



WHITE PAPER: LACIE FASTKEY USB 3.0 SSD

Summary and FAQ

This white paper discusses the advantages of solid-state drives over traditional hard disk drives, focusing on LaCie's first implementation of this emerging technology, the FastKey USB 3.0.

WHAT IS A SOLID STATE DRIVE (SSD)?

SSD is exclusively composed of NAND flash memory chips and a very fast controller.

Reliability and speed are higher than standard hard disks because there are no moving parts inside, latency, or variable transfer speeds.

LaCie FastKey is a true SSD.



MLC OR SLC?

Single-Layer Cell is usually used in “professional grade” products, because both price and reliability are higher reliability.

Multi-Layer Cell is usually used in “consumer grade” products.

Both technologies have the same architecture.

LaCie FastKey uses MLC technology.

WHAT IS USB 3.0?

USB 3.0 (or SuperSpeed USB 3.0) is the latest implementation of the USB technology (improving on USB 1.1 and USB 2.0).

The main improvement is transfer speed (now up to 5Gb/s) and decreased power consumption over USB 2.0.

LaCie FastKey is a native USB 3.0 device but is compatible with USB 2.0 and 1.1.

WHAT IS WEAR LEVELING?

NAND flash memory chips have a limited lifetime (1,000,000 “Programmed/Erased” cycles). Wear Leveling has been created in order to mitigate this problem by spreading writes over the entire device and not always on the same memory blocks.

LaCie FastKey uses wear levelling.

WHAT IS TRIM FUNCTION?

TRIM is a command for Windows 7, Windows Server 2008, and Linux.

TRIM improves performance when you delete files to prepare the space for future writing. The delete is slower, but you get better performance for future writes because the space is already empty.

LaCie FastKey is compatible with the TRIM function.

PERFORMANCE

Access Time – The time a program or device takes to locate a single piece of information and make it available to the computer for processing. Access time is typically measured in milliseconds (ms).

Access time for LaCie FastKey is less than 1ms, up to 18 times faster than a hard disk.

Sequential Transfer Rate – The amount of data that the device can read or write to adjacent sectors of the storage media in one second.

Sequential transfer rate is typically measured in megabytes per second (MB/s).

Random Transfer Rate – The amount of data that the device can read or write to non-adjacent sectors of the storage media in one second.

Random transfer rate is typically measured in megabytes per second (MB/s).

Measured speeds on LaCie FastKey are up to 260MB/s in read mode and 180MB/s in write mode. (USB 2.0 delivers 40MB/s in read mode and 20 MB/s in write mode.)

Turbo USB 3.0 Drivers

LaCie FastKey can work with specific USB 3.0 drivers developed by Symwave.

These drivers permit superior performance with LaCie FastKey on Windows-based computers.

USB 3.0 Drivers for Mac

LaCie has recently released exclusive USB 3.0 drivers for Mac OS 10.6.

These drivers permit full USB 3.0 speeds and compatibility between LaCie’s USB 3.0 products and Apple computers.

WHAT IS DRAM CACHE?

Dynamic Random Access Memory (DRAM) buffer boosts SSD performances and dramatically increases the random and sequential read and write transfer rates for small files.

LaCie FastKey includes 64MB of DRAM Cache, which permits small file copying 100 times quicker than with USB 2.0.



HOW TO GET MAXIMUM PERFORMANCE WITH LACIE FASTKEY USB 3.0?

Overall performance is always limited by the slowest component in the system. So be sure that your computer and your USB 3.0 motherboard or USB 3.0 card is correctly installed and configured.

FastKey can reach 260MB/s with the following (or equivalent) system configuration:

- ◆ Motherboard ASUS P5Q3
- ◆ Intel Quad Core Q8200 2.34GHz CPU
- ◆ 4GB of RAM DDR3
- ◆ Windows 7 32-bit
- ◆ Turbo USB 3.0 drivers (available on the LaCie FastKey or from www.lacie.com)
- ◆ Crystal Disk Mark 3.0

Speed Results with USB 3.0 PCI Express Card or ExpressCard/34 can be lower (approx. 150MB/s with a PCI Express Card and 50MB/s with an ExpressCard/34).

ABOUT LACIE

Through a combination of cutting-edge engineering and a rich history of unique design aesthetics, LaCie has earned an excellent reputation for producing products that are the perfect synthesis of form and function. Our hard disks and SSDs, network and RAID solutions, optical drives, displays, and accessories are created to enhance and expand your computing environment, no matter its platform or configuration.

Featuring the exclusive styles of world-renowned designers such as Neil Poulton, Philippe Starck, Karim Rashid and Sam Hecht, LaCie's award-winning products look stunning and perform with unparalleled reliability and versatility. LaCie is a global leader in manufacturing top-of-the-line tools that are often first-to-market, constantly raising the bar and re-establishing industry standards.

Please visit our website: www.lacie.com, for up-to-date product specifications—available in multiple languages for worldwide accessibility. Use it to purchase items online, contact our excellent technical support or locate the sales office or reseller nearest you.



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