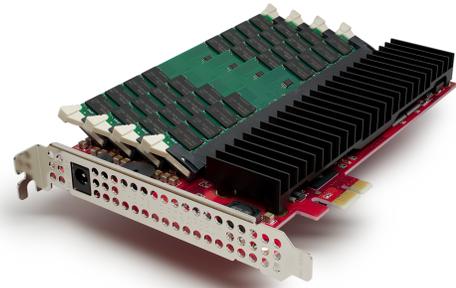


# DDRdrive™

The drive for speed.™

[www.ddrdrive.com](http://www.ddrdrive.com)



## ■ PRODUCT BRIEF

### ■ Product

The DDRdrive X1's breakthrough architecture combines equal capacities of DRAM and NAND to redefine solid-state storage. Singularly designed to target ZFS Intent Log Acceleration. The DDRdrive X1 is "The drive for speed."

### ■ Innovation

► **DRAM / NAND Synthesis** - A one-to-one correspondence between solid-state storage capacities. Combines the superior speed, reliability, and longevity of DRAM with the non-volatility of NAND. Removes the necessity and thus performance penalty of a Flash wear leveling implementation. Resolves the inherent random write limitations of a Flash based SSD by directling all IO to DRAM.

► **HBA / SSD Unification** - Negates needless data transfer between the otherwise physically separate HBA and SSD.

► **Lowest Latency Architecture** - A single chip FPGA based storage accelerator, in-the-field upgradable and purpose-built to dominate IO operations. Achieves the lowest possible latency by permitting a single "hop" between the host CPU and storage. Contrast to a SAS SSD which has an absolute best case of two hops, as at least two controller chips must be now traversed. Even worse, a three hop latency exists when the SAS SSD is mounted in a JBOD (via expander).

► **Custom Device Driver** - Replaces archaic SCSI protocol transfers with a direct-to-hardware storage stack, bypassing the inefficiency dictated by the SAS SSD's end-to-end SCSI.

► **Supercapacitor Powered** - The SuperCap PowerPack is guaranteed maintenance-free for the entire 5 year warranty.

### ■ Performance

Random 512B Writes up to: **200,000+ IOPS** <sup>2</sup>  
Random 512B Reads up to: 300,000+ IOPS <sup>1</sup>

Random 4KB Writes up to: **44,000+ IOPS** <sup>2</sup>  
Random 4KB Reads up to: 50,000+ IOPS <sup>1</sup>

Sustained Sequential Writes up to: **155+ MB/s** <sup>1</sup>  
Sustained Sequential Reads up to: 215+ MB/s <sup>1</sup>

<sup>1</sup> DDRdrive Control Panel Benchmark <sup>2</sup> Iometer 2006.07.27

### ■ Power

Maximum Active Power Draw: 9.91 W  
Minimum Idle Power Draw: 4.96 W

► ► 30,000+ IOPS/W or 33 µW/IOPS ◀ ◀

### ■ Price

SRP \$1,995.00 - Including a 5 Year Limited Warranty  
DDRdrive X1 4GB/4GB - AC Adapter - Transport Case

► ► 150+ IOPS/\$ or 0.007 \$/IOPS ◀ ◀

### ■ Target Market

ZFS Intent Log (ZIL) Accelerator (a.k.a ZFS log device)

### ■ Capacity

Primary Storage Capacity: 4GB DRAM \*  
Secondary Backup Capacity: 4GB SLC NAND \*

\* Available Raw Storage - 4,160,749,568 bytes

### ■ Device Driver Support

Omnios (all versions)	Syneto Storage OS
Oracle Solaris 11 (all versions)	SmartOS
Nexenta NexentaStor v3 thru v4	OpenSolaris (2009-06 through b134)
OpenIndiana (oi_147,oi_148)	

### ■ Backup/Restore

Complete Drive Backup: DRAM to NAND in 60 Seconds.  
Complete Drive Restore: NAND to DRAM in 60 Seconds.

Lifetime Number of Drive Backups: 100,000+

### ■ Hardware Requirements

PCI Express v1.0a, v1.1, v2, v3 X1/X4/X8/X16 Slot \*

\* Single-Wide / Full-Height \*\* / Full-Length Form Factor  
\*\* Top DIMM extends past PCB, confirm chassis compatibility.