QuickSpecs

Overview

Networking Adapters for HP Workstations

Models		
Ethernet Networking	**Part Number**	**Systems**
HP 1-Port 1GbE Flex IO NIC	3TQ26AA	HP Z2 G4 (Tower, Small-Form-Factor, and Mini)
Intel® I210-T1 1-Port 1GbE NIC	E0X95AA	HP Z240/Z440/Z640/Z840/Z4 G4/Z6 G4/Z8 G4
HP 361T 2-Port 1GbE NIC	C3N37AA	HP Z440/Z640/Z840
Intel® I350-T2 2-Port 1GbE NIC	V4A91AA	HP Z240/Z440/Z4 G4/Z6 G4/Z8 G4
Intel® I350-T4 4-Port 1GbE NIC	W8X25AA	HP Z240/Z440/Z640/Z840/Z4 G4/Z6 G4/Z8 G4
Aquantia® AQN-108 1-Port 5GbE NIC	1PM63AA	HP Z240/Z440/Z4 G4/Z6 G4/Z8 G4
Intel® X540-T2 2-Port 10GbE NIC	K4T75AA	HP Z440/Z640/Z840
Intel® X550-T2 2-Port 10GbE NIC	1QL46AA	HP Z4 G4/Z6 G4/Z8 G4
HP Z Dual-Port 10GbE Network Module	1QL49AA	HP Z6 G4/Z8 G4
Fiber Ethernet Networking		
Allied Telesis 1GbE LC Fiber 2pc Module	4CR69AV	HP Z2 G4 Mini
HP 560SFP+ 2-Port 10GbE SFP+ NIC	C3N52AA	HP Z240/Z440/Z640/Z840
Intel® X710-DA2 2-Port 10GbE SFP+ NIC[1]	1QL47AA	HP Z4 G4/Z6 G4/Z8 G4
HP 10GbE SFP+ SR Transceiver	C3N53AA	HP Z240/Z440/Z640/Z840/Z4 G4/Z6 G4/Z8 G4
Wireless Networking		
Intel® 8260 802.11 a/b/g/n/ac WLAN + Bluetooth 4.2 PCIe NIC	N0S95AA	HP Z240/Z440/Z640/Z840
Intel® 8265 802.11 a/b/g/n/ac WLAN + Bluetooth 4.2 PCIe NIC	1QL48AA	HP Z4 G4/Z6 G4/Z8 G4
Intel® 9260 802.11 a/b/g/n/ac Wave2 WLAN + Bluetooth 5 PCIe NIC	3TK89AA	HP Z8 G4[3]
Intel® 9560 802.11 a/b/g/n/ac WLAN + Bluetooth 5 M.2 NIC	2ZQ49AV [2]	HP Z2 G4 (Tower, Small-Form-Factor, and Mini)
Intel® AX200 802.11 a/b/g/n/ac/ax(WiFi 6) WLAN + Bluetooth 5 PCIe NIC	6VF53AA	HP 705 MT/800 G4/Z1
Intel® AX200 802.11 a/b/g/n/ac/ax(WiFi 6) V-pro WLAN + Bluetooth 5 PCIe NIC	7CE01AA	Z2 G4 Tower/SFF, HP Z4 G4/Z6 G4/Z8 G4

Notes:
[1] Intel® X710-DA2 is not supported on Windows 7 or Windows 8.1
[2] Part Number ending with AV implies that the option is only available in factory configuration for certain platforms and not as an aftermarket option kit

Ethernet Networking

HP 1-Port 1GbE Flex IO NIC(3TQ26AA)

Introduction
The HP 1-Port 1GbE Flex IO NIC is designed to work in the Flex IO port of select HP systems. Refer to platform specifications for compatibility. It utilizes a Realtek RTL8153 10/100/1000 Ethernet controller to provide an additional 1GbE LAN Port.

Performance and Features
- Supports IEEE 802.3az-2010, also known as Energy Efficient Ethernet (EEE). IEEE 802.3az-2010 operates with the IEEE 802.3 Media Access Control (MAC) Sublayer to support operation in Low Power Idle mode. When the Ethernet network is in low link utilization, EEE allows systems on both sides of the link to save power
- Fully compliant with Microsoft NDIS5, NDIS6 (IPv4, IPv6, TCP, UDP) Checksum features, and supports IEEE 802 IP Layer 2 priority encoding and IEEE 802.1Q Virtual bridged Local Area Network (VLAN).

Network Management
The HP 1-Port 1GbE Flex IO NIC provides Wake-on-LAN (WOL) support through the Flex IO port. 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 new or existing workstations 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.

