SEAGATE MOMENTUS XT SOLID STATE HYBRID DRIVE VS. TRADITIONAL HARD DISK DRIVE IN A PC NOTEBOOK SYSTEM

Seagate® Momentus® XT solid state hybrid drive

provided up to

143%

better performance

than the standard notebook HDD

Seagate

The speed of your drive has a direct bearing on how quickly your system can perform a variety of tasks. While solid state drives (SSDs) outperform traditional hard disk drives (HDDs), they can't match the capacity of HDDs. Solid state hybrid drives (SSHDs) merge high capacity with top performance, so you no longer have to choose. In Principled Technologies' tests in our labs, replacing a traditional HDD with the Seagate Momentus XT SSHD boosted performance considerably.

Using a range of custom tests and industry-standard benchmarks, we compared performance of a notebook system with a 7,200 RPM HDD and with the Seagate Momentus XT SSHD. The hybrid drive consistently outperformed the HDD, with performance increases as high as 143.5 percent.

This performance boost, along with the Seagate Momentus XT SSHD's 750GB capacity, gives you the best of both worlds—the capacity of an HDD and speed approaching that of an SSD.

We tested a Dell™ Latitude™ E5400 notebook system with a Hitachi®
Travelstar™ 7K320 HDD and the same system with a Seagate Momentus XT SSHD. For
each configuration, we conducted a number of hand-timed tests to measure how
quickly the system performed everyday tasks such as booting and opening different
kinds of files. We also conducted five industry-standard benchmark tests that measure
system performance, three versions of Futuremark® PCMark®, and two versions of
BAPCO® SYSmark®. We ran every test three times and report the median results.

See [Appendix A](#) for details on the test system configuration, [Appendix B](#) for
more information on the benchmarks we used, and [Appendix C](#) and [Appendix D](#) for
detailed test procedures.

FASTER IS BETTER

Figure 1 shows the time to perform a variety of everyday tasks with the two
drives. The Seagate Momentus XT SSHD system booted 41.0 percent faster, went to
sleep 44.4 percent faster, and went into hibernation mode 20.3 percent faster.

**Figure 1. The system with the
Seagate Momentus XT SSHD
performed everyday tasks faster
than did the system with the 7,200
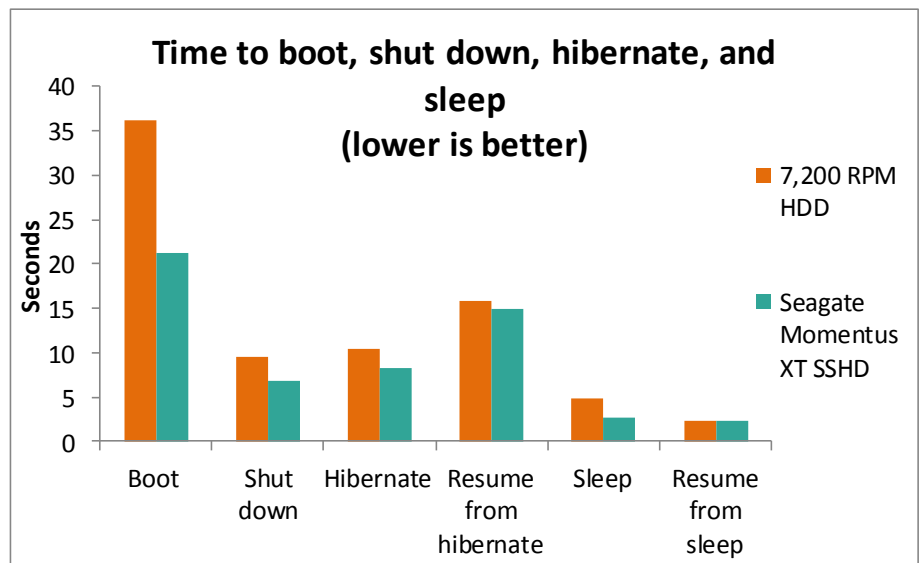RPM HDD. Lower numbers are
better.**

Figure 2 shows the time to open a variety of file types with the two drives. The
Seagate Momentus XT SSHD system opened files as much as 92.6 percent faster.

Time to open files (lower is better)

Figure 2. The system with the Seagate Momentus XT SSHD consistently opened files faster than did the system with the 7,200 RPM HDD. Lower numbers are better.
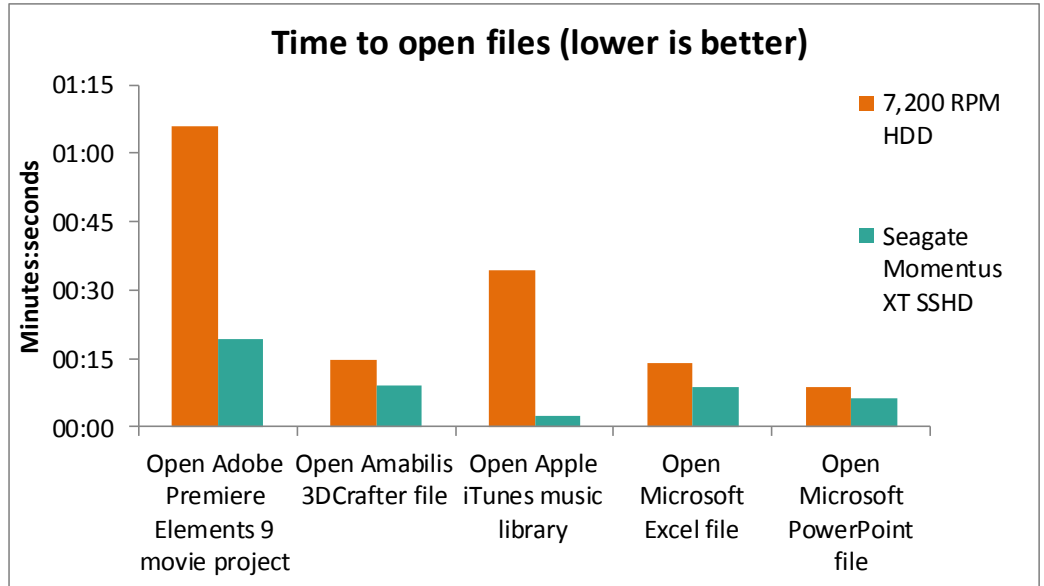
PERFORMANCE BOOST

Figure 3 shows the overall scores for the three Futuremark PCMark tests. The Seagate Momentus XT SSHD outperformed the HDD by 23.1 percent on PCMark 05 1.2.0, by 43.2 percent on PCMark 7 1.0.4, and by 18.2 percent on PCMark Vantage 1.0.2.0. The Detailed results section presents sub-scores for each benchmark.

