

Intel® Ethernet Network Adapter E610-XT2/XT4



Key Specifications

- Backward compatible with multi-speed support for 10/5/2.5/1GbE, and 100BASE-TX
- Standard CAT5e/CAT6/CAT6A cabling with 100m reach
- PCI Express (PCIe) 4.0
- Low power consumption
- Network Virtualization Overlay aware with stateless offload support for VXLAN, GENEVE, and NVGRE
- Intel® Ethernet Flow Director for hardware-based application traffic steering
- Excellent small packet performance for network appliances and Network Functions Virtualization (NFV)
- Device attestation and encrypted BMC communications with secure SPDM

Overview

Simplify technology transitions with the Intel® Ethernet Network Adapter E610-XT2 and E610-XT4. These adapters support auto-negotiation between multiple port speeds to provide maximum flexibility for dual and quad-port configurations. The adapters' efficient design also delivers a significant generation-over-generation reduction in power consumption to enable diverse use cases across servers and network appliances.

The E610-XT2 and E610-XT4 are part of the Intel® Ethernet 600 Series, delivering the latest advances in 10GBASE-T and 2.5GBASE-T performance and connectivity, including advanced security features. The 600 Series offers modern standards-based cryptographic security anchored by hardware Root of Trust (RoT) and secure communications with management controllers to enhance Ethernet security.

10GBASE-T is one of the least-disruptive paths for upgrading from 1000BASE-T. The familiar RJ45 interface simplifies migration, and backwards compatibility allows for a staged approach to higher speed networks. With 10X performance improvement, migrating from 1 to 10GbE is a solid financial decision that is also budget friendly.

Why Intel® Ethernet

Intel Ethernet E610 Network Adapters offer best-in-class compatibility, performance assurance, and world-class customer support. Key features and technologies deliver outstanding performance and support for servers, network appliances, embedded and edge IoT workloads.

Compatibility and interoperability

- Extensive conformance testing to IEEE and Ethernet Technology Consortium standards
- Comprehensive operating system and hypervisor support
- Broad network interoperability testing for best-in-class compatibility

Performance assurance

- Validated on all x86 architectures and optimized for Intel® architecture
- Security protocols and management to ensure data integrity

Worldwide product support

- Industry-leading warranty
- World-class customer pre- and post-product support
- Adherence to regulatory and environmental requirements

All Intel® Ethernet 600 Series Network Adapters include these feature-rich technologies:

Low Power Consumption

With an absolute max power consumption of 5.1 W, the dual port E610-XT2 represents a 45 percent reduction in power compared to the Intel® Ethernet Network Adapter X710-T2L, and a 60 percent reduction in power compared to the X550-T2.

Flexible and Scalable I/O for Virtualized Infrastructures

Intel® Virtualization Technology (Intel® VT) delivers outstanding I/O performance in virtualized server environments.

I/O bottlenecks are reduced through intelligent offloads, enabling near-native performance and VM scalability. These offloads include Virtual Machine Device Queues (VMDq) and Flexible Port Partitioning using SR-IOV with a common Virtual Function (VF) driver for networking traffic per Virtual Machine (VM). Host-based features supported include:

VMDq for Emulated Path. VMDQ enables a hypervisor to represent a single network port as multiple network ports that can be assigned to individual VMs. Traffic handling is offloaded to the network controller, delivering the benefits of port partitioning with little or no administrative overhead.

SR-IOV for Direct Assignment. Adapter-based isolation and switching enables optimal CPU usage in virtualized environments.

- Up to 64 VFs per port; each VF can support a unique and separate data path for I/O-related functions within the PCI Express hierarchy.
- SR-IOV, used with a networking device, allows the bandwidth of a single port (function) to be partitioned into smaller slices that can be allocated to specific VMs or guests via a standard interface.

Advanced Traffic Steering

Intel® Ethernet Flow Director (Intel® Ethernet FD) is an advanced traffic steering capability. Large numbers of flow affinity filters direct receive packets by their flows to queues for classification, load balancing, and matching between flows and CPU cores.

Steering traffic into specific queues can eliminate context switching required within the CPU. As a result, Intel® Ethernet FD significantly increases the number of transactions per second and reduces latency for cloud applications like memcached.

Enhanced Network Virtualization Overlays (NVO)

Network virtualization has changed the way networking is done in the data center, delivering accelerations across a wide range of tunneling methods: VxLAN, GENEVE, NVGRE, MPLS, and VxLAN-GPE with NSH Offloads.

