



Lenovo ThinkPad T60 Review (pics, specs)

by Andrew -

The [Lenovo ThinkPad T60](#) series is the first ThinkPad to be released with the new Intel Core Duo processor. The ThinkPad T-series can be thought of as the flagship of the ThinkPad brand, it's squarely targeted towards business users and professionals. Durability, security, usability and performance are all important characteristics of the ThinkPad T-series. The T60 carries on these traditions with a jump in performance from the most recent T43 and some changes to configuration options available and the port and [keyboard](#) layout.



Lenovo ThinkPad T60 ([view larger image](#))

An important thing to note regarding the [ThinkPad T60](#) is the fact it comes in two flavors: a 14" screen variety and 15" screen variety. The 14" type offers lighter weight and longer battery life at the expense of a smaller screen. The 15" type T60 offers higher end performance configurations and also the option of a FlexView screen, but at the cost of a higher weight and less power life per battery cell. Under review here is a high end configuration of the T60 15" variety. Following are the specs

Specs of the ThinkPad T60 Being Reviewed:

Model #: 2623-D3U

Processor: Intel T2500 2.0GHz Core Duo
Motherboard Chipset: Intel Calistoga i945GM/PM
Hard Drive: 100GB 5400RPM SATA ([Hitachi Travelstar HTS541010G9SA00](#))
Memory/RAM: 1GB (1,024MB) (configurable up to 4GB)
Screen: 15.0" 1400 x 1050 SXGA+ (LG Philips LP150E05 - A2)
Graphics: ATI X1400 128MB
Optical Drive: Multi-Burner DVD recordable
Battery: 9-cell (extended life, protrudes from back of [notebook](#))
Wireless: Intel PRO/Wireless 3945ABG (802.11 a/b/g), Bluetooth 2.0, InfraRed
User Input: Touchpad, Pointing Stick, UltraNav buttons, Fingerpring Scanner
Warranty: 3-years parts and labor, 1-year battery
Dimensions:
14.1" screen config: 12.2" x 10.0" x 1.0-1.2" (width x depth x thickness)
15" screen config: 13" x 10.6" x 1.2-1.4" (width x depth x thickness)
Weight: 6.4lbs (14" T60 is about 5.2 lbs with a 6-cell battery and optical drive)
Ports:
3 USB 2.0 ports
dock/port replicator
Display-out
AC adapter port
RJ-11 (Modem)
RJ-45 (Ethernet LAN)
Audio line out for headphone/speakers
Microphone
Slots:
1 Type II PC card slot
1 ExpressCard 54 slot
Buttons:
Power on/off
Volume up/down/mute (3 buttons)
Wireless on/off
ThinkVantage shortcut button (shortcut to system support, security and diagnostics suite)
Battery lock and release
Price: \$2,799 (as of 2/13/2006 at [Lenovo.com](#))

Design and Build

The [ThinkPad T60](#) is a premium product with a durable build. For somebody that travels a lot or relies on their notebook to earn a livelihood, the difference between a sub \$1,000 starter notebook and a premium workhorse is obvious. The ThinkPad T60 stands out with its durability via choice of components, very sturdy case material and a strong protective chassis. You pay a lot more for these features of a T60, but if you're on the road, away from support, and miss a time sensitive opportunity because of hardware problems -- you might just wish you had spent extra dollars for a better built notebook such as the T60.

So how does the T60 excel build-wise? Basically the same as its predecessor T-series [notebooks](#) did. The T60 body is a rugged plastic that does not flex. The magnesium reinforced lid won't flex and provides amazing protection for the screen. The keyboard does not flex -- at all. The thick metal hinges that attach the screen are very rigid and ensure the screen does not wobble. The keyboard is spill proof and has two drain holes to make sure if you do happen to spill your morning Starbucks coffee, the liquid is carried away from sensitive components and out through the bottom

of the notebook. The hard drive is shock mounted and the entire chassis is a newly designed magnesium "roll cage" (it offers 30% more protection than past T-series chassis), and even if your T60 is dropped and broken the Active Protection System (APS) will stop hard drive activity to prevent data loss. The double screen latch system locks securely to make sure the screen stays down when being carried around. In other words, there's no shortcuts being used in build quality from past ThinkPad notebooks since the Lenovo takeover of IBM -- only enhancements.

Aesthetically the [ThinkPad T60](#) remains pretty much the same as past ThinkPad T series notebooks, meaning from a few feet away you'd be hard pushed to tell the difference between a T40, T41, T42, T43 or T60 (assuming they're all the same 14" size -- the 15" size was not introduced until the T42 came about). But with the T60 there are definitely some changes in overall layout and aesthetic looks.

