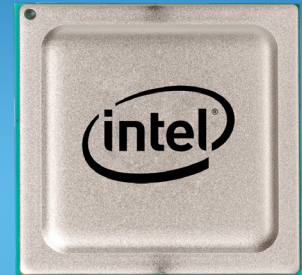


# Intel® Ethernet Controller E810-CAM2/CAM1/XXVAM2



## Move data faster with Intel® Ethernet 800 Series

### Key Features

- Supports multiple port speeds with a single architecture: 100/50/25/10/1GbE
- Application Device Queues (ADQ)
- Dynamic Device Personalization (DDP)
- Enhanced Data Plane Development Kit (DPDK)
- iWARP and RoCEv2 Remote Direct Memory Access (RDMA)
- Intel® Ethernet Adaptive Virtual Function (Intel® Ethernet AVF)
- Enhanced server virtualization: 256 VFs, 768 VSIs
- Optimized Advanced Transmission Scheduler
- Extensive Network protocol support
- IEEE1588/Precision Time Protocol
- Hardware Root of Trust with Firmware Recovery

### Overview

Intel® Ethernet 800 Series supports up to 100Gb/s throughput for a variety of workloads.

#### Enterprise:

- Broad physical interfaces support, thorough test and validation with ecosystem devices for compatibility
- Extensive Microsoft solution support

#### Communications:

- Flexible Ethernet Port Configuration with link modes supporting different fan-in or fan-out connections
- Leveraging the Intel Ethernet 800 Series' fully programmable pipeline, DDP can add or modify protocols on-demand improving packet processing efficiency
- Enhanced DPDK for Network Functions Virtualization acceleration, advanced packet forwarding, and highly effective packet processing
- IEEE1588 Precision Time Protocol (v1 and v2) with per-packet time stamping

#### Cloud:

- Up to 100Gb/s throughput for diverse workloads in modern data centers
- Support both iWARP and RoCEv2 RDMA, selectable via software per port for low-latency, high-throughput workloads
- Application Device Queues (ADQ) to increase application predictability, reduce application latency and improve application throughput

Intel® Ethernet Products are customers' choice for extensive compatibility, performance assurance, broad product selection, and world-wide support.

All Intel® Ethernet 800 Series Controllers<sup>1</sup> include these technologies:

### Supports both iWARP and RoCEv2 RDMA

RDMA is a host-offload, host-bypass technology that enables a direct memory-to-memory data communication between applications over a network. RDMA provides high throughput and low-latency performance for high-speed Ethernet by eliminating three major sources of networking overhead: TCP/IP stack process, memory copies, and application context switches.

**RoCEv2 (RDMA over Converged Ethernet):** RoCEv2 substitutes the InfiniBand physical layer and data link layer with Ethernet, operates on top of UDP/IP, and is routable over IP networks.

**iWARP, IETF standard protocols based:** Delivers RDMA on top of the pervasive TCP/IP protocol. iWARP RDMA runs over standard network and transport layers and works with all Ethernet network infrastructure. TCP provides flow control and congestion management and does not require a lossless Ethernet network. iWARP is a highly routable and scalable RDMA implementation.

Intel Ethernet 800 Series supports both RoCEv2 and iWARP that are selectable via software per port to provide the flexibility that customers need.

### Deliver consistent application performance with Application Device Queues (ADQ)

As modern data centers scale, a key challenge is to provide scalable and predictable application-level performance. ADQ technology improves performance scalability and predictability by dedicating specific resources to key workloads. ADQ enables application-specific data steering, signaling, and rate limiting using an optimized application thread to device data path.

### Improve packet processing efficiency with enhanced Dynamic Device Personalization (DDP)

DDP customizable packet filtering, along with enhanced DPDK, supports advanced packet forwarding and highly-efficient packet processing for both Cloud and Network Functions Virtualization (NFV) workloads. The introduction of the fully programmable pipeline in the Intel Ethernet 800 Series enhances DDP functionality by increasing the number of protocols that can be added in a DDP profile package. The Intel Ethernet 800 Series firmware can load an enhanced DDP profile with many workload-specific protocols at driver initialization for greater flexibility.

### Advanced Transmission Scheduling

The Intel Ethernet 800 Series features an enhanced Advanced Transmission Scheduling mechanism for a steady Tx traffic flow to avoid burst-send.

