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Review: Top four external drives

Richard Ericson

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Broadband connections, peer-to-peer networks and larger media files coupled with new regulations that require diligence in backing up files have clearly affected the external hard drive market as drive capacities expand to 1TB and beyond. Meanwhile, the prices of those drives continue to drop, making them ever more attractive, particularly with the ease of deployment -- literally a two-minute installation, and you're ready to go.

We put four of the leading external hard drives to the test. Our criteria were simple: The drives had to have multiple connection technologies (USB 2.0 plus FireWire 400 or FireWire 800 or both), include backup software and have a capacity of at least 500GB.

We ran four performance tests using four different PCs running Windows XP SP2.

For starters, we ran HD Tach (Simpli Software's benchmark suite) on each drive with each interface we connected. HD Tach tests the random read speed across several locations on the disk and averages the times ([see accompanying chart](#)). HD Tach's burst read speed isolates the speed of the interface the device is attached to and measures the maximum speed at which data can be transferred from a device's internal cache memory to the CPU. (The more devices you have connected to the interface, the more important burst speed is.) HD Tach's final test reads each track, from the inside to the outside of the disk, averaging the results. Since read speeds are faster on the inside tracks, a full-disk test is more accurate to judge overall speed.

We also created a testbed of files, which consisted of a combination of large multi media files (JPEG, MPG and AVI), large audio files, executables, Word and Excel documents, and several compressed Windows installation files. We copied them from our system to the external drive. This test is useful for comparing relative speeds of the drives, includes the overhead of the interface tested and most closely simulates the "real world" use of backing up files from your hard drive to the external drive. We clocked the elapsed time to the nearest second.

The drives share several features in common. For example, they were all easy to install -- just plug in the power cord, make the connection, and wait for Windows to recognize the drive. Each manufacturer noted that only one connection -- USB or FireWire -- can be made at a time.

All but the LaCie drive were preformatted to the stated capacity, all are quiet enough to not be distracting,

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and all include the cables needed to use the drive with the USB and FireWire interfaces each supported.

The drives are reviewed here alphabetically by manufacturer name.

[Iomega Desktop Hard Drive](#)

Model tested: MDHD750-1, 750GB (\$449.95)



Also available: 500GB (\$239.95), 320GB (\$189.95)

Iomega Corp.'s slim and attractive Desktop Hard Drive is simplicity itself. It's also the only unit to sport a plain vanilla on/off power switch on the back of the drive. Supporting all three interfaces (and including a

pass-through FireWire 800 port for connecting an additional device), the connections are clearly marked with icons and descriptions on the back of the drive. The unit has no fancy lights -- just a single blue power light on the front, which is all you really need. A stand is provided for vertical operation, though it can also operate horizontally.

Iomega includes a minimal Quick Start Guide (in 17 languages), with a more comprehensive user guide (including directions for formatting or partitioning the drive, for example) on the accompanying CD. Unfortunately, the CD contains user manuals for several drive models, and ours didn't exactly match the picture of the drive with USB and FireWire support, which was a bit confusing.

No files for the backup or user guide are preinstalled on the drive, which is a smart move, we think, because you might accidentally erase them when you reformat the drive. Another plus: Operation was smooth and faultless. The drive performed exactly as expected using all three interfaces. Windows recognized the drive, the backup software worked as expected, and we didn't have to worry about whether the drive's automatic startup/shutdown feature would work -- it doesn't have one.

Though in our benchmark tests the Iomega turned in the slowest results in both the copy test and HD Tach tests, it wasn't far behind the Western Digital Corp. My Book. For example, the copy test took 7:50 with the FireWire 400 interface, while the Western Digital completed the job in 7:46, an insignificant difference.

Like the Western Digital My Book, backup and restore duties are handled by EMC's Retrospect Express 7.5. It's a full-featured utility, though its user interface isn't easy for novices and occasional users to understand.

[LaCie d2 Quadra](#)

Model tested: 500GB (\$259.99)



Also available: 320GB (\$189.99)

The LaCie d2 Quadra comes with the best set of performance benchmarks, especially the copy test. Unfortunately, it also came with the most headaches and nonfunctioning features of any of these four drives.

First, the good news. The drive's HD Tach and copy benchmarks gave the best numbers of the group -- copying with the FireWire 800 connection, which has a second pass-through port, sliced more than 40% off the time of than its closest competitor -- 3:10 versus 5:21 for the Western Digital MyBook. At list prices, it has the lowest per-gigabyte

cost, and the Kensington security slot is a nice safety feature.

In addition to the USB and two FireWire connections (one acts as a pass-through), the d2 Quadra has a fourth connection (hence its name) -- eSATA (though no cable is provided). A removable stand lets you operate the drive vertically; it fits into a groove on the side of the drive. It's also the only drive of the four capable of being rack-mounted.