The first change you'll notice between the T60 and former T-series notebooks is the UltraNav buttons have changed along with the hardware buttons at the top (power, volume, ThinkVantage). Gone are the familiar red stripes on the mouse buttons and blue stripe on the scroll bar button. The mouse buttons are also squared off now and significantly smaller. See pictures below for a comparison of the T60 to the T43 UltraNav layout:



The **ThinkPad T60** touchpad and UltraNav buttons



The **ThinkPad T43** touchpad and UltraNav buttons

Personally, I really liked the coloring on the mouse buttons. I'm a fan of using subtle color to make things stand out as being an important function (and mouse buttons are an important function). The coloring was also unique and something different, I'd prefer if Lenovo leave the obsessively clean looks to Sony and Apple. Besides, the ThinkPad is sometimes called too boring in its all black look, and tearing away what color there is makes it look more boring and, might I say -- generic. The button size change was made consciously by Lenovo to improve usability, argument being larger buttons are easier to bump accidentally. I'd say the new buttons are probably as usable as past ones -- or you at least get used to them quickly if you've used a ThinkPad in the past, but still, I preferred the larger size.

Also changed is the button look at the top of the keyboard, the Function keys (F1 - F12) used to be grey in color, but with the T60 they become all black. Again, I miss the extra color separation and distinct look. Also, the once black volume and power buttons are now silver and do not reside in a dimpled depression as they did previously. The "Access IBM" button has become the "ThinkVantage" button and jumps to the right of the volume keys. In use these plastic constructed buttons feel fine, but just looking at them would cause suspicion of cheapness and you'd half expect them to be wobbly (they're not).



Above is pictured the T60 top row of keys and buttons



Above is pictured the T43 top row of keys and buttons

The port layout of the T60 has also changed quite a bit, these changes are covered in the **Input & Output Ports** section.

So overall in terms of aesthetic design, I still love the professional black look of the T60, it's as distinctive a ThinkPad look as ever. However, I can't say I like the new buttons look or the UltraNav changes. At least they didn't change the lid color to titanium or anything crazy like that though...

Screen

The ThinkPad T60 under review is a 15.0" variety with an SXGA+ (1400 x 1050) and has what Lenovo calls "FlexView" technology to provide very wide viewing angles. Often notebook screens can suffer from color distortion if viewed from angles that deviate from perpendicular viewpoints (straight on and level) -- the cheaper the LCD the worse the viewing angle. The FlexView screen is a real treat though, the screen color and brightness maintains from just about any angle you try. Gathering people around your laptop to view a spreadsheet (or to view the latest version of your work offices favorite online flash based cartoon) will mean everyone can see it, even those at the end of the semicircle of people. Also important and worth noting, since the screen is matte (anti-glare) you won't get any nasty reflection of office lights on the screen -- but it is true colors are not as bold and contrasting as with the popular glossy screen consumer notebooks (i.e. Sony XBrite, Dell TrueLife, Fujitsu CrystalView, HP BrightView).

Below are examples of how the T60 screen maintains amazing colors and brightness from any angle:



T60 view straight on ([view larger image](#))



T60 view with screen tilted 70-degrees back ([view larger image](#))



T60 view with screen tilted 50-degrees forward ([view larger image](#))



60-degree from front left side angle view ([view larger image](#))



Straight on view of ThinkPad T60 (left) compared to Dell e1705 (right) ([view larger image](#))



Angle view of T60 screen and e1705 screen -- notice colors and text still crisp at this angle for the T60 ([view larger image](#))

Brightness wise the T60 screen under review is very good, it's the brightest ThinkPad screen that I've experienced in fact. But ThinkPad screens are not known for being the brightest and best, just adequately bright and good enough for business use. So I'll say that the T60 screen being reviewed is bright, it's equivalent in brightness to a current Dell e1705 17" consumer oriented notebook I have in hand (see pics above), but I'm sure there's a 5% audience out there that might wish there was one more notch increase of brightness available.

The screen lighting is very even, there's no areas of darkness or brightness -- indeed it's what makes the T60 FlexView screen all the more amazing, it's so evenly lit and crisp from such vast angles.

Also, keep in mind, my comments here reflect the use of a 15" SXGA FlexView screen T60. Experiences may differ with a 14" size screen, there is no FlexView offering on that screen size.