The transmission scheduling mechanism provides a decision tree of multiple layers with abundant queue resources, fine granularity of quanta size, high frequency decisions and advanced scheduling algorithm.

### IEEE 1588 Precision Time Protocol

The Intel Ethernet 800 Series supports both IEEE 1588 v1 and v2 with 2-step option. The products provide increased accuracy and can report the reception time for every packet.

### Ethernet Port Configuration Tool (EPCT)

Moving into high-speed Ethernet with 100Gb throughput, support for different link modes and specifications can be challenging. The Intel Ethernet 800 Series, with EPCT, provides the flexibility to support different link modes and speeds. The built-in Link Establishment State Machine (LESM) guarantees compatibility with the device on the other end of the wire.

### Intel® Ethernet Adaptive Virtual Function (Intel® Ethernet AVF)

This driver eases SR-IOV hardware upgrades and preserves base mode functionality in hardware and software. Customers deploying mass-scale VMs or containers for their network infrastructure can now leverage this common Virtual Function (VF) driver.

### Protect, Detect and Recover

Zero Trust is a security design strategy centered on the belief that organizations, by default, should not automatically trust anything or anybody inside or outside its perimeters and instead must verify anything and everything trying to connect and gain admittance to its systems before granting access.

The Intel Ethernet 800 Series implements a design philosophy of platform resiliency with 3 vectors of security: Protect, Detect and Recover, with Hardware Root of Trust to protect the firmware and critical device settings with built-in detection of corruption and automated device recovery to ensure returning the device to its originally programmed state.

## PERFORMANCE

100Gb Throughput

## HOST INTERFACE FEATURES

PCI Express 3.0/4.0 x16, x8

## NETWORK INTERFACE FEATURES

Link Establishment State Machine (LESM)

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

Up to 2 100Gb/50Gb connections or 4 25Gb connections or 8 10Gb connections

100Gb: 100GBASE-CR4/KR4, CAUI-4, 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+

## PIPELINE

Fully programmable pipeline with enhanced Dynamic Device Personalization (DDP)

## VIRTUALIZATION FEATURES

8 Physical Functions (PF)

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

Application Device Queues

## STATELESS OFFLOAD

TCP Segment Offload (TSO)

UDP Segment Offload (USO)

Large Segment Offload (LSO)

Checksum Offload (TCP/UDP/IP)

## OVERLAY NETWORK STATELESS OFFLOAD

VxLAN

GENEVE

GRE

## QUALITY OF SERVICE (QoS)

Priority Code Point (PCP)

Differentiated Services Code Point (DSCP)

Data Center Bridging (DCB/DCB-X)

Enhanced Transmission Selection (802.1Qaz)

Priority-based Flow Control (802.1Qbb)

Advanced Transmission Scheduling

## RDMA

iWARP

RoCEv2

## CONVERGED STORAGE NETWORK

iSCSI

SMB Direct

iSER

NVMe over RDMA (iWARP and RoCEv2)

Storage Performance Development Kit (SPDK)

NVMe over TCP

## PRECISION CLOCKS SYNCHRONIZATION

IEEE 1588 Precision Time Protocol, per packet time stamping

## NETWORK BOOT

Signed UEFI option ROM compatible with HTTPS boot

## MANAGEMENT

NC-SI over MCTP

NC-SI over SMBus

MCTP over PCIe

BMC

PLDM and PLDM based firmware update

## ENVIRONMENTAL

Operating Temperature: 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
Intel® Ethernet Controller E810-CAM2	EZE810CAM2
Intel® Ethernet Controller E810-CAM1	EZE810CAM1
Intel® Ethernet Controller E810-XXVAM2	EYE810XXVAM2

## SUPPORTED OPERATING SYSTEMS

For a complete list of supported operating systems for Intel® Ethernet 800 Series Controllers visit [intel.com/support/EthernetOS](https://www.intel.com/support/EthernetOS)

## 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](https://intel.com/content/www/us/en/support/contact-support.html)

## Product Information

For information about Intel® Ethernet Products visit:  
[intel.com/ethernet](https://intel.com/ethernet)

1. Features availability varies based on software and NVM release.

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