Service and Support
The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	1 RJ-45
System Interface	Flex IO
Network Cable	1GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps, Half- and full-duplex

Ethernet Networking

Controller	Realtek RTL8153
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green): Off = 100Mbps, Green = 1Gbps
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Q (Virtual LAN) 802.3az (Energy Efficient Ethernet) FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	0.81W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	1.5 in x 1.5 in. x 0.75 in (3.81 cm x 3.81 cm x 1.9 cm)
Kit Contents	HP 1-Port 1GbE Flex IO NIC 2 screws for securing to the system motherboard Product Warranty statement and the Installation Guide.

Ethernet Networking

Intel® I210-T1 1-Port 1GbE 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.

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.

Performance and 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

Network Management

The Intel® I210-T1 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 new or existing workstations 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.
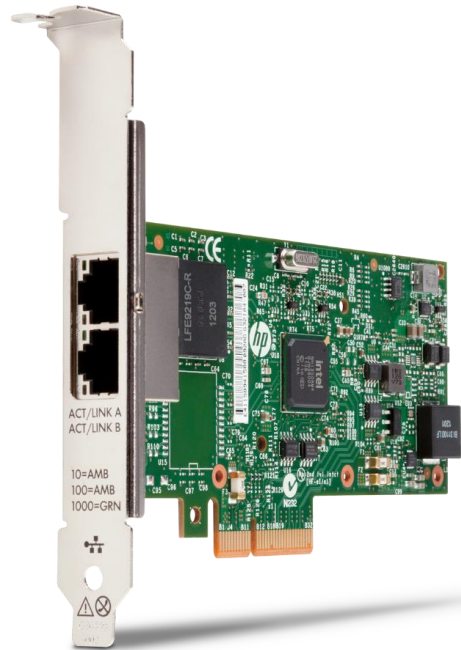
Ethernet Networking

Service and Support
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Technical Specifications

Network Interface(s)	1 RJ-45
System Interface	PCI Express v2.1 x1
Network Cable	1GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps, Half- and full-duplex
Controller	Intel® Ethernet I210 Controller
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = 10Mbps, Green = 100Mbps, Amber = 1Gbps
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Qav (Audio-Video Bridging) 802.1Q (Virtual LAN) 802.3az (Energy Efficient Ethernet) 802.1AS (Frame Expansion) IEEE 1588 (Precision Clock Synchronization) FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	0.81W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	0.709 in x 2.64 in. (6.7 cm x 1.8 cm)
Kit Contents	Clamshell container holding: • Intel® I210-T1 Single-Port 1GbE NIC with a standard height bracket attached • Low profile bracket Product Warranty statement and the Installation Guide.

Ethernet Networking

HP 361T 2-Port 1GbE 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.

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).

Ethernet Networking

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

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. WoL is limited to Port A only.

PXE Support
Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations 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.

Service and Support
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Technical Specifications

Network Interface(s)	2 RJ-45
System Interface	PCI Express v2.1 x4 (operable in PCI Express v2.1 x1 with potential performance degradation)
Network Cable	1GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps, Half- and full-duplex
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = 10Mbps, Green = 100Mbps, Amber = 1Gbps
Controller	Intel® Ethernet I350 Controller
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Q (Virtual LAN) 802.3az (Energy Efficient Ethernet) 802.1AS (Frame Expansion) IEEE 1588 (Precision Clock Synchronization) FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)

Ethernet Networking

Power Requirement	4.4W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	5.5 in x 2.75 in (14 cm x 7 cm) (without bracket)
Kit Contents	Clamshell container holding:

- HP 361T Dual-Port 1GbE NIC with a standard height bracket attached
- Low profile bracket

Product Warranty statement and the Installation Guide.

Intel® I350-T2 2-Port 1GbE NIC (V4A91AA)

Introduction

The 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).

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. WoL is limited to Port A only.

Ethernet Networking

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations 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.

Service and Support

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Technical Specifications

Network Interface(s)	2 RJ-45
System Interface	PCI Express v2.1 x4 (operable in PCI Express v2.1 x1 with potential performance degradation)
Network Cable	1GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps, Half- and full-duplex
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = 10Mbps, Green = 100Mbps, Amber = 1Gbps
Controller	Intel® Ethernet I350 Controller
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Q (Virtual LAN) 802.3az (Energy Efficient Ethernet) 802.1AS (Frame Expansion) IEEE 1588 (Precision Clock Synchronization) FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	4.4W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	5.5 in x 2.75 in (14 cm x 7 cm) (without bracket)
Kit Contents	Clamshell container holding: • Intel® I350-T2 Dual-Port 1GbE NIC with a standard height bracket attached • Low profile bracket Product Warranty statement and the Installation Guide.