Futuremark PCMark overall scores (higher is better)

Figure 3. The system with the Seagate Momentus XT SSHD had higher overall scores on all three Futuremark PCMark tests than did the system with the 7,200 RPM HDD. Higher numbers are better.
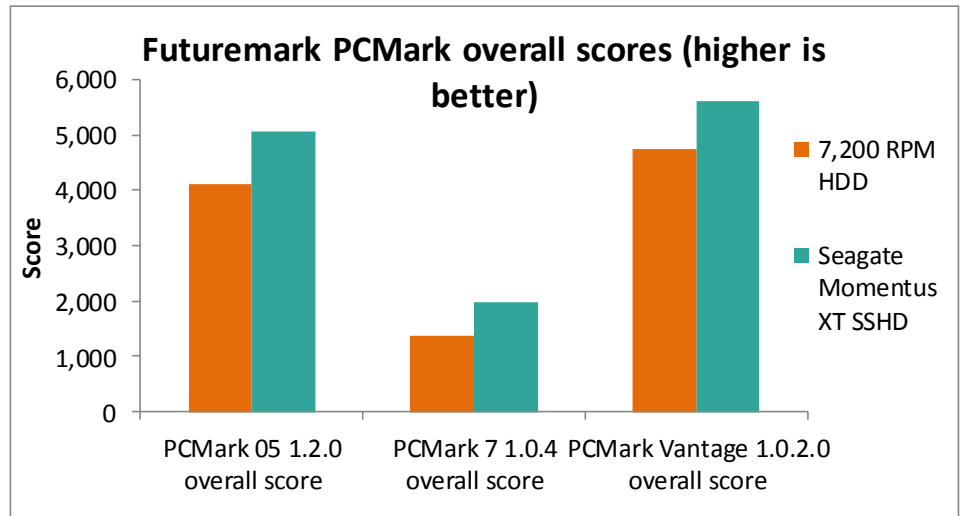
Figure 4 shows the overall scores for the two BAPCO SYSmark tests. The Seagate Momentus XT SSHD outperformed the HDD by 13.1 percent on SYSmark 2007 Preview 1.06 and by 6.3 percent on SYSmark 2012 1.00. The Detailed results section presents sub-scores for each benchmark.

Figure 4. The system with the Seagate Momentus XT SSHD had higher overall scores on both BAPCO SYSmark tests than did the system with the 7,200 RPM HDD. Higher numbers are better.
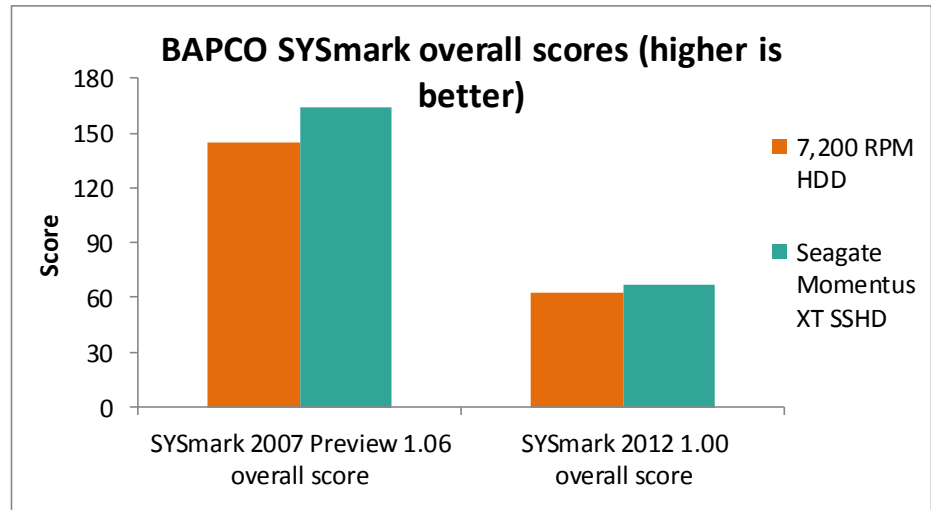
DETAILED RESULTS

Figure 5 shows the Futuremark PCMark 05 scores the system earned with the two drives. The Seagate Momentus XT SSHD outperformed the HDD by 23.1 percent overall and by 128.5 percent on the HDD sub-test.