The drive's FireWire connections worked fine with all four of our test machines, but the USB 2.0 refused to be recognized in one of them. The warning message that the drive was malfunctioning was our first experience with the drive, leading us to be wary. It turned out that was just the beginning of our disappointment.

The drive comes with two backup programs. LaCie 1-Click backup does little more than copy files to or from the drive (it has no scheduler, for example), so you'll want to use the EMC Retrospect Express HD backup software, which lets you select files and establish a regular backup schedule. It should not be confused with Retrospect Express 7.5 used in the Western Digital and Iomega drives; this version uses a wizard to help you specify which files are backed up, but only one backup job can be defined and scheduled. Express 7.5 is more flexible.

Also on the d2 Quadra's installation CD is a "shortcut button" utility that allows you to launch the backup program or any other program of your choice when you push a lit button on the drive, but it failed to work.

Unlike the other drives in this roundup, the d2 Quadra came unformatted, requiring an hour before we could

put it to work. We followed the manufacturer's instructions and formatted it as an NTFS drive for our tests.

[Seagate FreeAgent Pro](#)

Model tested: ST307504FPA1E3-RK, 750GB (\$419.99)

Also available: 320GB (\$199.99), 500GB (\$299.99)



There are several distinguishing features on the latest Seagate, the FreeAgent Pro -- but most have little to do with the drive itself. Let's start with the packaging, which tried to add a level of "hipness" to a product that, let's be honest, just isn't very sexy. Case in point: The drive's retail box includes a slogan near the box's handle that says, "If only this handle helped you move data like FreeAgent Pro," and the label with the disk size on the front of the box reads "750 Glorious Gigabytes." The bright orange stripe up the side and along the top of the drive adds another note of distinction, though we couldn't get the light to flicker (to indicate activity) despite several attempts with the setup utility.

The FreeAgent Pro is designed to operate vertically, and its base contains the power connector, an eSATA connector and the USB 2.0 connector. To use the FireWire 400 interface -- FireWire 800 isn't supported -- you must unscrew part of the base with a coin (the slot in the attachment screw is concave, making an ordinary screwdriver less efficient) and swap the USB connection with the FireWire 400 module. If you plan to share the drive among systems that may use either USB or FireWire, this isn't the drive for you.

The installation guide provides a four-step illustrated setup procedure, including estimated time to complete each task -- you should be done in an hour and 51 minutes, it notes. The guide also explains that when you start the drive, you'll see a pop-up window with further directions. That option, familiar to Windows users when you plug in a new drive, offers to install utility software, which works only on Windows systems and is preinstalled on the drive. (Be sure to back it up to a CD or DVD, or you'll lose it when you reformat the drive.)

The preinstalled utilities include a diagnostic program (the only statistic reported was that the drive was operating normally) as well as a button to establish a system restore point or revert to the last point, which does nothing more than execute the corresponding Windows commands. You can also set the sleep interval; choices range from three minutes to five hours, plus "never."

Seagate Technology LLC boasts that this drive can do more than ordinary external backup drives. In fact, though the drive comes with the aforementioned utilities, it's the backup software called AutoBackup (a rebranding of Memeo's similarly named product) that gives the drive the distinguishing features Seagate touts on the box, from synchronizing your project to a flash drive to uploading your photos to a Shutterfly account. Though you could do most of the operations using an ordinary file manager, the backup software does offer some useful scheduling, letting you synchronize between, say, your iPod and your FreeAgent Pro drive. It's flexible and far easier to use than Retrospect Express, making it a point in this drive's favor.

The FreeAgent Pro's power on/off switch at the base has no tactile feel whatsoever; a one-second push turns the drive on, but a five-second push is required to turn the drive off manually. The auto on/off (to stay in sync with the system's power) did not properly shut down the drive.

The Seagate bested both the Western Digital and Iomega drives in the copy tests for both USB 2.0 and FireWire 400 tests. It was sluggish in the random read and sequential read tests but held its own in the burst read tests.

[Western Digital My Book Pro](#)

Model tested: 500GB (\$279.99)

Also available: 250GB (\$179.99)



Western Digital's My Book is so named because it's about the size of a large paperback book. The drive, which can be operated horizontally or vertically, has a distinctive pair of lighted concentric rings on the front of the unit. The outer ring indicates power (solid blue) and disk activity (the light moves around the ring when the drive is reading or writing). A faster flashing shows the drive is transitioning to system standby, whereas slower flashes means the drive is in standby. The inner ring is divided into six sections. Each illuminates clockwise to indicate used space, and each lit section represents about 17% of capacity in use).