Ethernet Networking

Intel® I350-T4 4-Port 1GbE NIC (W8X25AA)

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-T4 supports both 10Mbps Ethernet and 100Mbps Fast Ethernet in addition to Gigabit Ethernet, users are guaranteed end-to-end protocol support across their enterprise.

- Quad 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).

Ethernet Networking

Network Management
The Intel I350-T4 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. WoL is limited to Port A only.

PXE Support
Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations 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.

Service and Support
The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	4 RJ-45
System Interface	PCI Express v2.1 x4 (operable in PCI Express v2.1 x1 with some performance degradation)
Network Cable	1GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps, Half- and full-duplex
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = 10Mbps, Green = 100Mbps, Amber = 1Gbps
Controller	Intel® Ethernet I350 Controller
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Q (Virtual LAN) 802.3az (Energy Efficient Ethernet) 802.1AS (Frame Expansion) IEEE 1588 (Precision Clock Synchronization) FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	5.0W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)

Ethernet Networking

Physical Dimensions (LxW)	5.5 in x 2.75 in (14 cm x 7 cm) (without bracket)
Kit Contents	Clamshell container holding:

- Intel® I350-T4 Quad-Port 1GbE NIC with a standard height bracket attached
- Low profile bracket

Product Warranty statement and the Installation Guide.

Ethernet Networking

Aquantia® AQN-108 1-Port 5GbE NIC (1PM63AA)

Introduction

The Aquantia® AQN108 is a single chip, single port high-performance PCIe 3.0 four-speed 5GBASE-T / 2.5GBASE-T / 1000BASE-T / 100BASE-TX Ethernet adapter. The AQN108 supports line-rate performance of up to 5 GbE Ethernet links. AQN108 incorporates Aquantia's AQrate® technology which delivers 5 GbE and 2.5 GbE network connectivity speed through 100 meters of Cat 5e or Cat 6 cabling enabling higher data rates with zero change to legacy cabling.

Performance and Features

The AQN108 is compliant with the NBASE-T™ Alliance PHY Specification and the IEEE® 802.3an standard to perform all the functions required to implement 5GBASE-T / 2.5GBASE-T / 1000BASE-T / 100BASE-TX transmission over 100 meters of twisted pair cabling. The AQN108 adapter integrates such features as IEEE 802.3az Energy Efficient Ethernet (EEE), 1588v2, and Media Access Control Security (MACsec).

- PCI Express Gen3 x1
- Support for 9.5K Jumbo Frames, TCP/IP Checksum Offload (TCO) & large send offload (LSO)
- Supports cable runs up to 100 meters (328 feet)
- Supports Audio Video Bridging (AVB) and 1588v2 for management of time-sensitive traffic packets
- Supports Preboot eXecution Environment (PXE)
- Supports WoL

Network Management

The Aquantia® AQN-108 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 new or existing workstations 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

Service and Support
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Technical Specifications

Network Interface(s)	1 RJ-45
System Interface	PCI Express v3.0 x1
Network Cable	5GbE over Category 5e (or better) up to 100m
Data Rates Supported	100 Mbps, 1/2.5/5 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = No Link, Amber = <5Gbps, Green = 5Gbps
Controller	Aquantia® AQC108
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Qav (Audio-Video Bridging) 802.3az (Energy Efficient Ethernet) IEEE 1588 (Precision Clock Synchronization) 802.1P (Quality of Service) 802.1AE (MACsec) 802.3bz (NBASE-T) FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) Morocco UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	3.5W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	3.72 in x 3.18 in (9.5 cm x 8.1 cm) (without bracket)
Kit Contents	Clamshell container holding: - Aquantia® Single-Port 5GbE NIC with a standard height bracket attached - Low profile bracket Product Warranty statement and the Installation Guide.

Ethernet Networking

Intel® X540-T2 2-Port 10GbE NIC (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

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.

WoL is not supported on Intel® Ethernet 10-gigabit adapters.

