

PERFORMANCE COMPARISON:
DELL LATITUDE E5430 VS. LENOVO THINKPAD L430

Dell™ Latitude™ E5430 notebook



*Faster business
application performance*

on SYSmark® 2012

Faster media handling and 3D

on HDXPRT 2012 and 3DMark®11

Faster boot and shutdown

on PT's lab tests

versus Lenovo® ThinkPad® L430

When it comes to your employees' notebook computers, every second counts. A sluggish system not only affects productivity, but is a source of annoyance as well. That's why it's essential to select notebooks that offer the fastest performance.

Principled Technologies tested two notebook systems in our labs, the Dell Latitude E5430 and the Lenovo ThinkPad L430. We found that the Latitude outperformed the ThinkPad in three areas: business application performance, media handling and 3D, and boot and shutdown time. These advantages can save your workers time, making the Dell Latitude E5430 an excellent choice.



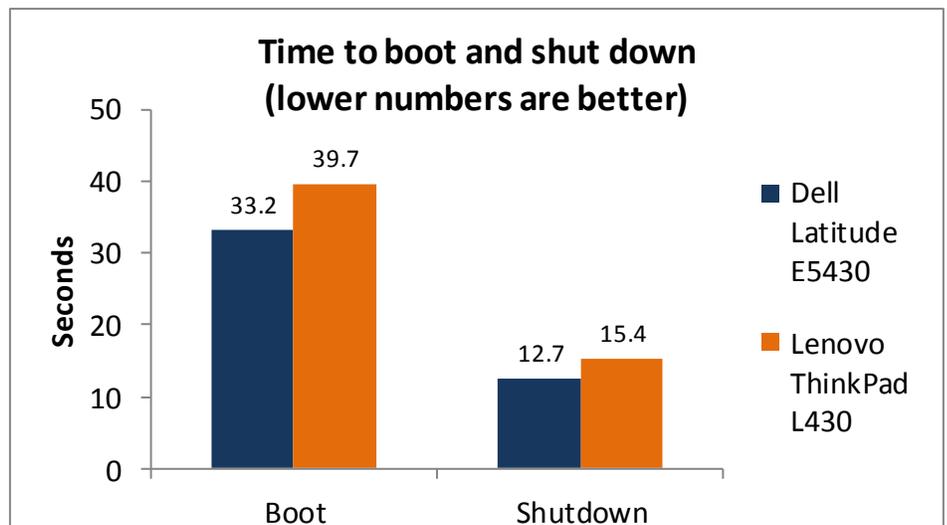
TIME IS OF THE ESSENCE

Because notebook system response time and performance are so important to today's worker, we conducted three tests to compare the Dell Latitude E5430 and the Lenovo ThinkPad L430. We measured boot and shutdown time, business application performance, and media handling and 3D. We conducted every test three times and present the results for the median run of each test.

Boot and shutdown

The less time users spend waiting for their notebooks to boot up or shut down, the more time they have to be productive. Figure 1 shows the median results for our boot and shutdown tests. In our tests, the Dell Latitude E5430 took 16.2 percent less time to boot and 17.8 percent less time to shut down than the Lenovo ThinkPad L430.

Figure 1: The Dell Latitude E5430 took 16.2 percent less time to boot and 17.8 percent less time to shut down than the Lenovo ThinkPad L430.



Performance testing

Because performance is so important to today's worker, we used three benchmarks to rate the performance of the notebooks, and found that the Dell Latitude E5430 was up to completing the tasks workers require.

We tested the gaming performance of the systems using FutureMark® 3DMark®11, which tests the graphics capabilities of the notebooks, and found that the Dell Latitude E5430 outperformed the Lenovo ThinkPad L430 on the 3DMark11 benchmark. Figure 2 shows the median results of our 3DMark11 tests.