Figure 5. The system with the Seagate Momentus XT SSHD had higher Futuremark PCMark 05 scores than did the system with the 7,200 RPM HDD. Higher numbers are better.
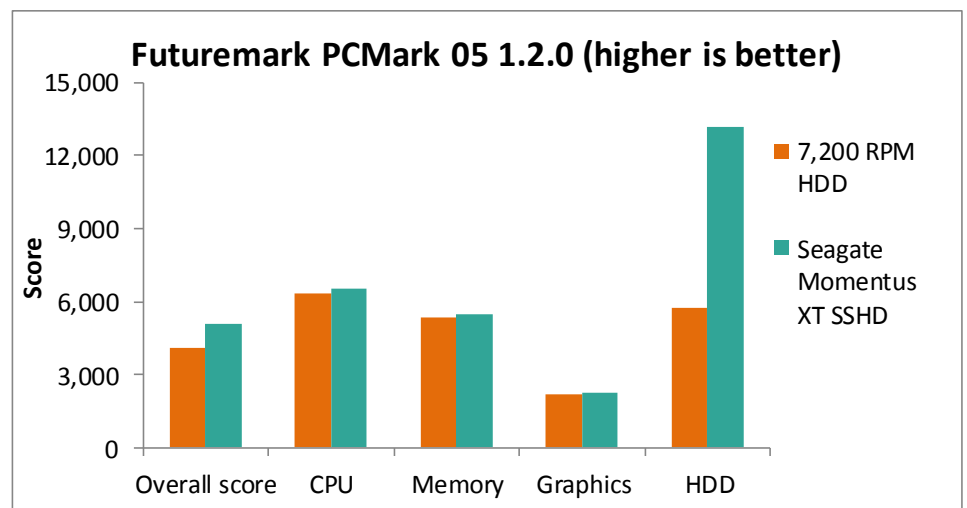
Figure 6 shows the Futuremark PCMark 7 scores the system earned with the two drives. The Seagate Momentus XT SSHD outperformed the HDD by 43.2 percent overall and by 112.6 percent on the System Storage score.

Figure 6. The system with the Seagate Momentus XT SSHD had higher Futuremark PCMark 7 scores than did the system with the 7,200 RPM HDD. Higher numbers are better.
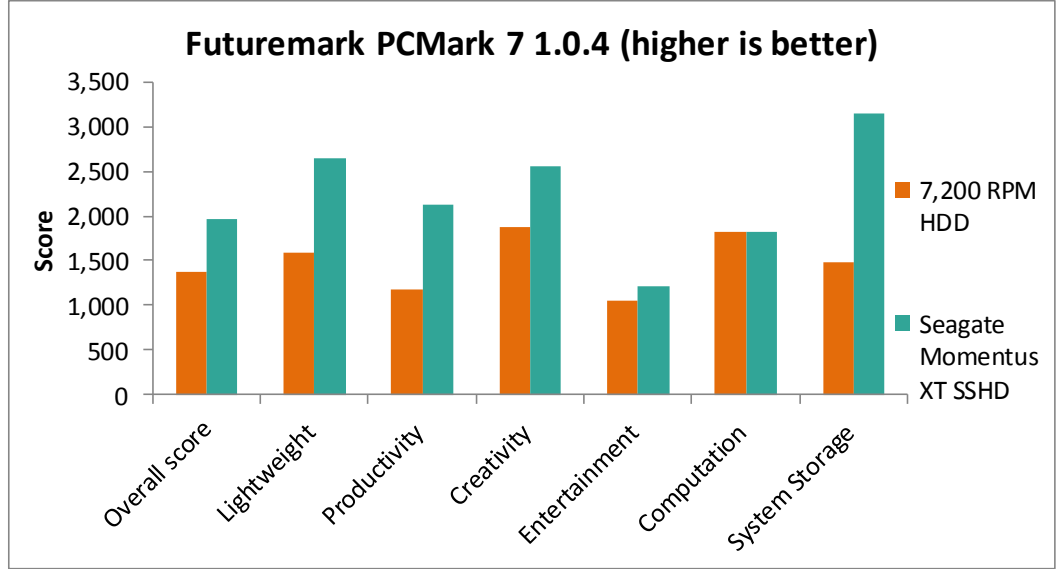

Figure 7 shows the Futuremark PCMark Vantage scores the system earned with the two drives. The Seagate Momentus XT SSHD outperformed the HDD by 18.2 percent overall and by 143.5 percent on the HDD Test Suite.

Figure 7. The system with the Seagate Momentus XT SSHD had higher Futuremark PCMark Vantage scores than did the system with the 7,200 RPM HDD. Higher numbers are better.
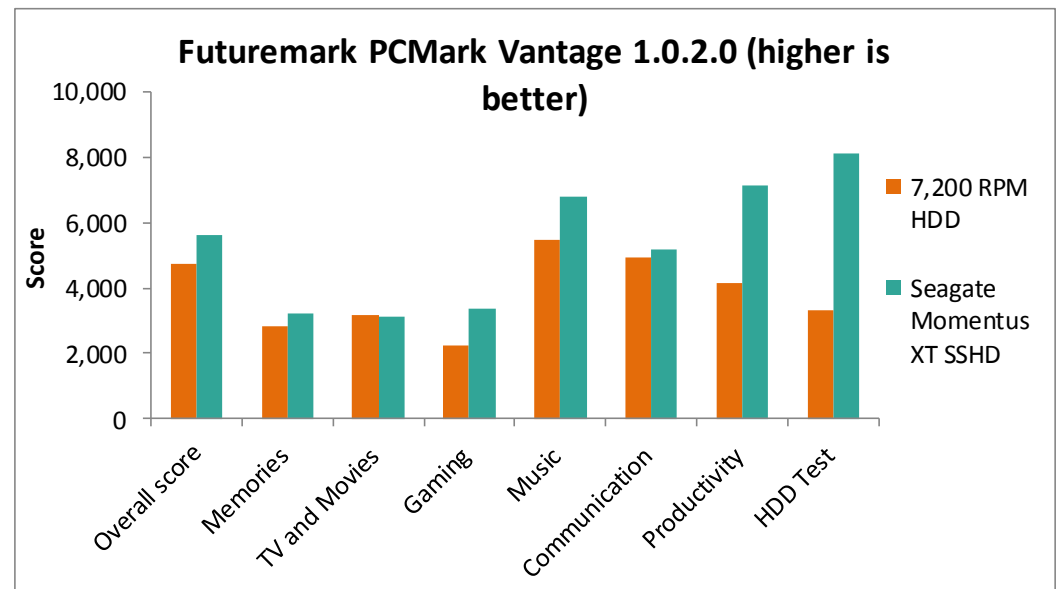
Figure 8 shows the BAPCo SYSmark 2007 Preview scores the system earned with the two drives. The Seagate Momentus XT SSHD outperformed the HDD by 13.1 percent overall and by 26.1 percent on VideoCreation.