Ethernet Networking

Service and Support
The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	2 RJ-45
System Interface	PCI Express v2.1 x8 (operable in PCI Express v2.1 x4 with potential performance degradation)
Network Cable	1GbE over Category 5e (or better) up to 100m 10GbE over Category 6 up to 55m 10GbE over Category 6a up to 100 meters
Data Rates Supported	100 Mbps, 1/10 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = No Link, Amber = <10Gbps, Green = 10Gbps
Controller	Intel® Ethernet Controller X540
Compliance	IEEE 802.1p 802.1Q VLANs 802.3 2005 Flow Control Support 802.3ad (Link Aggregation Control Protocol) FCC A (USA) CE (European Union) ICES-003 A (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	17.4W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	15.25 in x 6.5 in (38.7 cm x 16.5 cm) (without bracket)
Kit Contents	Clamshell container holding: • Intel® X540-T2 Dual-Port 10GbE NIC with a standard height bracket attached • Low profile bracket Product Warranty statement and the Installation Guide.

Ethernet Networking

Intel® X550-T2 2-Port 10GbE NIC (1QL46AA)

Introduction

The Intel® Ethernet Converged Network Adapter is the newest innovation in Intel's leadership to drive 10GbE into the broad server market. The adapter hosts Intel's latest Ethernet silicon, the Intel® Ethernet Controller X550, a low-cost single-chip 10GBASE-T solution for today's server platforms.

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
- Low profile design shipping with standard height and low-profile brackets
- SR-IOV for direct assignment: NIC-based isolation and switching for various virtual stations instances enabling optimal CPU usage in virtualized environments
- PXE 2.0 enabled through boot read-only memory (ROM)

WoL is not supported on Intel® Ethernet 10-gigabit adapters.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.
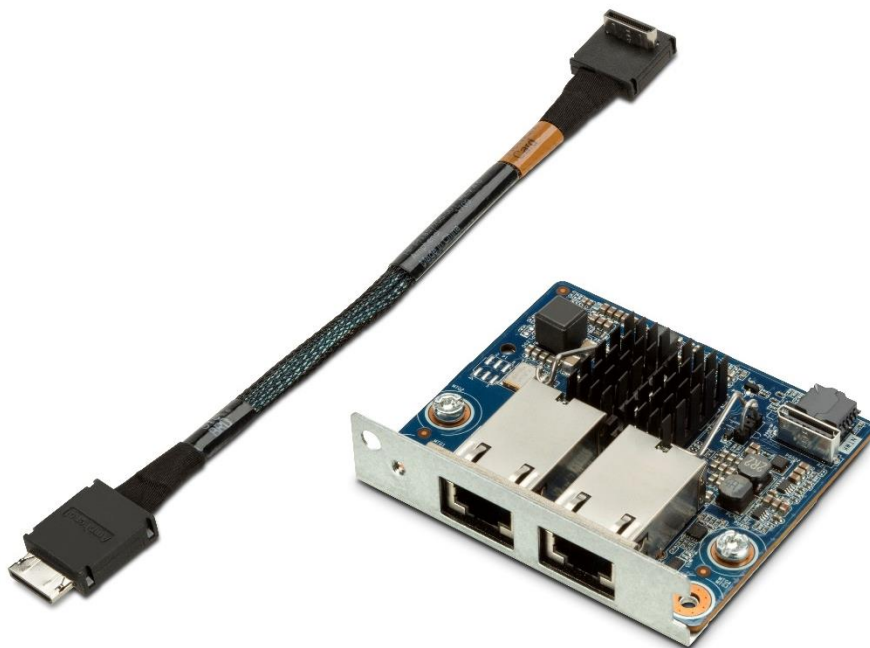
Technical Specifications

Network Interface(s)	2 RJ-45

Ethernet Networking

System Interface	PCI Express v3.0 x4 (operable in PCI Express v3.0 x4 with potential performance degradation)
Network Cable	1GbE over Category 5e (or better) up to 100m 5GbE over Category 5e (or better) up to 100m 10GbE over Category 6 (or better) up to 55m 10GbE over Category 6a (or better) up to 100 meters
Data Rates Supported	100 Mbps, 1/2.5/5/10 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = No Link, Amber = <10Gbps, Green = 10Gbps
Controller	Intel® Ethernet Controller X550
Compliance	802.1Q VLANs 802.1Qbg (Virtual Ethernet Port Aggregator) FCC A (USA) CE (European Union) ICES-003 A (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	11.2W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	5.1 in x 2.7 in (14.5 cm x 6.9 cm) (without bracket)
Kit Contents	Clamshell container holding: • Intel® X550-T2 Dual-Port 10GbE NIC with a standard height bracket attached • Low profile bracket Product Warranty statement and the Installation Guide.

Ethernet Networking

HP Z Dual-Port 10GbE Network Module (1QL49AA)

Introduction
The HP Z Dual-Port 10GbE Network Module HP Z 10GbE Dual Port Module is a 10GBASE-T adapter utilizing the Intel X722 MAC and X557-AT2 PHY pairing to deliver 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). Experience increased performance with offload protocols and Intel's iWARP RDMA protocol. The module was developed to be a low-cost option without the need of a PCIe slot, which can help with network transitions to 10G.