FutureMark 3DMark11		
	Dell Latitude E5430	Lenovo ThinkPad L430
3D Mark Score	594	593
Graphics Score	512	513
Physics Score	3,365	3,402
Combined Score	576	560

Figure 2: Median scores for the FutureMark 3DMark11 benchmark. Higher numbers are better.

BAPCo SYSmark® 2012 measures system performance for a number of common tasks including office productivity and media creation. Figure 3 shows the median results of our SYSmark 2012 tests. The Dell Latitude E5430 achieved a higher SYSmark2012 Overall Performance Rating than the Lenovo ThinkPad L430.

BAPCo SYSmark 2012		
	Dell Latitude E5430	Lenovo ThinkPad L430
SYSmark 2012 Overall Performance Rating	120	119
SYSmark 2012 – Office Productivity	120	115
SYSmark 2012 – Media Creation	117	115
SYSmark 2012 – Web Development	111	108
SYSmark 2012 – Data/Financial Analysis	134	136
SYSmark 2012 – 3D Modeling	116	116
SYSmark 2012 – System Management	127	123

Figure 3: Median scores for the BAPCo SYSmark 2012 benchmark. Higher numbers are better.

HDXPRT 2012 measures the performance of systems on common media usages. Figure 4 shows the median results of our HDXPRT 2012 tests. The Dell Latitude E5430 and Lenovo ThinkPad L430 performed comparably when handling media in the HDXPRT 2012 tests.

HDXPRT 2012		
	Dell Latitude E5430	Lenovo ThinkPad L430
Create HD Score (Higher is better)	175	175
Media Organizer - minutes (lower is better)	5.85	5.99
Media Creator - minutes (lower is better)	12.26	12.36
Photo Blogger - minutes (lower is better)	8.72	8.75
Video Producer - minutes (lower is better)	2.61	2.57
Music Maker - minutes (lower is better)	2.71	2.71

Figure 4: Median scores for the HDXPRT 2012 benchmark.

WHAT WE TESTED

In this section, we present a brief overview of what we tested. For detailed system configuration information, see [Appendix A](#). For step-by-step details on how we tested, see [Appendix B](#).

FutureMark 3DMark11

FutureMark's 3DMark11 1.0.3 benchmark suite tests system GPU DirectX®11 performance and CPU workload processing performance, primarily to report a system's 3D gaming capability. Tests include HDR rendering, shadow mapping, and pixel shading. For more information on this benchmark, see <http://www.3dmark.com/3dmark11>.

BAPCo SYSmark 2012

BAPCo SYSmark 2012 is an application-based benchmark that tests performance in the following office workload scenarios: office productivity, media creation, Web development, data/financial analysis, 3D modeling, and system management. SYSmark 2012 records the time the system takes to complete each individual operation in each scenario. For more information on this benchmark, see <http://www.bapco.com/products/sysmark2012/>.

HDXPRT 2012

The High Definition eXperience & Performance Ratings Test (HDXPRT) 2012, is a benchmark that evaluates the capabilities of PCs in consumer digital media uses, including

- Media Organizer
- Media Creator
- Photo Blogger
- Video Producer
- Music Maker

For more information on HDXPRT 2012, see www.hdxprt.com.

IN CONCLUSION

Today's workers do not want computers that keep them waiting. Selecting notebooks that perform everyday tasks quickly makes good business sense. In our tests, the Dell Latitude E5430 booted, shut down, performed office workload scenarios, and handled graphics and 3D more quickly than the Lenovo ThinkPad L430. This makes it an excellent choice for your employees.

APPENDIX A – SYSTEM CONFIGURATION INFORMATION

Figure 5 provides detailed configuration information for the test systems.

