsoft and Windows are either trademarks or registered trademarks of Microsoft Corporation in the U.S. and other countries. Linux is the registered trademark of Linus Torvalds in the U.S. and other countries. Bluetooth is a trademark owned by its proprietor and used by HP Inc. under license. Red Hat is a registered trademark of Red Hat, Inc. in the United States and other countries.