BAPCo SYSmark 2007 Preview 1.06 (Higher is better)

Figure 8. The system with the Seagate Momentus XT SSHD had higher BAPCo SYSmark 2007 Preview scores than did the system with the 7,200 RPM HDD. Higher numbers are better.

Figure 9 shows the BAPCo SYSmark 2012 Preview scores the system earned with the two drives. The Seagate Momentus XT SSHD outperformed the HDD by 6.3 percent overall and by 11.4 percent on the Office Productivity score.

BAPCo SYSmark 2012 1.00 (Higher is better)

Figure 9. The system with the Seagate Momentus XT SSHD had higher BAPCo SYSmark 2012 Preview scores than did the system with the 7,200 RPM HDD. Higher numbers are better.
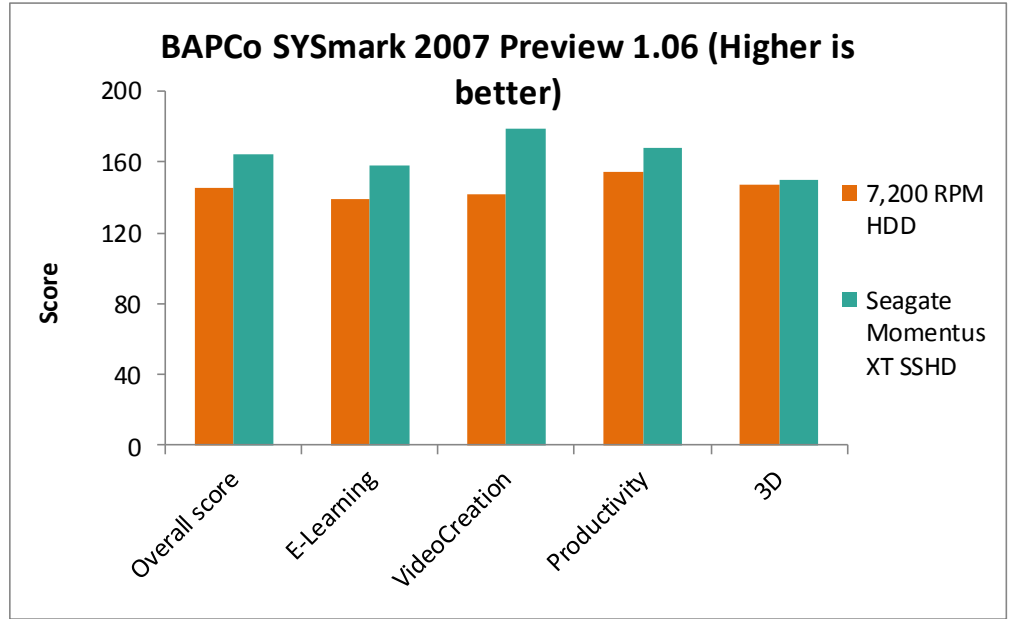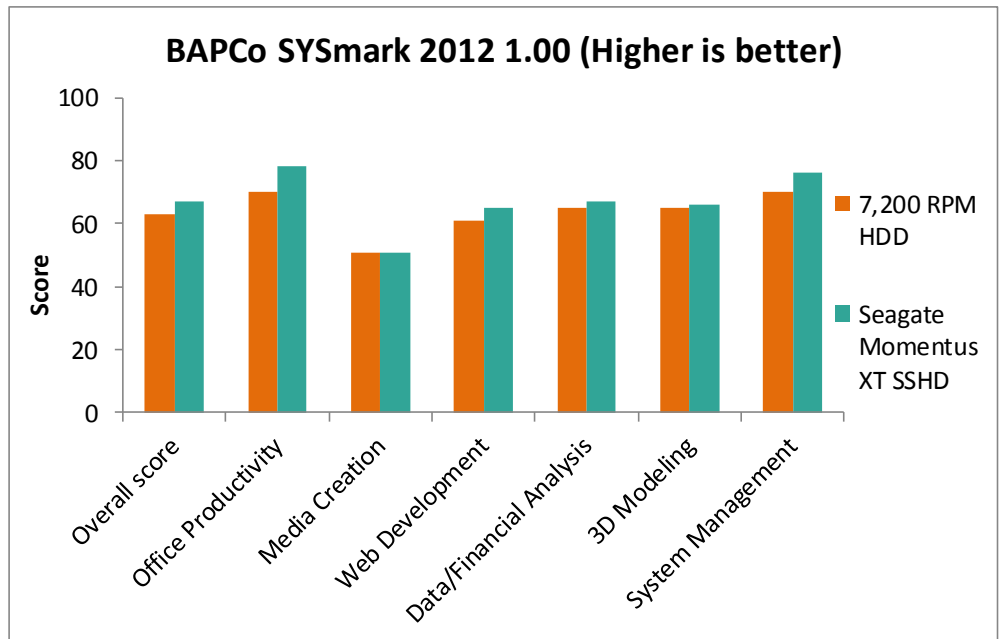
Figure 10 presents the times it took the system to perform everyday tasks and to open files with the two drives. We conducted three runs and present the scores from the median run.

Time to perform everyday tasks and to open files (lower times are better)	7,200 RPM HDD	Seagate Momentus XT SSHD	Percentage time saved with Seagate Momentus XT SSHD
Perform everyday tasks			
Boot	00:36.2	00:21.3	41.0%
Shut down	00:09.5	00:06.9	28.0%
Hibernate	00:10.5	00:08.3	20.3%
Resume from hibernate	00:15.9	00:14.9	6.3%
Sleep	00:04.9	00:02.7	44.4%
Resume from sleep	00:02.4	00:02.3	3.7%
Open files			
Open Adobe® Premiere® Elements 9 movie project	01:06.0	00:19.4	70.7%
Open Amabilis 3DCrafter™ file	00:14.8	00:09.2	37.7%
Open Apple® iTunes® music library	00:34.3	00:02.5	92.6%
Open Microsoft® Excel® file	00:13.9	00:08.6	37.7%
Open Microsoft PowerPoint® file	00:08.8	00:06.2	30.0%

Figure 10. Time, in minutes: seconds, to perform everyday tasks and to open files with the two drives. Lower times are better and higher percentage time saved is better.