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 a theoretical 20Gb/s bi-directional near line rate throughput per port (combined dual port throughput limited)
- Remote Direct Memory Access (RDMA) using internet Wide Area RDMA Protocol (iWARP)
- SR-IOV capable in hardware (requires server FW, SW and OS support; 128 per device)
- 1,536 Transmit and Receive Queues per port
- Jumbo Frames, Checksum & Segmentation Offload, IPv6 and RSS
- Field replaceable and upgradeable
- Support for Preboot eXecution Environment (PXE)
- IEEE 1588 / IEEE 802.1as (Time Synchronization)
- Energy Efficient Ethernet (EEE) for low power consumption during periods of low data activity

Service and Support
The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP

Ethernet Networking

option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

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 up to 256 Virtual Machines (VMs) to share single PCIe resources. Network virtualization can be taken a step further with support of Network Service Headers (NSH), Geneve, VXLAN, and NVGRE. The HP Z Dual-Port 10GbE Network Module HP Z 10GbE Dual Port Module is SR-IOV ready, requiring firmware, software and OS support.

RDMA with iWARP
With the Intel® C620 series chipset, the HP Z Dual-Port 10GbE Network Module HP Z 10GbE Dual Port Module natively supports a form of Remote Direct Memory Access (RDMA) using Internet Wide Area RDMA Protocol (iWARP). The Intel iWARP support enables three performance-enhancing features: Kernel Bypass – which allows software applications to bypass the OS and directly access the Ethernet adapter resources, Direct Data Placement – which allows data to be written directly into user space, bypassing buffers, and Transport Acceleration – where the TCP/IP and iWARP protocols are accelerated in silicon relative to host software stacks. All of these features equate to reducing latency, freeing up processor cycles, and increasing memory bandwidth. RDMA support may be limited depending on OS support.

Dual-port 10 Gigabit Ethernet Throughput
The HP Z Dual-Port 10GbE Network Module HP Z 10GbE Dual Port Module delivers 20 Gbps full duplex Ethernet transfer rate per individual 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.
On the HP Z8 Gen 4 and Z6 Gen 4 Workstations, the HP Z Dual-Port 10GbE Network Module HP Z 10GbE Dual Port Module will operate with a combined theoretical throughput of 32 Gbps full duplex when both ports are actively transferring at maximum capacity.

Technical Specifications

Network Interface(s)	2 RJ-45
System Interface	Cabled interface through motherboard and to the Intel C622 Chipset
Network Cable	10GbE over Category 6a up to 100 meters
Data Rates Supported	1/10 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = No Link, Amber = 1Gbps, Green = 10Gbps
Controller	Intel X722 MAC's in Chipset, paired with the Intel X557-AT2 PHY
Compliance	FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) Morocco UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	Up to 7W
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	2.75 x 3 in (Module dimensions only)

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Kit Contents	HP Z Dual-Port 10GbE Network Module, module-to-motherboard Oculink cable, Rear I/O Label, Installation guide, Warranty card.

Fiber Ethernet Networking

Allied Telesis 1GbE LC Fiber 2pc Module (4CR69AV)

Introduction
The Allied Telesis 1GbE LC Fiber 2pc Module is a custom solution designed specifically for use in the compact space of the HP Z2 G4 Mini Workstation. It utilizes the PCIe connection provided by the Z2 Mini's WLAN M.2 slot and offers a 1GbE LC Fiber connection (via non-removable optics connector) for secure network connectivity.

Performance and Features
- WoL from S3, S4, and S5
- Up to 2Gb/s bi-directional near line rate throughput
- Hardware acceleration TCP/IP/UDP stateless intelligent offloads
  - ARP Offload
  - Large Send Offload V2 (IPv4/IPV6)
  - NS Offload
  - TCP/UDP Checksum Offload (IPv4/IPv6)
- Preboot eXecution Environment (PXE) via EFI or Legacy mode
- Jumbo Frames up to 9KB
- IPv6
- RSS (up to 4 queues)
- Integrated PHY and MAC

Service and Support
The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	1 LC Fiber Connection
System Interface	PCI Express Gen1.1x1 (via WLAN M.2 interface)

