

# Kalray K200-LP Storage DPU™ Data Sheet



## Benefits

### A new class for performance

Up to 2M IOPS, 18GB/s per PCIe card

### Superior economics and efficiency

Up to 15x better perf/\$ @ 3x less W/IOPS

### No-compromise data services

Accelerated data protection, durability and security with the lowest latency

### Cost-optimized capacity performance

Transparent support of NVMe SSDs including the latest QLC for most workloads

### Robust software suite

Optimized transparency for seamless integration

### Industry standard compliance

Easy integration of hardware and SPDK-based software suite

## Use Cases

### Efficient data offloading

Data services offload from CPU and acceleration of local NVMe storage in high-performance storage servers and arrays

### Disaggregated composable storage

High-performance, disaggregated composable NVMe storage target services for cost and power efficient CPU-free storage enclosures (Smart-JBOF) for a seamless transition from SAS to NVMe-oF

## Overview

### Software-defined acceleration, transform from SAS to modern fabrics/NVMe-oF

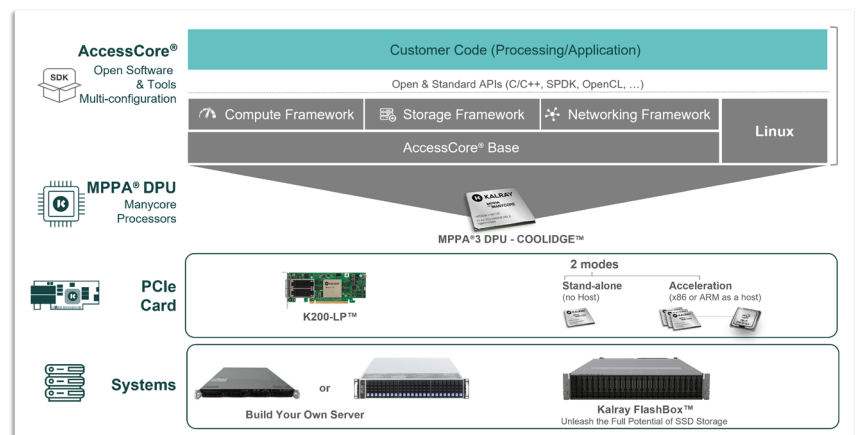
Kalray's MPPA3® data processing unit (DPU) is a new class of processor, specialized in intelligent data processing, for storage, compute and AI acceleration. Leveraging the patented manycore architecture, the DPU is natively capable of managing massive data flows and multiple workloads with no bottlenecks, to enable smarter, more efficient, and energy-wise data-intensive applications.

The DPU software Access Core Storage (ACS) offers a wide range of accelerated software-defined storage and storage networking services, specifically designed to **maximize the data center infrastructure's performance and power efficiency**. It includes robust support for local PCIe attached flash, including Quad-Level Cell (QLC) based SSD, as well as NVMe-oF RoCE and TCP, facilitating unparalleled performance and value.

With the Kalray DPU, data centers can unlock the full potential of their infrastructure and optimize performance and energy consumption while improving performance, retaining programmable open standards-based implementations and stacks, and leveraging built-in security to prevent data breaches and cyber attacks.

By integrating K200-LP DPU PCIe cards and ACS onboard software into data storage servers and storage enclosures, data centers can **accelerate their transition from traditional storage architectures relying on SAS to locally attached NVMe storage** and advanced, efficient disaggregated fabric-based NVMe-oF infrastructures.

This integration provides data centers with a fast path to meet the storage requirements of demanding workloads including HPC, AI/ML, and post-production, and embraces the benefits of modern, scalable, and flexible data solutions with minimal effort.



## K200-LP STORAGE DPU™ Features

### Host and network interfaces

#### PCI express Gen4 interface

- 16-lane PCIe GEN4 endpoint (EP) or root complex (RC)
- Bifurcation up to 8 downstream ports in RC mode
- SR-IOV up to 8 PF / 248 VF
- Address translation and protection
- Support for hot plug
- Up to 512 DMAs for multi queues/kernel bypass drivers

#### 2x100GbE QSFP28 Ethernet interface

- 2x 40GbE, 2x 100GbE
- Jumbo frame support (9.6KB)
- Priority flow control (PFC), IEEE 802.1Qbb
- Checksum offload header & payload
- Hash & round-robin dispatcher

### Security

- Hardware root-of-trust
- Secure boot with authentication & encryption
- True random number generator (TRNG), RSA, Diffie-Hellman, DSA, ECC, EC-DSA and EC-DH acceleration

### Accelerators

#### Cryptography (optional)

- AES-128/192/256 (ECB/CBC/ICM/CTR/GCM/GMAC/CCM), AES-XTS, MD5/SHA-1, SHA-2, SHA-3, Kazumi/Snow 3G, ZUC

### Storage

- Passthrough, LVOL, RAID 0, 1, 10, 6
- NVMe-oF RoCE, or TCP
- Snapshots, cloning, thin-provisioning

### Networking

- RoCE v1, v2
- Offloads:
  - TCP/UDP/IP checksums
  - VLAN insertion/stripping

### Management

- 1GbE out-of-band management port (internal)
- In-band and out-of-band unified interface for managing and monitoring (Redfish standard)
- Non-disruptive in-band firmware upgrades in HA mode

## Technical Specifications

Features	Specifications
Processor	Kalray MPPA®3-80 V1.2 @ 1GHz Fully programmable SPDK in data plane - 64 cores Linux management & control plane - 16 cores
Memory	20GB on-chip ultra-high speed memory 8GB DDR4 @ 3200MT/s
SSD device support	NVMe SLC, MLC, TLC, QLC
Network interface	2x QSFP28 100Gb Ethernet
Host interface	x16 PCIe Gen4 (RC and EP) bifurcatable
Format	Low profile – half length
Overall size	167.65 mm x 68.9 mm x 1 PCIe slot (with passive heat sink)
Power input	Only PCIe gold finger power input (75W: 12V@5.5A + 3.3V@3A)
Power consumption	36W (typical) 42W (max)
Safety, regulatory, and compliance	FCC, UL, VDDI, CE, Canada, RoHS Directive 2002/95/EC, WEEE Directive 2002/96/EC
MTBF	>200,000 hours
Operating temp	0C to 50C
Storage temp	-40C to 85C
Warranty	3 years (extendable)

For ordering information, contact your Kalray partner, sales representative, or visit [www.kalrayinc.com/contact-us](http://www.kalrayinc.com/contact-us)