Figure 11 presents industry-standard benchmark scores for the system with the two drives. We conducted three runs and present the scores from the median run.

Industry-standard benchmark scores (higher numbers are better)	7,200 RPM HDD	Seagate Momentus XT SSHD	Percentage improvement with Seagate Momentus XT SSHD
Futuremark PCMark 05 v1.2.0			
Overall score	4,121	5,075	23.1%
CPU score	6,324	6,546	3.5%
Memory score	5,362	5,498	2.5%
Graphics score	2,194	2,249	2.5%
HDD score	5,759	13,157	128.5%
Futuremark PCMark 7 v1.0.4			
Overall score	1,373	1,966	43.2%
Lightweight score	1,587	2,644	66.6%
Productivity score	1,171	2,134	82.2%
Creativity score	1,870	2,561	37.0%
Entertainment score	1,046	1,209	15.6%
Computation score	1,822	1,830	0.4%
System Storage score	1,481	3,149	112.6%

Industry-standard benchmark scores (higher numbers are better)	7,200 RPM HDD	Seagate Momentus XT SSHD	Percentage improvement with Seagate Momentus XT SSHD
Futuremark PCMark Vantage 1.0.2.0			
Overall score	4,758	5,622	18.2%
Memories Suite score	2,834	3,207	13.2%
TV and Movies Suite score	3,190	3,137	-1.7%
Gaming Suite score	2,213	3,372	52.4%
Music Suite score	5,459	6,779	24.2%
Communication Suite score	4,925	5,194	5.5%
Productivity Suite score	4,126	7,157	73.5%
HDD Test Suite score	3,335	8,120	143.5%
BAPCo SYSmark 2007 Preview v1.06			
Overall score	145	164	13.1%
E-Learning score	139	158	13.7%
VideoCreation score	142	179	26.1%
Productivity score	154	168	9.1%
3D score	147	150	2.0%
BAPCo SYSmark 2012 v1.00			
Overall score	63	67	6.3%
Office Productivity score	70	78	11.4%
Media Creation score	51	51	0.0%
Web Development score	61	65	6.6%
Data/Financial Analysis score	65	67	3.1%
3D Modeling score	65	66	1.5%
System Management score	70	76	8.6%

Figure 11. Benchmark scores for the two drives. Higher numbers are better.

CONCLUSION

As our test results show, replacing a traditional hard disk drive with the Seagate Momentus XT solid state hybrid drive boosted performance across the board. Upgrading your existing notebook system's drive, or selecting the Momentus XT for the next system you purchase, will give you this performance boost and the productivity gains that accompany it, while retaining the large capacity of an HDD.

APPENDIX A – SYSTEM CONFIGURATION INFORMATION

Figure 12 provides detailed configuration information about the test system.

System	Dell Latitude E5400
General	
Processor and OS kernel: (physical, core, logical)/(UP, MP)	1P2C2L/MP
Number of physical processors	1
Single/Dual-core processors	Dual
System power management policy	Balanced
Processor power-saving option	Enhanced Intel® SpeedStep® Technology
System dimensions (length x width x height)	13-1/4" x 9-1/2" x 1-1/2"
Weight of system with 6-cell battery	5 lbs. 10 oz.
CPU	
Vendor	Intel
Name	Core™ 2 Duo mobile
Model number	T9400
Stepping	C0
Socket type and number of pins	Socket P (478)
Core frequency (GHz)	2.53
Front-side bus frequency (MHz)	1,066
L1 cache	32 KB + 32 KB (per core)
L2 cache	6 MB (shared)
Platform	
Vendor	Dell Inc.
Motherboard model number	0D693C
Motherboard chipset	Intel GL40/GM45/GS45/PM45
Motherboard revision number	07
BIOS name and version	Dell Inc. A09 (02/25/2009)
BIOS settings	Default
Memory module(s)	
Vendor and model number	Samsung® M4 70T2864EH3-CF7
Type	PC2-6400
Speed (MHz)	800
Speed running in the system (MHz)	800
Timing/Latency (tCL-tRCD-tRP-tRASmin)	6-6-6-18
Size (MB)	2,048
Number of memory module(s)	2 x 1,024
Chip organization (single-sided, double-sided)	Double-sided

System	Dell Latitude E5400
Channel (single/dual)	Dual
Hard drive	
Traditional hard disk drive	
Vendor and model number	Hitachi Travelstar 7K320 HTS723216L9A362
Size (GB)	160
Buffer size (MB)	16
RPM	7,200
Type	SATA
Controller	Intel ICH9M-E/M
Driver	Intel 8.9.0.1023 (6/4/2009)
Solid state hybrid drive	
Vendor and model number	Seagate Momentus XT Solid State Hybrid Drive ST750LX003
Size (GB)	750
Buffer size (MB)	32 MB with 4GB solid state SLC NAND flash storage
RPM	7,200
Type	SATA
Controller	Intel ICH9M-E/M
Driver	Intel 8.9.0.1023 (6/4/2009)
Operating system	
Name	Microsoft® Windows® 7 Ultimate
Build number	7600
Service pack	SP1
File system	NTFS
Kernel	ACPI x64-based PC
Language	English
Microsoft DirectX® version	DirectX 11
Graphics	
Vendor and model number	Mobile Intel GMA X4500HD
Type	Integrated
Chipset	Mobile Intel 4 Series Express Chipset
BIOS version	1659.0
Total available graphics memory (MB)	809
Dedicated video memory (MB)	64
System Video memory (MB)	0
Shared system memory (MB)	745
Resolution	1,440 x 900 x 32-bit
Driver	Intel 8.15.10.2302 (2/11/2011)

