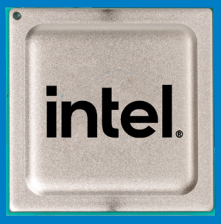
Product Brief
Intel® Ethernet 800 Series Controllers

Intel® Ethernet E830 Controller



intel
ETHERNET

Key Specifications

- 200Gb maximum throughput
- PCIe 5.0 x8 and 4.0 x16
- 200/100/50/25/10GbE
- Ethernet Port Configuration Tool
- SyncE, PTP and PTM
- Open vSwitch Acceleration
- iWARP and RoCEv2 Remote Direct Memory Access (RDMA)
- Hardware Root of Trust (RoT)
- Secure boot
- Secure firmware update
- FIPS 140-3 level 1

Overview

Open, standards-based, Intel® Ethernet E830 Controllers offer leading performance, security, manageability, and interoperability without the technical complexity and the high cost of proprietary technologies.

Modernizing the data center is made easier and less disruptive through driver compatibility between the Intel® Ethernet E830 Controllers and previous generation E810 Controllers, ensuring software consistency across generations of products.

Broad port density and speed combinations

E830 Controllers offer one of the broadest port densities and speed combinations in the market today, supporting 1x200Gb, 2x100Gb, 8x25Gb, 8x10Gb, 2x25Gb, 2x10Gb, and 2x1Gb in a single architecture.

Versatility and flexibility for the data center

Having the flexibility to reconfigure port density and speed for high-density, port-constrained environments can reduce TCO. Using the Ethernet Port Configuration Tool (EPCT), validate once, then configure the number of ports and port speed as often as needed in just two easy steps. Available for the 200Gb Intel Ethernet SKU.

Optimized for Intel® Xeon® processors

Every data center and workload needs computing capacity and powerful ways to move data securely. Intel® architecture offers both. Deployment-ready, reliable, and affordable, the Intel Ethernet E830 Controller is the perfect choice for amplifying performance for servers with Intel® Xeon® 6 processors.

Why Intel® Ethernet

Intel Ethernet E830 Controllers offer best-in-class compatibility, performance assurance, and world-class customer support. Key features and technologies deliver outstanding performance and support for data center 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
- Scales with processor cores and technologies

Worldwide product support

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

All Intel® Ethernet E830 Controllers offer these key features:

Programmable Pipeline / Dynamic Device Personalization (DDP)

DDP improves packet processing performance by using the E830 Controller's programmable pipeline to classify frames instead of the CPU. DDP increases throughput, lowers latency, and reduces host CPU overhead in both network functions virtualization (NFV) workloads and cloud-native architectures.

Data Plane Development Kit (DPDK)

DPDK-enabled to deliver faster NFV, advanced packet forwarding, and efficient packet processing resulting in effective use of CPU cycles and reduced overhead.

Precision Time Synchronization and Measurement

Growth in 5G RAN and edge deployments is driving demand for high-precision timing synchronization across the network.

Intel® Ethernet E830 Network Adapters enable service providers to build open, disaggregated vRAN solutions with off-the-shelf components to meet unique customer needs, including system size and budget.

- Synchronous Ethernet (SyncE) is integrated into E830 Controllers; integration increases accuracy, reduces cost, and simplifies firmware by removing the need to manage an external timer.
- Compliant with IEEE 1588 Precision Time Protocol (PTP) v2. SyncE and PTP maintain lockstep delivery of packets through a distributed network.
- Precision Time Measurement (PTM) v1.0a is a protocol used to synchronize a CPU with other devices in a server platform, such as a network adapter. Applications benefitting from PTM sub-microsecond timing accuracy include financial services, network monitoring, and distributed database systems.

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, NC-SI over MCTP.
- Unsigned SPDM over MCTP.
- PLDM over RBT with an extended list of message types, including T4, T5, over RBT and MCTP transport.

Open vSwitch (OVS) Acceleration

The E830 is optimized for Intel® Xeon® processors to minimize packet parsing overhead and flow table search. DPDK integration with OVS increases performance by eliminating extra layers in the architecture and native OVS stack.

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.
- Silicon Root of Trust (RoT) 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.

Performance

200Gb max throughput

Host Interface

PCI Express 5.0 x8, 4.0 x16

Network Interface

Link Establishment State Machine (LESM)

Flexible Ethernet Port Configuration with Ethernet Port Configuration Tool (EPCT)

1x 200Gb or 2x 100/50/25/10Gb connections or 8x 25/10Gb connections

200Gb: 200GBASE-CR4/KR4,
100Gb: 100GBASE-CR4/KR4, 100G-CAUI4, 100GBASE-CR2/KR2, 100GAUI-2, 100GAUI-4

50Gb: 50GBASE-CR2/KR2, 50GBASE-CR/KR, 50GAUI-1/-2, LAUI-2

25Gb: 25GBASE-CR/KR, 25G-AUI C2C/C2M, 25GBASE-CR1/KR1

10Gb: 10GBASE-KR, 10G SFI/SFP+

Packet Processing Pipeline

Fully programmable pipeline with enhanced Dynamic Device Personalization (DDP)

RDMA

RoCEv2

iWARP

Virtualization

Open vSwitch

SR-IOV with up to 256 Virtual Functions (VF)

768 Virtual Station Interfaces (VSI)

Microsoft VM Queue (VMQ)

VMware NetQueue

Traffic Steering

Receive Side Scaling (RSS)

Intel® Ethernet Flow Director

Stateless Offloads

TCP Segment Offload (TSO)

UDP Segment Offload (USO)

Large Segment Offload (LSO)

Checksum Offload (TCP/UDP/IP)

Large Receive Offload (LRO)

Transmit Side Scaling (TSS)

Receive Side Scaling (RSS)

Overlay Network Stateless Offload

VxLAN

GENEVE

GRE

Quality of Service (Qos)

Priority Code Point (PCP)

Differentiated Services Code Point (DSCP)

Enhanced Transmission Selection (802.1Qaz)

Priority-based Flow Control (802.1Qbb)

Advanced Transmission Scheduling

Package

23mm x 23mm FCBGA

Converged Storage Network

iSCSI

NVMe over TCP

Precision Clocks Synchronization

IEEE 1588 Precision Time Protocol, per packet time stamping

Integrated Synchronous Ethernet (SyncE)

Network Boot

Signed UEFI option ROM compatible with HTTPS boot

Management

NC-SI v1.2

NC-SI over MCTP

NC-SI over SMBus

MCTP over PCIe

BMC

PLDM over NC-SI over RBT and PLDM based firmware update

Environmental

Commercial Operating Temperature: Tj: 0 °C to 105 °C

Storage Temperature: -40 °C to 115 °C

Certifications

RoHS Compliant

FCC Class A

Product Order Codes

Product Name	Product Code	Speed
Intel® Ethernet Controller E830-CCAM1	EZE830CCAM1	200Gb
Intel® Ethernet Controller E830-XXVAM2	EZE830XXVAM2	25Gb

Warranty

Standard Intel limited warranty, one year. See Intel terms and conditions of sale for more details.

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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