System	Dell Latitude E5430	Lenovo ThinkPad L430
General		
Number of processor packages	1	1
Number of cores per processor	2	2
Number of hardware threads per core	2	2
System power management policy	Dell	Energy Saver
Processor power-saving option	Enhanced Intel® SpeedStep® Technology	Enhanced Intel SpeedStep Technology
System dimensions (length x width x height)	13-3/4" x 9-5/8" x 1-3/8"	13-7/8" x 9-1/8" x 1-3/8"
System weight	5 lbs. 1 oz.	5 lbs.
CPU		
Vendor	Intel	Intel
Name	Core™ i5	Core i5
Model number	3210M	3210M
Stepping	E1	E1
Socket type and number of pins	Socket 988B rPGA	Socket 988B rPGA
Core frequency (GHz)	2.50	2.50
L1 cache	32 KB + 32 KB (per core)	32 KB + 32 KB (per core)
L2 cache	512 KB (256 KB per core)	512 KB (256 KB per core)
L3 cache	3 MB	3 MB
Platform		
Vendor	Dell	Lenovo
Motherboard model number	0MYF02	2468CTO
Motherboard chipset	Intel QM77	Intel QM77
BIOS name and version	Dell A03 (06/03/2012)	Lenovo G3ET36WW(1.10) (06/20/2012)
Memory module(s)		
Vendor and model number	Hyundai HMT351S6CFR8C-PB	Samsung M471B5273DH0-CK0
Type	PC3-12800	PC3-12800
Speed (MHz)	1,600	1,600
Speed running in the system (MHz)	1,600	1,600
Timing/Latency (tCL-tRCD-tRP-tRASmin)	11-11-11-28	11-11-11-28
Size (MB)	4,096	4,096
Number of memory module(s)	1	1

System	Dell Latitude E5430	Lenovo ThinkPad L430
Amount of RAM in system (GB)	4	4
Chip organization (single-sided/double-sided)	Double-sided	Double-sided
Channel (single/dual)	Single	Single
Hard disk		
Vendor and model number	Hitachi HTS72323A7A364	Seagate ST320LT007-9ZV142
Number of disks in system	1	1
Size (GB)	320	320
Buffer size (MB)	16	16
RPM	7,200	7,200
Type	SATA 3.0 Gb/s	SATA 3.0 Gb/s
Controller	Intel Mobile Express Chipset SATA RAID Controller	Intel 7 Series Chipset Family SATA AHCI Controller
Driver	Intel 11.0.0.1032 (11/29/2011)	Intel 11.0.0.1032 (11/29/2011)
Operating system		
Name	Windows 7 Professional x64	Windows 7 Professional x64
Build number	7601	7601
Service Pack	1	1
File system	NTFS	NTFS
Kernel	ACPI x64-based PC	ACPI x64-based PC
Language	English	English
Microsoft DirectX version	DirectX 11	DirectX 11
Graphics		
Vendor and model number	Intel HD Graphics 4000	Intel HD Graphics 4000
Type	Integrated	Integrated
Chipset	Intel HD Graphics 4000	Intel HD Graphics 4000
BIOS version	2132.8	2124.6
Total available graphics memory (MB)	1,696	1,675
Dedicated video memory (MB)	64	64
System video memory (MB)	0	0
Shared system memory (MB)	1,632	1,593
Resolution	1,366 x 768 x 32-bit	1,366 x 768 x 32-bit
Driver	Intel 8.15.10.2639 (02/01/2012)	Intel 8.15.10.2696 (03/19/2012)
Sound card/subsystem		
Vendor and model number	IDT High Definition Audio	Realtek High Definition Audio
Driver	IDT 6.10.0.6388 (02/13/2012)	Realtek 6.0.1.6597 (03/20/2012)