The drive smartly turned on when we powered up our system and turned off when we turned system power off. In addition, you can press a button in the center of the lighted rings and up pops a dialog box asking if you want to safely shut down the drive. If you answer yes, the drive is shut down only after all data in the queue has been written. (You can also use the "Safely Remove Hardware" icon in your System Tray.) The button can also be used to power up the drive manually.

Installation is simple, though you must first connect the drive using the USB cable so you can install the FireWire drivers if you want to use that interface. When you plug in the drive for the first time, utilities are installed automatically. The software utilities are also on the drive, which makes it easy to install on any other machine with which you share the My Book Pro.

Included in the box are three cables (one per interface), a quick install guide and a CD with EMC's Retrospect Express 7.5 software. For extra security, the My Book Pro Edition is equipped with a Kensington Security Slot for use with a Kensington cable.

Like the Iomega drive, the Western Digital drive includes a copy of Retrospect Express 7.5, robust backup and recovery software that isn't user-friendly for novices and occasional users.

The Western Digital My Book's performance was a mixed bag. In HD Tach tests with the USB 2.0 interface, the My Book was on a par with the other three drives, while FireWire tests were mixed (see chart). The drive's copy speed with USB 2.0 was similar to the Iomega's but trailed the Seagate (2:21 slower) and LaCie (3:59 slower) drives. It was the same story for the FireWire 400 copy test (3:08 behind the Seagate and 3:19 slower than the LaCie). In FireWire 800 tests, it was squarely in the middle between the Iomega and LaCie.

Recommendations

In the end, we find that our favorite drive wins over the runner-up based on price and a couple of nice-to-have but by no means critical features.

LaCie's d2 Quadra has excellent copy performance and good HD Tach results, but those aren't enough to make up for its quirks and features that don't work as advertised.

If, and only if, you'll always connect the drive to systems with the same interface (either all USB or all FireWire 400), the Seagate FreeAgent Pro is a good choice, despite its lousy power switch. The AutoBackup software is the best of the group, the drive's copy speed is quite good, and its cost per gigabyte (at list prices) ties for second place with the Western Digital My Book.

The Iomega Desktop Hard Drive and the Western Digital My Book Pro are very close in overall performance, and while not as impressive as the LaCie drive, both behaved exactly as expected -- with plug-and-play ease that had us up and running in just a couple of minutes. There's a lot to be said of this "no surprises" out-of-the-box experience. Furthermore, unlike the Seagate drive, both the Iomega and Western Digital drives offer all three (well-marked) interfaces, and both include the same strong-on-features, weak-on-user-interface Retrospect Express 7.5 backup software. We found no flaws in the performance of either drive; everything we tested worked exactly as expected.

In the end, we were surprised that the Iomega's FireWire 800 copy test didn't run shorter. The lack of an automatic on/off feature may also be a deciding factor.

From the automatic power up/down to the visual display of the drive's capacity, the Western Digital's nice extras, plus its lower cost per gigabyte (at list prices), tipped the scale in its favor.

Western Digital



Iomega



Seagate



LaCie



HD Tach results	Western Digital			Iomega			Seagate		LaCie		
	USB	FW400	FW800	USB	FW400	FW800	USB	FW400	USB	FW400	FW800
Random read (ms, lower is better)	14.1	13.6	13.7	15.0	14.7	14.6	21.7	21.5	13.6	13.2	13.2
Burst read (MB/sec., higher is better)	31.3	41.4	79.7	32.9	42.3	85.0	32.8	41.9	32.3	64.5	64.5

Sequential read (Mbps, higher is better)	30.3	37.7	58.2	32.3	40.6	65.5	28.9	34.0	33.2	87.0	87.0
Copy time (mm:ss, lower is better)	8:26	7:46	5:21	8:46	7:50	6:49	6:05	4:38	4:27	4:27	3:10
Features	Western Digital		Iomega		Seagate		LaCie				
Capacity of model tested (GB)			500		750		750		500		
Preformatted as			FAT32		FAT32		NTFS		Not formatted; see review for details		
RPM			7200		7200		7200		7200		
Memory cache/buffer (MB)			16		8		16		16		
USB 2.0			Yes		Yes		Yes		Yes		
FireWire 400			Yes		Yes		Yes		Yes		
FireWire 800			Yes		Yes		No		Yes		
Backup software included	EMC Retrospect Express 7.5		EMC Retrospect Express 7.5		AutoBackup		LaCie 1-click; EMC Retrospect Express HD				
Power control	Automatic and manual		Manual only		Automatic and manual		Automatic and manual				
PC/Mac-supported	Yes/yes		Yes/yes		Yes/yes		Yes/yes				
Standard warranty (years)	3		1		5		2				
List price	\$279.00		\$449.95		\$419.99		\$259.99				
Cost per GB	\$0.56		\$0.60		\$0.56		\$0.52				
URL	www.westerndigital.com		www.iomega.com		www.seagate.com		www.lacie.com				