System	Dell Latitude E5400
Sound card/subsystem	
Vendor and model number	IDT High Definition Audio, Intel High Definition Audio HDMI
Driver	IDT 5.10.0.6124 (11/13/2008), Intel 6.10.0.6274 (3/9/2010)
Ethernet	
Vendor and model number	Broadcom® NetXtreme® 57xx Gigabit
Driver	Microsoft 10.100.4.0 (4/26/2009)
Wireless	
Vendor and model number	Intel Wireless WiFi Link 5300
Driver	Microsoft 12.4.1.4 (3/26/2009)
Optical drive(s)	
Vendor and model number	LG GT10N
Type	DVD-RW
Interface	SATA
USB ports	
Number	4
Type	2.0
IEEE 1394 ports	
Number (4-pin)	1
Monitor	
LCD type	WXGA
Screen size (inches)	14.1
Refresh rate (Hz)	60
Battery	
Type	Dell KM742
Size (length x width x height)	8" x 2" x 3/4"
Rated capacity	4,840 mAh x 11.1 V = 56 Wh
Cell count	6
Weight	11 oz.

Figure 12. Detailed configuration information about the test system.

APPENDIX B – ABOUT THE BENCHMARKS WE USED

For each of the benchmarks we used in our study, we present a brief excerpt from the developer's Web site. For more information, visit the appropriate URLs below.

BAPCo SYSmark 2007 Preview 1.06

"SYSmark 2007 Preview is an application-based benchmark that reflects usage patterns of business users in the areas of Video creation, E-learning, 3D Modeling and Office Productivity."
http://www.bapco.com/products/sysmark2007preview/

BAPCo SYSmark 2012 1.00

"SYSmark 2012 is an application-based benchmark that reflects usage patterns of business users in the areas of office productivity, data/financial analysis, system management, media creation, 3D modeling and web development. SYSmark 2012 is a ground up development and features the latest and most popular applications from each of their respective fields."
http://www.bapco.com/products/sysmark2012/index.php

Futuremark PCMark 05 1.2.0

"PCMark 05 is everything you need to reliably and easily measure the performance of your PC and determine its strengths and weaknesses. With PCMark05, you will be able to select the optimal upgrades for your existing PC, or choose the right new PC that fits your specific needs. This easy-to-use product gives you the same tools and knowledge that virtually every professional tester in the industry uses."
http://www.futuremark.com/products/pcmark05/

Futuremark PCMark 7 1.0.4

"PCMark 7 includes 7 PC tests for Windows 7, combining more than 25 individual workloads covering storage, computation, image and video manipulation, web browsing and gaming. Specifically designed to cover the full range of PC hardware from netbooks and tablets to notebooks and desktops, PCMark 7 offers complete PC performance testing for Windows 7 for home and business use."
http://www.pcmark.com/benchmarks/pcmark7/

Futuremark PCMark Vantage 1.0.2.0

"PCMark Vantage is the first objective hardware performance benchmark for PCs running Windows 7 or Windows Vista. From desktops and laptops to workstations and gaming rigs, PCMark Vantage helps you find the hardware and software bottlenecks that stop you getting more from your PC."
http://www.futuremark.com/benchmarks/pcmarkvantage/introduction/

APPENDIX C – TEST PROCEDURES—TIMING EVERYDAY TASKS

All tests are hand-timed and require a stopwatch.

Measuring time to boot

1. Simultaneously start the timer and boot the system.
2. Stop the timer when the taskbar appears.
3. Record the result.
4. Wait 5 minutes before shutting the system down.
5. Repeat steps 1 through 4 two more times, and report the median of the three runs.

Measuring time to shutdown

1. Boot the system.
2. Wait 5 minutes.
3. Simultaneously start the timer and shut down the system (Start→Shut Down).
4. Stop the timer when the hard drive LED turns off.
5. Record the result.
6. Repeat steps 1 through 5 two more times, and report the median of the three runs.

Measuring time to hibernate and resume from hibernate

1. Boot the system.
2. Wait 5 minutes.
3. Simultaneously start the timer and put the system into hibernate mode (Start→Hibernate).
4. Stop the timer when the hard drive LED turns off.
5. Record the result.
6. Reset the timer.
7. Simultaneously start the timer and press the power button to resume from hibernate mode.
8. Stop the timer when the system displays the desktop.
9. Record the result.
10. Shut down the system.
11. Repeat steps 1 through 10 two more times, and report the median of the three runs.

Measuring time to sleep and resume from sleep

1. Boot the system.
2. Wait 5 minutes.
3. Simultaneously start the timer and put the system into sleep mode (Start→Sleep).
4. Stop the timer when the hard drive LED turns off.
5. Record the result.
6. Reset the timer.
7. Simultaneously start the timer and press the power button to resume from sleep mode.
8. Stop the timer when the system displays the desktop.
9. Record the result.
10. Shut down the system.
11. Repeat steps 1 through 10 two more times, and report the median of the three runs.

Setting up the file-opening tests

1. Reset the system with the appropriate test image.
2. Copy the test 16MB Excel file to the desktop.

3. Copy the test 12MB PowerPoint file to the desktop.
4. Copy the test 1MB 3DCrafter file to the desktop.
5. Copy the test 35GB music library to C:\Music.
6. Copy the test 1.93GB of videos to C:\Videos.
7. Install Microsoft Office 2010.
8. Install Apple iTunes 10.
9. Install Adobe Premiere Elements 9.
10. Install Amabilis 3DCrafter 9.
11. Shut down the system.

Measuring time to open a Microsoft Office 2010 Excel file

Setting up the test

1. Boot the system.
2. Double-click the test Excel file to launch Excel.
3. On the PC select the "Design" tab and verify "Chart Styles" are visible. On the MacBook Pro select the "Chart" tab and verify "Chart Styles" are visible.
4. Exit Excel.
5. Shut down the system.

Running the test

1. Boot the system.
2. Wait 5 minutes.
3. Simultaneously start the timer and double-click the Excel test file.
4. Stop the timer when the file has loaded.
5. Record the result.
6. Shut down the system.
7. Repeat steps 1 through 6 two more times, and report the median of the three runs.