System	Dell Latitude E5430	Lenovo ThinkPad L430
Ethernet		
Vendor and model number	Broadcom® NetXtreme® 57xx Gigabit	Realtek PCIe GBE Family Controller
Driver	Broadcom 15.0.0.17 (08/24/2011)	Realtek 7.50.1123.2011 (11/23/2011)
Wireless		
Vendor and model number	Dell Wireless 1540	Wireless LAN PCI Express Half Mini Card Adapter
Driver	Broadcom 5.100.82.112 (10/26/2011)	Realtek 1005.25.825.2011 (08/25/2011)
Optical drive(s)		
Vendor and model number	PLDS DS-8A8SH	HL-DT-ST GT50N
Type	DVD-RW	DVD RW
USB ports		
Number	4	4
Type	1 x USB 2.0, 3 x USB 3.0	3 x USB 2.0, 1 x USB 3.0
Other	Media card reader, HDMI, eSATA	Media card reader
IEEE 1394 ports		
Number	0	0
Monitor		
LCD type	HD LED WXGA	HD LED WXGA
Screen size	14"	14"
Refresh rate	60 Hz	60 Hz
Battery		
Type	Dell T54FJ	Lenovo 45N1001
Size (length x width x height)	8-1/4" x 2" x 13/16"	8-1/8" x 2" x 3/4"
Rated capacity	5300mAh / 11.1V (59Wh)	5200mAH / 10.8V (57Wh)
Weight	11 oz.	11 oz.

Figure 5: Configuration information for the systems we tested.

APPENDIX B - HOW WE TESTED

Measuring time to boot and shut down

Boot and shutdown times

1. Simultaneously start the timer and boot the system.
2. Stop the timer when the Windows taskbar appears.
3. Record the result as the Boot time.
4. Bring up an administrative command prompt:
 - a. Select Windows Start orb.
 - b. Type `cmd` and right-click `cmd.exe`.
 - c. Select Run as administrator.
5. Type `Cmd.exe /c start /wait Rundll32.exe advapi32.dll,ProcessIdleTasks`
6. Do not interact with the system until the command completes.
7. After the command completes, wait 5 minutes before running the test.
8. Simultaneously start the timer and shut down the system (Start→Shut Down).
9. Stop the timer when the power LED turns off.
10. Record the result as the shutdown time.
11. Repeat steps 1 through 10 two more times, and report the median of the three runs.

Measuring graphics performance with 3DMark 11 1.0.3

Installing 3DMark 11

1. Purchase 3DMark 11 Professional Edition from <http://community.futuremark.com/store/>, and download the 3DMark_11_v103_installer.exe Windows package.
2. Install 3DMark 11 1.0.3 by double-clicking the 3DMark_11_v103.exe file; leave the default options set.
3. At the Choose Setup Language screen, choose English, and click Next.
4. At the Welcome screen, click Next.
5. At the License Agreement screen, click I accept the terms of the license agreement, and click Next.
6. At the Setup Type screen, click Complete, and click Next.
7. At the Ready to Install the Program screen, click Install.
8. When the 3DMark 11 Read Me page appears in your Web browser, review the document, and click Close when you are finished.
9. At the Setup Complete screen, click Finish to restart the computer.
10. Launch 3DMark 11 1.0.3 by double-clicking on the 3DMark 11 desktop icon. Enter the registration code, and click Register.
11. Exit 3DMark 11 1.0.3.

Running 3DMark11 1.0.3

1. Boot the system and open an administrative command prompt:
 - a. Select Windows Start orb.
 - b. Type `cmd` and right-click `cmd.exe`.
 - c. Select Run as administrator.
2. Type `Cmd.exe /c start /wait Rundll32.exe advapi32.dll,ProcessIdleTasks`

3. Do not interact with the system until the command completes.
4. After the command completes, wait 5 minutes before running the test.
5. Double-click the 3DMark 11 desktop icon to launch the benchmark.
6. In the 3DMark 11 Main section, click the Performance option under Preset, and select Benchmark tests only.
7. Click Run 3DMark 11.
8. When the benchmark run completes, take a screenshot of the results, and record them as follows:
 - 3DMark Score
 - Graphics Score
 - Physics Score
 - Combined Score
9. Shut down the system.
10. Repeat steps 1 through 9 two more times, and report the median of the three runs.

Measuring performance with SYSmark 2012

Avoiding 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.

