ioDrive Duo™

ioDrive Duo 640GB & 1.28TB

Fusion-io is the leader in accelerating application performance while consolidating infrastructure costs using Enterprise-class solid state technology.

Customers who use Fusion-io technology have achieved orders of magnitude performance improvements, infrastructure consolidation, and reliability benefits. VSL is only available with the ioDrive and its unique controller, making it possible to do things that would otherwise be impossible.

The Fusion-io ioDrive is a low latency/high performance solution based on its unique virtual storage layer (VSL). The VSL is a new storage subsystem that acts like storage for applications, yet interacts with host systems like another tier of memory. Without VSL, data must pass through multiple layers of memory and embedded processors, which results in context switching, queuing bottlenecks, and I/O storms, all of which increase latency thus starving customers of their mission critical data.

PERFORMANCE

ioDrives deliver unmatched I/O performance to applications, databases, and systems. Using an innovative "cut-through" architecture Fusion-io technology provides direct and parallel access between CPU cores and ioDrive Flash arrays, enabling 3-10x performance with near linear scaling; consistent performance across different read/write workloads; and low latency with minimal interrupts and context switching.

Other storage solutions today have to sacrifice any number of elements to improve in any one area; for example…RAID implementations applied to magnetic disks sacrifice either performance or capacity for reliability, or sacrifices latency for bandwidth, or bandwidth is sacrificed for IOPS. The ioDrive's balanced design doesn't have to make any sacrifices when it comes to performance, capacity, or reliability.

CONSOLIDATION

Performance improvements enable customers to do more with less, improving the efficiency of their existing infrastructure. By exceeding the performance of an entire SAN on a single card, customers can do more with their existing hardware. In data-intensive environments, such as databases, web scale-out, and virtualization, customers are able to meet performance requirements with as little as 1/10th of their previous infrastructure, resulting in storage consolidation, software license consolidation, and dramatic savings on administration, power, cooling and floor space.

RELIABILITY

ioDrives have a simple and elegant design that requires fewer components and failure points than traditional disk-based solutions. Its enterprise reliability features include the following:

- Advanced error correction to ensure data integrity
- No DRAM caches that require backup power like failure-prone batteries and super-caps
- Fusion-io Flashback protection with chip-level N+1 redundancy
- Unique self-healing to protect against silent corruption
- Industry's only Power-cut feature that protects data in the event of server power failure
- Management tools that includes benefits like data awareness and monitoring , real-time performance, and global management

Following is just a sampling of industries and applications for which ioMemory-based products are ideal.
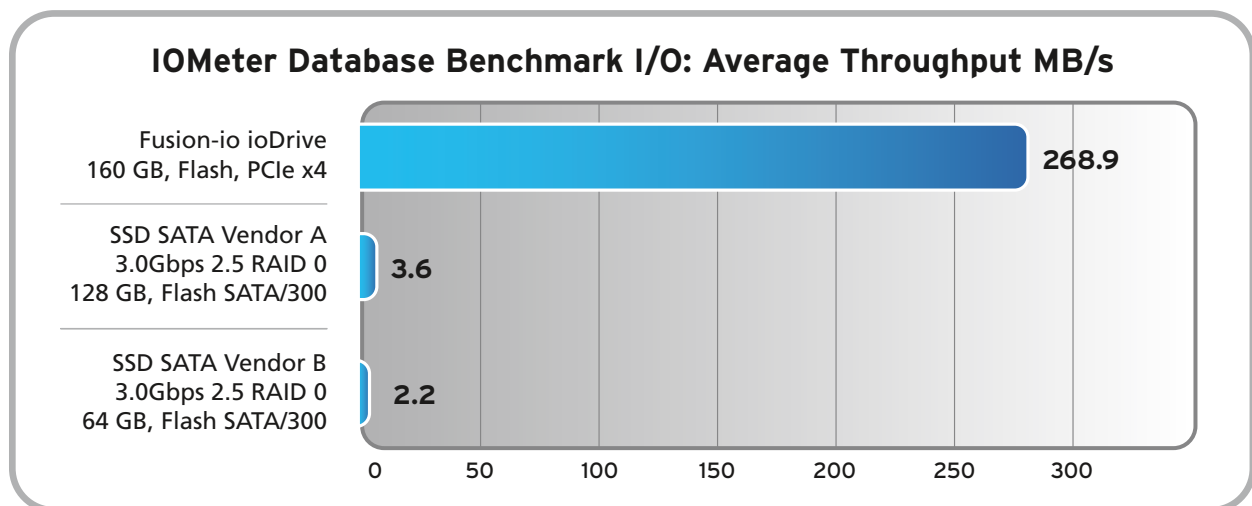
INDUSTRIES