Measuring time to open a Microsoft Office 2010 PowerPoint file

Setting up the test

1. Boot the system.
2. Double-click the test PowerPoint file to launch PowerPoint.
3. Verify that PowerPoint opens in full screen.
4. Exit PowerPoint.
5. Shut down the system.

Running the test

1. Boot the system.
2. Wait 5 minutes.
3. Simultaneously start the timer and double-click the PowerPoint test file.
4. Stop the timer when the file has loaded.
5. Record the result.
6. Shut down the system.
7. Repeat steps 1 through 6 two more times, and report the median of the three runs.

Measuring time to open Apple iTunes music library

Setting up the test

1. Boot the system.

2. Double-click the iTunes desktop icon to launch iTunes (Do not maximize the iTunes window).
3. Select File→Add Folder to Library, and browse to the test music library.
4. In the upper right corner, select Show items in a grid, and move the slider all the way to the left.
5. Exit iTunes.
6. Shut down the system.

Running the test

1. Boot the system.
2. Wait 5 minutes.
3. Simultaneously start the timer and double-click the iTunes desktop icon.
4. Stop the timer when the albums are displayed.
5. Record the result.
6. Shut down the system.
7. Repeat steps 1 through 6 two more times, and report the median of the three runs.

Measuring time to open Adobe Premiere Elements movie project

Setting up the test

1. Boot the system.
2. Double-click the Premiere Elements desktop icon to launch Premiere Elements 9.
3. Click New Project.
4. Enter a name for the test project and the save location.
5. Click the Get Media icon from Files and Folders, and browse to the test video files, and click open.
6. Drag each video to the bottom Sceneline.
7. Once all videos have been added to the Sceneline, click Save.
8. Exit Premiere Elements.
9. Copy the Premiere Elements Project file that was just created to the desktop.
10. Shut down the system.

Running the test

1. Boot the system.
2. Wait 5 minutes.
3. Simultaneously start the timer and double-click the Premiere Elements Project file.
4. Stop the timer when the project is displayed.
5. Record the result.
6. Shut down the system.
7. Repeat steps 1 through 6 two more times, and report the median of the three runs.

Measuring time to open an Amabilis 3DCrafter file

Setting up the test

1. Boot the system.
2. Double-click the test 3DCrafter file to launch 3DCrafter.
3. Exit 3DCrafter.
4. Shut down the system.

Running the test

1. Boot the system.
2. Wait 5 minutes.
3. Simultaneously start the timer and double-click the 3DCrafter test file.
4. Stop the timer when the file has loaded.

5. Record the result.
6. Shut down the system.
7. Repeat steps 1 through 6 two more times, and report the median of the three runs.

APPENDIX D – TEST PROCEDURES—INDUSTRY-STANDARD BENCHMARKS

Measuring performance using Futuremark PCMark05 v1.2.0

Setting up the test

1. Reset the system with the appropriate test image.
2. Download the PCMark05_v120_installer.exe Windows package from http://www.futuremark.com/products/pcmark05/.
3. Install PCMark05 1.2.0 with the default options by double-clicking the PCMark05_v120_installer.exe file.
4. Launch PCMark05 1.2.0 by clicking on the PCMark05 desktop icon. Enter the registration code, click Register, and click OK.
5. Exit PCMark05 1.2.0.

Running the test

1. Reboot the system.
2. Double-click the PCMark05 desktop icon to launch the benchmark.
3. Verify all test suites are selected.
4. Accept the default settings in PCMark05, and click Run PCMark.
5. When the benchmark run completes, record the results.
6. Repeat steps 1 through 5 two more times, and report the median of the three runs.

Measuring performance using Futuremark PCMark 7 1.0.4

Setting up the test

1. Reset the system with the appropriate test image.
2. Download the PCMark_7_v104_installer.exe Windows package from www.futuremark.com/benchmarks/pcmarkvantage/download/.
3. Install PCMark 7 1.0.4 with the default options by double-clicking the PCMark_7_v104_installer.exe file.
4. Launch PCMark 7 1.0.4 by clicking on the PCMark 7 desktop icon. Enter the registration code, click Register, and click OK.
5. Exit PCMark 7 1.0.4.

Running the test

1. Reboot the system.
2. Double-click the PCMark 7 desktop icon to launch the benchmark.
3. Select all test suites.
4. Click Run Benchmark.
5. When the benchmark run completes take a screenshot of the results, and record them as follows:
   - PCMark Score
   - Lightweight Score
   - Productivity Score
   - Creativity Score
   - Entertainment Score
   - Computation Score
   - System Storage Score
6. Repeat steps 1 through 5 two more times, and report the median of the three runs.

Measuring performance using Futuremark PCMark Vantage 1.0.2.0

Setting up the test

1. Reset the system with the appropriate test image.
2. Download the PCMark_Vantage_v100_installer.exe Windows package from www.futuremark.com/benchmarks/pcmarkvantage/download/.
3. Install PCMark Vantage 1.0.0 with the default options by double-clicking the PCMark_Vantage_v100_installer.exe file.
4. Launch PCMark Vantage 1.0.0 by clicking on the PCMark Vantage x64 desktop icon. Enter the registration code, click Register, and click OK.
5. Exit PCMark Vantage 1.0.0.
6. Download the PCMark Vantage 1.0.2.0 Patch (PCMark_Vantage_v102_patch_1901.exe Windows package) from www.futuremark.com/benchmarks/pcmarkvantage/download/.
7. Install the patch by double-clicking the PCMark_Vantage_v102_patch_1901.exe file.

Running the test

1. Reboot the system.
2. Double-click the PCMark Vantage desktop icon to launch the benchmark.
3. Verify all test suites are selected, and that the HDD Suite target is set to C:.
4. Accept the default settings in PCMark Vantage, and click Run Benchmark.
5. When the benchmark run completes, click Submit results.
6. Take a screenshot of the results, and record them as follows:
   o PCMark Suite
   o Memories Suite
   o TV and Movies Suite
   o Gaming Suite
   o Music Suite
   o Communication Suite
   o Productivity Suite
   o HDD Test Suite
7. Repeat steps 1 through 6 two more times, and report the median of the three runs.

