



## Fastest File Storage for AI and HPC

Scale to 100s of PBs

Extreme IOPS and Throughput

Software-Defined Flash Platform

Reduces Performance Infrastructure Footprint

Eliminates File System Bottlenecks

Accelerate One Application or all I/O

Supports InfiniBand, Omni-Path, and Ethernet

Flexible Data Protection Options

### IME Deployments



TACC



CSCS  
Centro Svizzero di Calcolo Scientifico  
Swiss National Supercomputing Centre



東京大学情報基盤センター  
Tokyo Tech



Tokyo Tech

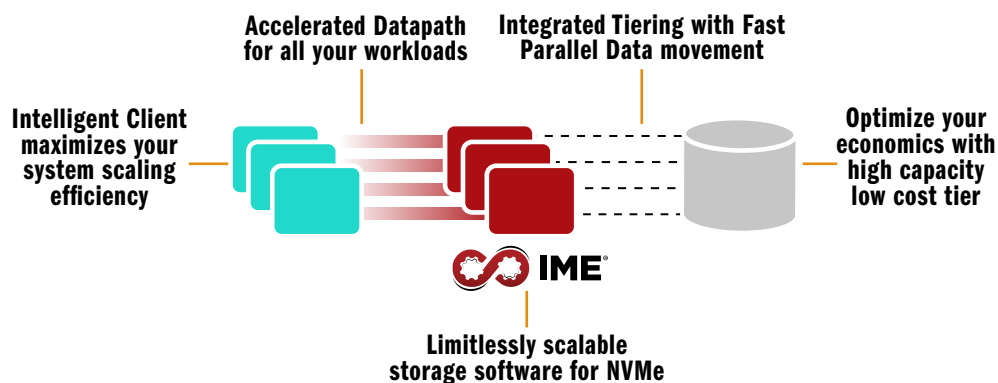


# DDN IME

Modern workloads in AI, Big Data and HPC are creating demand for a new approach to high performance storage. DDN's Infinite Memory Engine (IME<sup>®</sup>) is the first and only scale-out, software-defined file system that streamlines the data path for application I/O. IME software interfaces directly to applications and secures your data via a data path that eliminates file system bottlenecks. With IME, architects can realize true flash-cache economics with a storage architecture that separates capacity from performance.

### Innovation at Scale

IME was built ground-up as the first and fastest scaleout storage software that leverages NVMe flash to deliver the ultimate performance to your application workloads. IME delivers the benefits of true parallel scale-out design without compromising on performance, accelerating random, sequential, read and write workloads.



### Limitless Capacity and Integrated Tiering

IME's patented network erasure coding allows for scaling unmatched by any file system. IME software intelligently distributes application I/O eliminating hot spots in real-time and spreading your application workload evenly across your infrastructure. IME integrates natively into low-cost data tiers meaning your file system can scale limitlessly, with the economics to suit your budget.

- Maximize your flash media performance and lifetime
- Improve the efficiency of your network and storage through adaptive data routing
- Best Performance for the diverse I/O requirements of modern workloads and mixed CPU/GPU environments
- Ideal for delivering the data rates needed across commercial analytics and machine learning

## IME is well suited for a variety of use cases including:

- Machine Learning and Analytics: Scalable flash software that delivers performance into your containerized data pipelines
- Application Ensembles: A single namespace that serves all your complex workloads
- Application Workflows: Maintain your hottest data in IME's NVMe tier
- In-situ Analysis: Make real-time decisions on your live data streams
- Application Pre and Post-Processing: Prepare, format, adapt your data through IME's fast interfaces
- Checkpointing: Store HPC checkpoints radically fast with IME's unique approach to file I/O

## Appliance or in the Cloud

IME is available as software only running in the cloud or as an integrated appliance. The IME140 and IME240 appliances are built on a best-of-breed 1U and 2U storage respectively. The IME140 delivers over 20GB/s of bandwidth and over 350K IOPs direct to applications with up to 10 NVMe drives. The IME240 delivers over 20GB/s of bandwidth with up to 24 NVMe drives. Both IME140 and IME240 support flexible N+K erasure coding.



## Technical Specifications

	IME140®	IME240®
<b>System Features</b>	Active/Active Storage Controllers DeClustered RAID (DCR) supports erasure coding schemas: RAID 6 8+2, 4+2; RAID 5 8+1, 4+1; RAID 1 1+1	Sequential read performance up to 24GB/s; Sequential write performance up to 20GB/s Up to 1.5M IOPs per appliance
<b>Fabric Ports</b>	Up to 2x InfiniBand™ EDR/FDR; or 2x 10/40/100GbE Ethernet; or 2x Intel® Omni-Path	2x InfiniBand™ EDR/FDR; or 2x 10/40/100GbE Ethernet; or 2x Intel® Omni-Path
<b>Weight</b>	Maximum weight: 48lbs / 21.8KG	Maximum weight: 55lbs / 24KG
<b>Dimensions</b>	1RU; (WxHxD) 17.2 x 1.7 x 27.82 in. (437 x 43 x 707 mm)	2RU; (WxHxD) 17.2 x 3.5 x 27.76 in. (437 x 89 x 705 mm)
<b>Power</b>	550W total system power consumption (AC input requirement, max. config. with nine data drives)	796W total system power consumption (AC input requirement, max. config. with 23 data drives)
<b>Data Drives</b>	NVMe data drives up to 10 per system. Capacities from 2TB per NVMe SSD.	NVMe data drives up to 23 per system. Capacities from 2TB per NVMe SSD.
<b>System Drive</b>	2x 2.5", 1TB, SAS3.0 12GB/S, 7.2K RPM	2x 2.5", 1TB, SAS3.0 12GB/S, 7.2K RPM
<b>CPU, Memory</b>	Dual Intel® Xeon® Scalable Processors (skylake), 8x 8GB DDR4-2400 RAM	Dual Intel® E5 Series Processor, 8x 16GB DDR4-2400 RAM
<b>Out-of-Band Mgt.</b>		Dedicated IPMI LAN RJ45
<b>Drive Bays</b>	10, tool-less 2.5" drive bays	24, tool-less 2.5" drive bays
<b>Sequential Read and Write Performance</b>	Over 20GB/s (EDR/OPA)	Over 20GB/s (EDR/OPA)
<b>Erasure Coding</b>	N (data)+K (parity) Flexible Erasure Coding options with K=1, 2 or 3. Supports (3+1)...(15+1), (6+2)... (15+2), (9+3)...(15+3)	

## About DDN

DataDirect Networks (DDN) is the world's leading big data storage supplier to data-intensive, global organizations. DDN has designed, developed, deployed, and optimized systems, software, and solutions that enable enterprises, service providers, research facilities, and government agencies to generate more value and to accelerate time to insight from their data and information, on premise and in the cloud.

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