Fiber Ethernet Networking

Network Cable	1GbE over Multimode LC Fiber. Distance is dependent upon network cable: OM1 50/125um 500 MHz:km 550m OM2 62.5/125um 200 MHz:km 275m OM2 62.5/125um 160MHz:km 220m
Data Rates Supported	1 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity
Controller	Broadcom BCM57762
Compliance	IEE 802.3z Base1000SX 802.3x (Ethernet Flow Control) 802.1Q (VLANs) 802.1P (Quality of Service) FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	2W (Typical)
Operating Temperature	32° to 122° F (0° to 50° C)
Physical Dimensions (LxW)	LC Fiber Board: 37mm x 45mm x 13mm (WxLxH, including connector) Cable: 200mm M.2 Board: 22mm x 30mm x 1.75mm (WxLxH)

Fiber Ethernet Networking

HP 560SFP+ 2-Port 10GbE SFP+ NIC (C3N52AA)

Introduction
The HP 560SFP+ 2-Port 10GbE SFP+ Adapter is based on Intel's third generation 10GbE controller, Intel® 82599.

The HP 560SFP+ 2-Port 10GbE SFP+ 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
- 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)

WoL is not supported on Intel® Ethernet 10-gigabit adapters.

Service and Support
The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.
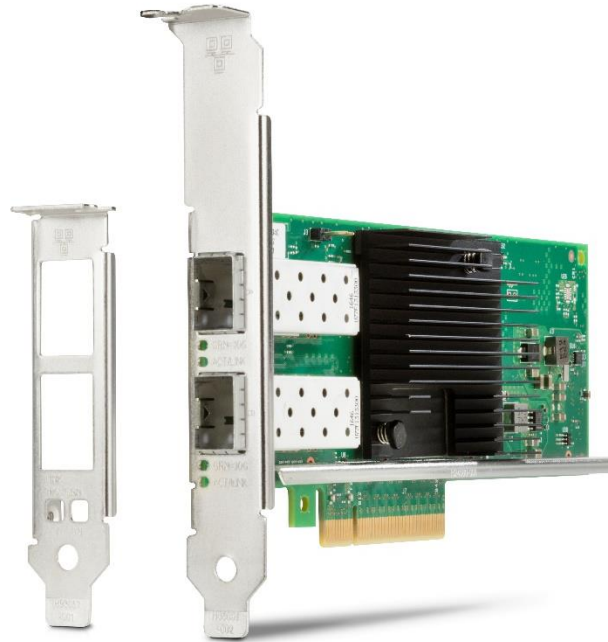
Fiber Ethernet Networking

Technical Specifications

Network Interface(s)	2 SFP+ Ports (designed to be used with HP 10GbE SFP+ Transceivers)
System Interface	PCI Express v2.1 x8 (operable in PCI Express v2.1 x4 with potential performance degradation)
Network Cable	10GbE over Multimode LC Fiber via HP 10GbE SPF+ SR Transceiver
Data Rates Supported	10 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Amber): Off = No Link, Amber = 10Gbps
Controller	Intel® 82599ES
Compliance	802.3 (LAN) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.3ad (Link Aggregation Control Protocol) 802.1Q (VLANs) 802.3az (Energy Efficient Ethernet) 802.1AS (Frame Expansion) IEEE 1588 (Precision Clock Synchronization) FCC A (USA) CE (European Union) ICES-003 A (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	10W (Typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	5.75 in x 2.25 in (14.6 cm x 4.7 cm)
Kit Contents	Clamshell container holding: • HP 560SFP+ Dual-Port 10GbE SFP+ NIC with a standard height bracket attached • Low profile bracket Product Warranty statement and the Installation Guide.

Fiber Ethernet Networking

Intel® X710-DA2 2-Port 10GbE SFP+ NIC (1QL47AA)

Introduction
The X710 adapters 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 new generation of X710 adapters are power misers. They deliver double the throughput with only half the power of the previous X520 generation.

Performance and Features
- Industry-leading throughput and latency performance
- Up to 40Gb/s bi-directional near line rate throughput
- Exceptional Low Power Adapters
- Network Virtualization offloads including VXLAN, NVGRE, Geneve, Network Service Headers (NSH)
- 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

WoL is not supported on Intel® Ethernet 10-gigabit adapters.