Avoiding 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 After Effects CS5
- Adobe Dreamweaver CS5
- Adobe Photoshop CS5 Extended
- Adobe Premiere Pro CS5
- Adobe Flash Player 10.1
- Autodesk® 3DS Max® 2011
- Autodesk AutoCAD® 2011
- Google SketchUp™ Pro 8
- Microsoft Internet Explorer
- Microsoft Office 2010
- Mozilla Firefox Installer
- Mozilla Firefox 3.6.8
- Winzip Pro 14.5

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

Using the SYSmark built-in Configuration Tool

This tool supports three levels of configuration:

1. Only makes changes that are REQUIRED in order for the benchmark to run.
2. Additionally, makes changes that are RECOMMENDED for repeatable results.
3. Additionally, makes OPTIONAL changes that help ensure best results.

The Configuration tool makes the following configuration changes at each of the three levels:

Level 1 - Required

- Disables User Account Control (UAC)
- Disables Windows Update
- Disables System Sleep and Hibernate
- Disables Low Battery Actions
- Disables Network Proxies

Level 2 - Recommended

- Creates BAPCo power scheme
- Sets Power Plan Type to High Performance
- Disables Windows Firewall
- Disables Windows Sidebar/Gadgets
- Disables Windows Pop-ups
- Disables Incoming Remote Desktop Connections
- Disables Windows Error Reporting
- Disables Screen Saver and Monitor Timeout
- Sets CPU Adaptive Mode
- Disables Desktop Slideshow
- Disables Disk Defrag

Level 3 - Optional

- Sets Hard Disk Timeout
- Disables Windows Defender
- Disables System Restore
- Ignores Laptop Lid Close
- Sets Maximum Display Brightness
- Disables Adaptive Brightness

Because we are testing how well each system does out of the box, we chose only the Required options in the Configuration tool.

1. Insert the SYSmark 2012 Install DVD into the notebook PC's DVD drive.
2. When the Autoplay menu appears, click Run SYSmark2012_setup.exe.
3. At the Welcome screen, click Next.
4. Enter the serial number, and click Next.
5. Accept the license agreement, and click Next.
6. At the Choose Components screen, select Full, and click Next.
7. At the Choose Install Location screen, accept the default location of C:\Program Files (x86)\BAPCo\SYSmark2012, and click Next.
8. At the Choose Start Menu Folder screen, click Install.
9. Insert Disc 2 when prompted.

10. At the InstallShield Wizard Complete screen, click Finish.
11. Download and install SYSmark 2012 Patch 2 <http://www.bapco.com/support/>.
12. Launch SYSmark 2012.
13. Click Configuration and choose only the Required options.
14. Click Apply, and restart the computer when prompted.

Running the test

1. Launch SYSmark 2012 by double-clicking the desktop icon.
2. Enter a Project name and choose 3 iterations.
3. Click Run Benchmark.

Getting the SYSmark 2012 results

When SYSmark 2012 has completed, the Test Results Viewer appears. To submit these results to BAPCo, we saved the test results by performing the following steps:

1. Click Save.
2. Enter a name, and select FDR to save the results as an FDR file.
3. Click Save again, and select PDF to save the results as a PDF file.
4. Browse to the Documents directory where the result FDR and PDF files were saved.

Measuring digital media capabilities with HDXPRT 2012

Setting up the test

1. Insert the HDXPRT DVD-ROM into your DVD drive.
2. At the HDXPRT Install screen, click Install HDXPRT.
3. Accept the HDXPRT end user license agreement.
4. After the setup is complete, select Yes, I want to restart my computer now, and click Finish.

Running HDXPRT

1. Click the HDXPRT 2012 shortcut on the desktop.
2. Click Run HDXPRT.
3. Enter a test name, choose 3 iterations, and click Run.
4. The Results Screen automatically appears at the end of a successful run. The test results files are found in the C:\ProgramFiles\HDXPRT\Reports\<<TestName> directory.

ABOUT PRINCIPLED TECHNOLOGIES



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