Speakers

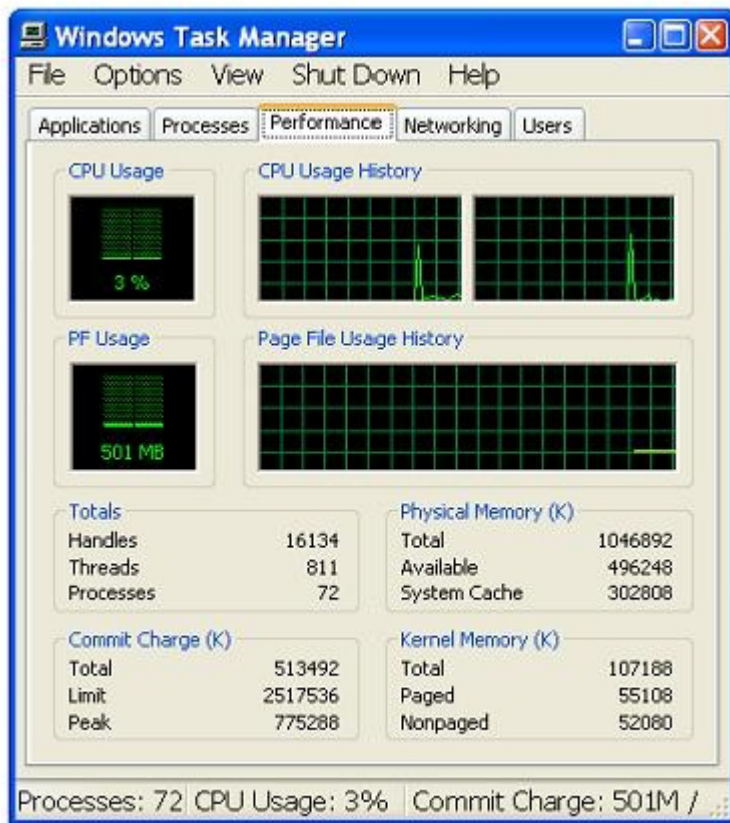
The T60 speakers are located at the front bottom area of the notebook. The speakers are actually not half bad, they certainly get loud enough to comfortably hear a [DVD movie](#) from across a room. The sound quality does deteriorate as loudness increases -- more static and tinny sound becomes apparent at the loudest level. Even at the louder levels though the sound is not grating and serviceable -- good news if you prefer not to have to carry external speakers. As usual though, the recommendation is to have a pair of headphones if you want bass or what can be considered very good sound quality.



Above is a front view of the ThinkPad T60, you can see the infrared port on the far left, the new wireless on/off button on the left side (a new feature) and the speakers are centered at the front underside ([view larger image](#))

Processor and Performance

The [ThinkPad T60](#) is the first Core Duo based notebook I've used. It runs at 2.0GHz with dual core processors -- meaning multi-tasking is what this machine is born to do. I've had zero situations in which lag has been a problem, even when there's a virus scan running in the background and I'm ripping a CD, have Word, Outlook, an HTML Editor and Visual Studio (a code development tool) open and flipping between them the T60 is yawning and CPU usage is low.



Two processor graphs for two processor cores in Windows Task Manager

The T2500 processor coupled with the ATI X1400 128MB graphics card is also enough to play most any game, albeit maybe not at the highest setting. As a demonstration of the processor and graphics card capability I installed Doom 3 and took it for a test run. The game ran flawlessly on medium settings, which I think for a business notebook is pretty good. If you're on the road and want to unwind a little you're not exactly going to be pulling out the 3D surround sound headphones and getting online to smash it up, a one player high-end 3D game at medium graphics settings is probably enough. And given the fact Doom 3 runs well with such settings, Half Life 2 and other popular titles can be assumed to run and probably well.



Doom 3 runs just very well at medium settings on the T60 with an ATI X1400 128MB graphics card ([view larger image](#))



Settings used for playing Doom 3 on the T60

Benchmarks

Below are the results gained from running Super Pi (ftp://pi.super-computing.org/windows/super_pi.zip), a program that forces the laptop's processor to calculate Pi to 2 million digits of accuracy. As you can see, the new Intel Core Duo processor smokes any previous processor at this calculation, the ThinkPad T60 and [recently reviewed Acer 8204WLMi](#) are

pretty close on processor speed times. The T60 beats the last T43 1.86GHz Pentium M I reviewed by about 27 seconds on this calculation (something like 26% faster).