These stateless offloads preserve application performance for overlay networks, enabling network traffic to be distributed across CPU cores – increasing network throughput.

Manageability

Broad system manageability capabilities using the latest DTMF (Distributed Management Task Force) protocols.

- NC-SI 1.2 protocol compliance. Transport options include NC-SI over RBT and NC-SI over MCTP.
- Secured messages using SPDM over MCTP.
- PLDM over RBT with an extended list of message types, including T4, T5, and T6 over RBT, and MCTP transport.

Modern Standards-based Security

Intel offers modern standards-based cryptographic security anchored by a hardware Root of Trust (RoT).

- Device attestation in compliance with SPDM 1.1.2 Security Protocol and Data Model.
- Compliant with NIST SP 800-193 platform firmware resiliency guidelines.
- Meets FIPS 140-3 level 1 requirements.
- Secure boot isolates sensitive parameters and keys used for boot and operation.
- Secure firmware update verifies digital signatures of new firmware binaries.
- Recovery mode/failsafe mode is activated upon detection of abnormal device operation.

Specifications

General

Connections	RJ45 Copper
RJ45 Copper	10GBASE-T: 55 m using CAT6, 100 m using CAT6A 2.5GBASE-T and 5GBASE-T: 100 m using CAT5e, CAT6, or CAT6A 100BASE-TX and 1000BASE-T: 100 m using CAT5e, CAT6, or CAT6A

Power Consumption

Link Speed / Traffic	Dual Port		Quad Port	
	Typical Power	Max Power	Typical Power	Max Power
100 Mbps	3.4 W	3.4 W	6.0 W	6.0 W
1GbE	4.0 W	4.1 W	7.4 W	7.4 W
2.5GbE	4.1 W	4.2 W	7.4 W	7.5 W
5GbE	4.5 W	4.5 W	8.2 W	8.2 W
10GbE	5.1 W	5.1 W	9.6 W	9.7 W

Thermals and Airflow

	Heatsink to Port (0 - 65 °C) Minimum LFM	Port to heatsink (0 - 65 °C) Minimum LFM
Dual Port	100 LFM	100 LFM
Quad Port	100 LFM	130 LFM

Adapter Features

Data Rate Supported Per Port	10/5/2.5/1Gbps and 100Mbps
Bus Type/Bus Width	Dual-Port: PCIe 4.0 x4 Quad-Port: PCIe 4.0 x8 x8 (bifurcated – first 4 lanes of each x8 group)
Interrupt Levels	INTA, MSI, MSI-X
Hardware Certifications	FCC A, cULus, CE, VCCI, BSMI, RCM, KCC, EEE
Controller	Intel® Ethernet Controller E610-XAT2

Technical Features

Storage Temperature	-40 °C to 70 °C (-40 °F to 158 °F)
Storage Humidity	Maximum: 90% non-condensing relative humidity at 35 °C
LED Indicators	LINK (green = 10Gbps; yellow = 5/2.5/1Gbps, 100Mbps) ACTIVITY (green = link up/idle; blinking green = port activity)

Physical Dimensions

Dimensions	169 mm x 69 mm
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Supported Operating Systems

For a complete list of supported network operating systems for Intel® Ethernet 600 Series Network Adapters visit: [intel.com/support/EthernetOS](https://www.intel.com/support/EthernetOS)

Intel Regulatory

FCC Class A for World Wide EMC/EMI	Commercial usage
Safety	UL 62368-1 and CAN/CSA C22.2 No. 62368-1-14 - Audio/video, information and communication technology equipment Part 1: Safety requirements European Group Differences and National Differences according to EN 62368-1:2014
RoHS-compliant	Product is compliant with EU RoHS Directive 2011/65/EU (Directive 2011/65/EU) and its amendments (e.g. 2015/863/EU)

Product Order Codes

Configuration	Product Code
Dual Port (Single Pack)	E610XT2
Dual Port (Multi Pack)	E610XT2M5
Quad Port (Single Pack)	E610XT4
Quad Port (Multi Pack)	E610XT4M5

Warranty

Intel limited lifetime hardware warranty, 90-day money-back guarantee (US and Canada) and worldwide support. Visit: [Intel® Terms and Conditions of Warranty, Support and Services](#)

Customer Support

For customer support options in North America visit: intel.com/content/www/us/en/support/contact-support.html

Product Information

For information about Intel® Ethernet Products and technologies visit: intel.com/ethernet

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