Service and Support
The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Fiber Ethernet Networking

Technical Specifications

Network Interface(s)	2 SFP+ Ports (designed to be used with HP 10GbE SFP+ Transceivers)
System Interface	PCI Express v3.0 x8 (operable in PCI Express v3.0 x4 with potential performance degradation)
Network Cable	10GbE over Multimode LC Fiber via HP 10GbE SPF+ SR Transceiver
Data Rates Supported	10 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = No Link, Green = 10Gbps
Controller	Intel® X710-AM2
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Q (Virtual LAN) 802.1Qbg (Virtual Ethernet Port Aggregator) 802.3az (Energy Efficient Ethernet) 802.1AS (Frame Expansion) IEEE 1588 (Precision Clock Synchronization) 802.1P (Quality of Service) 802.3ad (Link Aggregation Control Protocol) 10GBASE-SR FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	4.3W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	6.5 in x 2.5 in (16.5 cm x 6.4 cm)
Kit Contents	Clamshell container holding: • Intel® X710-DA2 Dual-Port 10GbE SFP+ NIC with a standard height bracket attached • Low profile bracket Product Warranty statement and the Installation Guide.

Fiber 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 following Network Adapters:
- HP 560SFP+ 2-Port 10GbE SFP+ NIC (C3N52AA)
- Intel® X710-DA2 2-Port 10GbE SFP+ NIC (1QL47AA)

Service and Support
The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Operating Temperature	32°F to 113°F (0°C to 45°C)
Operating Humidity	0% to 85%, noncondensing
Dimensions (HxWxD)	0.47 in x 0.54 in x 2.19 in (1.19 cm x 1.38 cm x 5.57 cm)

Wireless Networking

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

Introduction
The Intel® Dual Band Wireless-AC 8260 is Intel's 3rd Generation 802.11ac, dual band, 2x2 Wi-Fi + Bluetooth® 4.2 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.

Service and Support
The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

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

Technical Specifications

Wireless Networking

Network Interface(s)	Wireless LAN: 802.11ac dual-band 2x2, (up to 867Mbps) Bluetooth®: 4.2
System Interface(s)	PCI Express v2.1x1 10-pin or 6-pin cable for Bluetooth®
Operating Temperature	32°F to 176°F (0C to 80°C)
Kit Contents	PCI Express Card with M.2 WLAN Dual-Band Antenna USB cable for internal Bluetooth® connection Installation Guide Warranty Card

Wireless Networking

Intel® 8265 802.11 a/b/g/n/ac WLAN + Bluetooth 4.2 PCIe NIC (1QL48AA)

Introduction

The Intel® Dual Band Wireless-AC 8265 is Intel's 3rd Generation 802.11ac, dual band, 2x2 Wi-Fi + Bluetooth® 4.2 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 8265 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.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Roaming

Wireless Networking

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

Technical Specifications

Network Interface(s)	Wireless LAN: 802.11ac dual-band 2x2, (up to 867Mbps) Bluetooth®: 4.2
System Interface(s)	PCI Express v2.1x1 10-pin or 6-pin cable for Bluetooth®
Operating Temperature	32°F to 176°F (0C to 80°C)
Kit Contents	PCI Express Card with M.2 WLAN External Dual-Band Antenna USB cable for internal Bluetooth® connection Installation Guide Warranty Card

Wireless Networking

Intel® 9260 802.11 a/b/g/n/ac Wave 2 WLAN + Bluetooth 5 PCIe NIC (3TK89AA)

Introduction

The Intel® Dual Band Wireless-AC 9260 is Intel's 802.11ac wave 2, dual band, 2x2 Wi-Fi + Bluetooth® 5 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 9260 doubles the theoretical throughput up to 1.73 Gbps (from 867 Mbps) using 160 Mhz channels.

Performance and Features

- 802.11 a/b/g/n/ac wave 2, Dual band 2x2 with up to 1.73Gbps speed (theoretical maximum); 6x faster than 802.11n, with up to 6x more bandwidth per stream
- Dual mode Bluetooth® 5 provides up to 4x the range over Bluetooth 4.2 and doubles the transmit speed over the previous generation. Also added in Bluetooth 5 is support for indoor location services.
- Full support for latest Microsoft Windows 10 OS with HCI drivers.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Roaming

Supports seamless roaming between respective access points (802.11b, 802.11g, 802.11a/b/g, 802.11a/b/g/n, and 802.11ac wave2) Dual Mode Bluetooth® 2.1, 2.1+EDR, 3.0, 4.0, 4.1, BLE, 4.2, 5.0

Wireless Networking

Technical Specifications

Network Interface(s)	Wireless LAN: 802.11ac wave 2 dual-band 2x2, (up to 1.73Gbps) Bluetooth®: 5.0
System Interface(s)	PCI Express v2.1x1 10-pin or 6-pin cable for Bluetooth®
Operating Temperature	32°F to 176°F (0C to 80°C)
Kit Contents	PCI Express Card with M.2 WLAN External Dual-Band Antenna USB cable for internal Bluetooth® connection Installation Guide Warranty Card

Wireless Networking

Intel® 9560 802.11 a/b/g/n/ac WLAN + Bluetooth 5.0 M.2 NIC

Introduction
The Intel® Wireless-AC 9560 adapter is a 2x2 802.11ac Wi-F and Bluetooth® 5 combo module. It includes 802.11ac Wave 2 features such as 160MHz channels delivering up to 1.73Gbps and downlink MU-MIMO.