Notebook	Time
Lenovo ThinkPad T60 (2.0GHz Core Duo)	1m 18s
Acer TravelMate 8204WLMi (2.0GHz Core Duo)	1m 15s
Sony VAIO FS680 (1.86 GHz Pentium M)	1m 53s
IBM ThinkPad T43 (1.86 GHz Pentium M)	1m 45s
IBM ThinkPad Z60m (2.0 GHz Pentium M)	1m 36s
Fujitsu LifeBook N3510 (1.73 GHz Pentium M)	1m 48s
Dell Inspiron 6000D (1.6 GHz Pentium M)	1m 52s
Dell Inspiron 600M (1.6 GHz Pentium M)	2m 10s
HP Pavilion dv4000 (1.86 GHz Pentium M)	1m 39s
HP DV4170us (Pentium M 1.73 GHz)	1m 53s
Sony VAIO S380 (1.86 GHz Pentium M)	1m 45s

Below are the results gained from running 3DMark05 on the [ThinkPad T60](#), basically it can be seen that the X1400 performance rests somewhere between the older ATI X600 and X700:

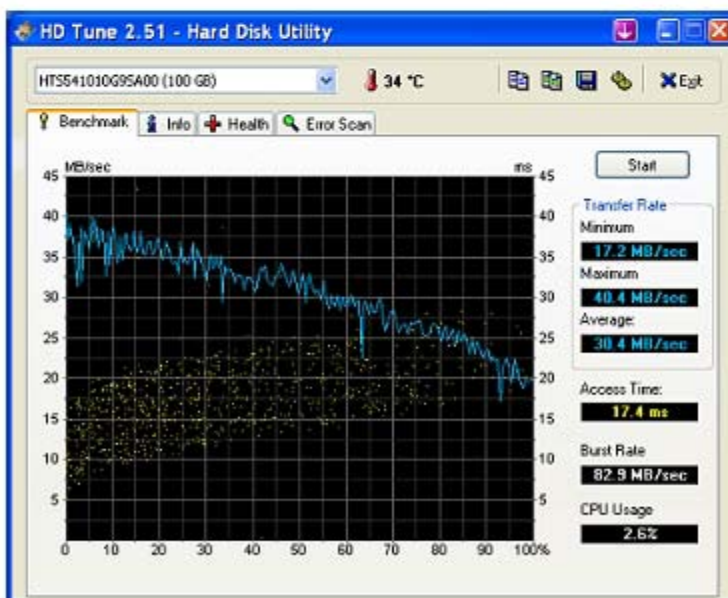
Notebook	3DMark 05 Results
Lenovo ThinkPad T60 (2.0GHz Core Duo, ATI X1400 128MB)	2092 3D Marks / 4462 CPUMarks
Lenovo ThinkPad Z60m (2.0GHz Pentium M, ATI X600 128MB)	1659 3DMarks / 3426 CPUMarks
ThinkPad T43 (1.86GHz, ATI X300 64MB graphics)	727 3DMarks / 3414 CPUMarks
Asus V6Va (2.13 GHz Pentium M, ATI Radeon Mobility x700 128 MB)	2530 3D Marks / 3749 CPU Marks
Quanta KN1 (1.86 GHz Pentium M, NVIDIA GeForce Go 6600 128mb)	2,486 3DMarks / 4106 CPUMarks
HP dv4000 (1.86GHz Pentium M, ATI X700 128MB)	2536 3D Marks / 3557 CPU Marks
Acer TravelMate 8204WLMi (2.0GHz Core Duo, ATI X1600 256MB)	4157 3DMarks / 4812 CPU Marks

Below are the results gained from running PCMark04 on the T60 and comparison results to the T43, the T60 with the given configuration handily beats the 1.86GHz ATI X300 equipped T43.

Futuremark PCMark04 Scores		
	IBM T43 (1.86GHz, ATI X300)	Lenovo T60 (2.00 GHz, ATI X1400)
Multithreaded Test 1 / File Compression	3.33 MB/s	6.83 MB/s
Multithreaded Test 1 / File Encryption	27.19 MB/s	55.83 MB/s

Multithreaded Test 2 / File Decompression	23.4 MB/s	52.5 MB/s
Multithreaded Test 2 / Image Processing	10.88 MPixels/s	23.24 MPixels/s
Multithreaded Test 3 / Virus Scanning	1914.17 MB/s	4450.72 MB/s
Multithreaded Test 3 / Grammar Check	2.82 KB/s	4.88 KB/s
File Decryption	54.11 MB/s	59.64 MB/s
Audio Conversion	2496.87 KB/s	3062.34 KB/s
Web Page Rendering	5.27 Pages/s	6.35 Pages/s
DivX Video Compression	51.71 FPS	74.82 FPS
Physics Calculation and 3D	159.19 FPS	212.51 FPS
Graphics Memory - 64 Lines	868.44 FPS	1514.98 FPS
Futuremark 3DMark05 Scores		
3DMark Score	727 3DMarks	2092 3D Marks
CPU Score	3414 CPUMarks	4462 CPUMarks
Gaming Tests		
GT1 - Return To Proxycon	3.3 FPS	9.7 FPS
GT2 - Firefly Forest	2.2 FPS	5.7 FPS
GT3 - Canyon Flight	3.4 FPS	10.6 FPS
CPU Tests		
CPU Test 1	1.18 FPS	2.5 FPS
CPU Test 2	2.9 FPS	3.5 FPS