- Web
- Financial
- BI/Data Warehouse
- Digital Media
- Government
- MS Business
- Seismic Processing
- Bio-tech
- Medical
- Telecommunications

APPLICATIONS

- Databases
- Web caching
- Virtualization
- Web 2.0
- Data Warehousing

REAL-WORLD PERFORMANCE

The following demonstrates the ioDrive's throughput compared to a popular SSD.

IOMeter Database Benchmark I/O: Average Throughput MB/s

Fusion-io ioDrive 160 GB, Flash, PCIe x4	268.9
SSD SATA Vendor A 3.0Gbps 2.5 RAID 0 128 GB, Flash SATA/300	3.6
SSD SATA Vendor B 3.0Gbps 2.5 RAID 0 64 GB, Flash SATA/300	2.2

0   50   100   150   200   250   300

Source: Tom's Hardware

ioDrive Duo™

> Sustain over 250,000 I/Os per second
> Easily RAID multiple ioDrive Duo's
> Half length easily fits most servers

ioDrive Duo Capacity	640GB	1.28TB
NAND Type	MLC (Multi Level Cell)	MLC (Multi Level Cell)
Read Bandwidth (64kB)	1.5 GB/s	1.5 GB/s
Write Bandwidth (64kB)	1.0 GB/s	1.1 GB/s
Read IOPS (512 Byte)	196,000	185,000
Write IOPS (512 Byte)	285,000	278,000
Mixed IOPS (75/25 r/w)	138,000	150,000
Access Latency (512 Byte)	29 µs	30 µs
Bus Interface	PCI-Express x4 / x8 or PCI Express 2.0 x4	
Operating Systems	64-Bit Microsoft XP/Vista/Win7/Server 2003/Server 2008, RHEL 4/5/6, SLES 10/11	
Server Platforms	R610, R710, R810, R910, and M610X	

AGENCY

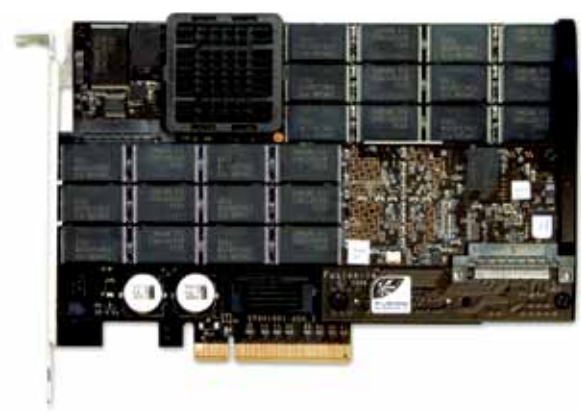|	
US / Canada	ANSI C63.4/EN 55022/ CNS 13438, Radiated and Conducted Emissions Class A EN 55024 Immunity EN 55022 Class A
Europe	2004/108/EC EMC Directive CE IEC 61000 Class A Mark
Japan	VCCI - V-2/2009.04
Taiwan	BSMI - CNS 13438 / EN 55022 class A
New Zealand/Australia	AS/NZS CISPR22:2006 / 47CFR Part 15, Radiated and Conducted Emissions Class A
Korea	KCC – FIO-IODRIVE DUO (Class A)
RoHS	RoHS – EU Directive 2002/95/EC

STANDARDS

Form Factor	Full height, Half length PCI Express 2.0
Connectivity	PCI Express electromechanical spec 2.0
Power	PCI Express power spec 2.0

ENVIRONMENTAL SPECIFICATIONS

		Min	Max
Temperature (ºC)*	Operational	0	55
	Non-operational	-40	70
Air Flow (LFM)		300	
Humidity (%)	Non-condensing	5	95
Altitude (ft)	Operational		10,000
	Non-operational		30,000

 * Temperate derated 1 C per 1000 ft elevation above sea level

100% Designed and Assembled in the U.S.A.

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