Performance and Features
- 802.11 a/b/g/n/ac, Dual band 2x2 with up to 1.73Gbps speed using 160MHz channels
- Bluetooth® 5 provides 4x range over Bluetooth® 4.2 with the same power and double the transmit speed for faster transmissions.
- Downlink MU-MIMO allows an Access Point to simultaneously transmit data to multiple clients and can improve overall downlink network capacity.
- Full support for latest Microsoft Windows 10 OS.

Service and Support
The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

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, 5.0

Technical Specifications

Network Interface(s)	Wireless LAN: 802.11ac dual-band 2x2, (up to 1.7Gbps) Bluetooth®: 5.0
System Interface(s)	PCIe Express via M.2 interface
Operating Temperature	32°F to 176°F (0C to 80°C)
Kit Contents	Factory Configurable Only

Wireless Networking

Intel® AX200 802.11 a/b/g/n/ac/ax WLAN + Bluetooth 5 PCIe NIC (6VF53AA)

Introduction

The Intel® AX200 is Intel's 1st Generation 802.11ax (also known as WiFi Wave 6), dual band, 2x2 Wi-Fi + Bluetooth® 5 adapter. WiFi Wave 6 compatibility greatly improves WiFi performance and reliability, especially in congested wireless network environments, while lowering latency, increasing range, and doubling data throughput over 802.11ac wave 2.
Combined with Intel® Core™ processors and exceptional Intel wireless innovations like Dynamic Regulatory Solution, the Intel® AX200 dramatically reshapes your connected experience at home, work, or on the go

Performance and Features

- 802.11 a/b/g/n/ac/ax Wave 6, Dual band 2x2 with up to 2.4Gbps speed (theoretical maximum); Up to 3x faster than 802.11ac and up to 4x capacity in congested environments than 802.11ac
- Dual mode Bluetooth® 5 provides up to 4x the range over Bluetooth 4.2 and doubles the transmit speed over the previous generation. Also added in Bluetooth 5 is support for indoor location services.
- Full support for latest Microsoft Windows 10 OS with HCI drivers.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Roaming

Supports seamless roaming between respective access points (802.11b, 802.11g, 802.11a/b/g, 802.11a/b/g/n, 802.11ac, and 802.11ax) Dual Mode Bluetooth® 2.1, 2.1+EDR, 3.0, 4.0, 4.1, BLE, 4.2 ,5.0

Technical Specifications

Wireless Networking

Network Interface(s)	Wireless LAN: 802.11ax dual-band 2x2, (up to 2.4Gbps) Bluetooth®: 5.0
System Interface(s)	PCI Express v2.1x1 10-pin or 6-pin cable for Bluetooth®
Operating Temperature	32°F to 176°F (0C to 80°C)
Kit Contents	PCI Express Card with M.2 WLAN External Dual-Band Antenna USB cable for internal Bluetooth® connection Installation Guide Warranty Card

Summary of Changes

Date of change:	Version History:		Description of change:
October 9, 2017	From v1 to v2	Added	Intel Ethernet I350-T4 4-Port 1Gb NIC card
November 9, 2017	From v2 to v3	Added	Intel X550 10GBASE-T Dual Port NIC , Intel X710-DA2 10GbE SFP+ DP NIC, 10GBASE-T Dual NIC Module Z6/8 G4, Intel 8265 802.11 a/b/g/n/ac&BT PCIe and Aquantia NBASE-T 5GbE PCIe NIC
September 10, 2018	From v3 to v4	Added	Added missing specs
September 21, 2018	From v4 to v5	Added	HP 1-Port 1GbE Flex IO NIC, Intel® 9560, Allied Telesis 1GbE LC Fiber 2pc Module
September 11, 2019	From v5 to v6	Added	Intel 9260 802.11 a/b/g/n/ac Wave 2 WLAN + Bluetooth 5 PCIe NIC and Intel AX200 802.11 a/b/g/n/ac/ax WLAN + Bluetooth 4.25 PCIe NIC
		Changed	Format
February 28, 2020	From v6 to v7	Added	Intel AX200 802.11 a/b/g/n/ac/ax(WiFi 6) V-pro WLAN + Bluetooth 5 PCIe NIC