Measuring performance using BAPCO SYSmark 2007 Preview 1.06

Antivirus software conflicts

SYSmark 2007 is not compatible with any virus-scanning software, so we uninstalled any such software that was present on the notebook PCs before we installed the benchmark.

Pre-installed software conflicts

SYSmark 2007 installs the following applications, which its test scripts employ:

- Adobe Photoshop 6.0.1
- InterVideo WinDVD® 6.0
- Macromedia Flash® 5.0
- Microsoft Excel 2002
- Microsoft Outlook 2002
- Microsoft PowerPoint 2002
- Microsoft Word 2002
- Netscape Communicator™ 6.01

- Network Associates McAfee® VirusScan® 5.13
- WinZip® Computing WinZip 8.0

If any of these applications are already on the system under test, they will cause problems with the benchmark due to software conflicts. To avoid any such issues, before we installed the benchmark, we uninstalled all conflicting pre-installed software applications, including different versions of any of the programs SYSmark 2007 uses.

Setting up the test

1. Disable the User Account Control.
   a. Click Start→Control Panel.
   b. At the User Accounts and Family Safety settings screen, click Add or remove user account.
   c. At the User Account Control screen, click Continue.
   d. Click Go to the main User Accounts page.
   e. At the Make changes to your user account screen, click Turn User Account Control on or off.
   f. At the User Account Control screen, click Continue.
   g. Uncheck Use User Account Control to help protect your computer, and click OK.
   h. At the You must restart your computer to apply these changes screen, click Restart Now.
2. Purchase and install SYSmark 2007 Preview v1.06 with default settings from https://www.bapcostore.com/store/product.php?productid=16165&cat=251&page=1.
3. Download and install the BAPCo auto-configuration tool v2.4.1, selecting option 3.

Running the test

1. Reboot the system.
2. Launch SYSmark 2007 Preview by double-clicking the desktop icon.
3. Click Run.
4. Select Official Run, choose 3 Iterations, check the box beside run conditioning run, and enter a name for that run.
5. When the benchmark completes and the main SYSmark 2007 Preview menu appears, click Save FDR to create a report.

Measuring performance using BAPCO SYSmark 2012 1.00

Antivirus software conflicts

SYSmark 2012 is not compatible with any virus-scanning software, so we uninstalled any such software that was present on the notebook PCs before we installed the benchmark.

Pre-installed software conflicts

SYSmark 2012 installs the following applications, which its test scripts employ:

- ABBYY® FineReader Pro 10.0
- Adobe Acrobat® Pro 9
- Adobe Dreamweaver® CS5
- Adobe Flash® Player 10.1
- Adobe Photoshop CS5 Extended
- Adobe Premiere® Pro CS5
- Adobe After Effects® CS5
- Autodesk® 3ds Max® 2011
- Autodesk AutoCAD® 2011
- Google SketchUp™ Pro 8

- Microsoft Excel 2010
- Microsoft Internet Explorer® 8 (or newer version, if already installed)
- Microsoft Outlook® 2010
- Microsoft PowerPoint 2010
- Microsoft Word 2010
- Mozilla® Firefox® 3.6.8
- WinZip Command Line 3.2

If any of these applications are already on the system under test, they will cause problems with the benchmark due to software conflicts. To avoid any such issues, before we installed the benchmark, we uninstalled all conflicting pre-installed software applications, including different versions of any of the programs SYSmark 2012 uses.

Setting up the test

1. Disable the User Account Control.
   a. Click Start→Control Panel.
   b. At the User Accounts and Family Safety settings screen, click Add or remove user account.
   c. At the User Account Control screen, click Continue.
   d. Click Go to the main User Accounts page.
   e. At the Make changes to your user account screen, click Turn User Account Control on or off.
   f. At the User Account Control screen, click Continue.
   g. Uncheck Use User Account Control to help protect your computer, and click OK.
   h. At the You must restart your computer to apply these changes screen, click Restart Now.
2. Purchase and install SYSmark 2012 v1.00 with default settings from https://www.bapcostore.com/store/product.php?productid=16185&cat=251&page=1.
3. Launch SYSmark 2012 by double-clicking the desktop icon, and select Configuration.
4. Select all options and click Apply.
5. Reboot the system.

Running the test

1. Launch SYSmark 2012 by double-clicking the desktop icon.
2. Enter a Project name.
3. Select 3 Iterations, check the box beside Conditioning Run, and click Run Benchmark.
4. When the benchmark completes and the main SYSmark 2012 menu appears, click Save FDR to create a report.

ABOUT PRINCIPLED TECHNOLOGIES

Principled Technologies, Inc.
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We provide industry-leading technology assessment and fact-based marketing services. We bring to every assignment extensive experience with and expertise in all aspects of technology testing and analysis, from researching new technologies, to developing new methodologies, to testing with existing and new tools.

When the assessment is complete, we know how to present the results to a broad range of target audiences. We provide our clients with the materials they need, from market-focused data to use in their own collateral to custom sales aids, such as test reports, performance assessments, and white papers. Every document reflects the results of our trusted independent analysis.

We provide customized services that focus on our clients' individual requirements. Whether the technology involves hardware, software, Web sites, or services, we offer the experience, expertise, and tools to help our clients assess how it will fare against its competition, its performance, its market readiness, and its quality and reliability.

Our founders, Mark L. Van Name and Bill Catchings, have worked together in technology assessment for over 20 years. As journalists, they published over a thousand articles on a wide array of technology subjects. They created and led the Ziff-Davis Benchmark Operation, which developed such industry-standard benchmarks as Ziff Davis Media's Winstone and WebBench. They founded and led eTesting Labs, and after the acquisition of that company by Lionbridge Technologies were the head and CTO of VeriTest.