Below is a graph generated from running HDTune on the T60, a [hard drive benchmarking](#) application:



[\(view larger image\)](#)

Heat and Fan

The T60 is cool running, very cool running in fact. After playing Doom 3 and running 3D benchmark applications the T60 fans didn't even kick in. The back area where the fan and vents are got a bit warm as they pushed the heat out, but certainly not uncomfortably warm or anything. The fact that there's an extra heat vent now on the back where the parallel port used to be probably helps quite a bit to dissipate heat.

Input and Output Ports

Here's a quick visual rundown on the ports available again and what's on each side of the notebook:



T60 left side: Fan/heat vent, Monitor-out, modem, ethernet, microphone, headphones, USB 2.0, ExpressCard (top slot) and PCMCIA Type II slots ([view larger image](#))



T60 right side: 2 USB 2.0 ports, optical drive/multi-bay ([view larger image](#))



T60 back side: heat vent, power jack, battery slot ([view larger image](#))



T60 front side: Infrared, wireless on/off switch, speakers, screen latch open ([view larger image](#))



T60 underside view: Port replicator connector, access to memory, battery release latch and lock ([view larger image](#))



Above view -- the same ThinkPad look as ever except that hump on the right which contains the WWAN antenna on this specific model (if you order a T60 without WWAN connectivity you will not have this)

The T60 drops the parallel port in favor of an extra vent on the back of the notebook. Finally we have 3 USB 2.0 ports, much better than the 2 the T-series use to have. The dual ExpressCard / PCMCIA card slots is a smart move as we're right now in the middle of phasing out the PCMCIA type slot and adopting ExpressCard as the standard.

I'm a little annoyed there's no media card reader, having an SD card slot is nice to have given the

number of devices that use it. Yes, I know USB flash memory drives are cheap and easy too but an SD card is easy to store inside of a notebook and quickly pop it out when needed or pop in an SD card from a PDA or camera when needed for easy fast transfer of files from other mobile devices. I use the SD slot a lot on my ThinkPad X41 and wish the T60 had it.

No FireWire port still for the T-series, the X60 series will have this and so does the Z60 series, odd that the T60 didn't adopt it. It doesn't bother me not to have it, I don't use it, but there's definitely some that will be annoyed.

And along with the parallel port going bye-bye, so does the S-Video port. Another thing that will probably annoy a number of people as well. In regards to the parallel port, you knew it was only a matter of time before that thing went and having the extra vent at the back there really seems to help keep the notebook cool, so fine by me.

Overall the port selection can be called *fine*, but could certainly be better and not up to snuff with some other similar notebooks.

Keyboard / Touchpad / Pointing Stick



ThinkPad T60 keyboard area ([view larger image](#))

The ThinkPad keyboard is the best there is, there's zero flex, every key feels individual, every key has great travel/feedback and the keyboard is full-size. There are changes on the T60 keyboard however, the Windows key and Menu shortcut key have been added to the T60 as Lenovo starts to integrate these keys across the ThinkPad line (starting with the Z60 series). It never bothered me not having the Windows key as I don't use it. With the introduction of this key, the ALT key suffers the most in being sized down, in doing a few ALT-TAB commands to switch between open windows I found I hit the Window-TAB keys instead. Kind of annoying, but you learn and muscle memory kicks in so you know how far to stretch (or not stretch) to hit the ALT key or Windows key if you use that.

The T60 has a pointing stick, I love using this and find it much easier than the provided touchpad - it makes it so you can move the cursor around the screen without having to lift your hand from the keys, a much faster and easier to control style of input. But the great thing is that if the pointing stick isn't your cup of tea then you've got the touchpad to fall back on.

As mentioned in the design section, the mouse buttons have been squared off and downsized, the feel of the buttons is still the same but overall I think uglier and not as easy to find via feeling. They're still better than most any other notebook though, the travel and feedback from the mouse buttons is good.

Worth mentioning, the F8 and F9 keys now can be used in conjunction with the Fn key as shortcuts. Hit Fn + F8 to bring up a display to disable the touchpad or disable TrackPoint. Hit Fn + F9 to bring up an applet that allows you to easily detach devices such as the multi-bay optical drive.

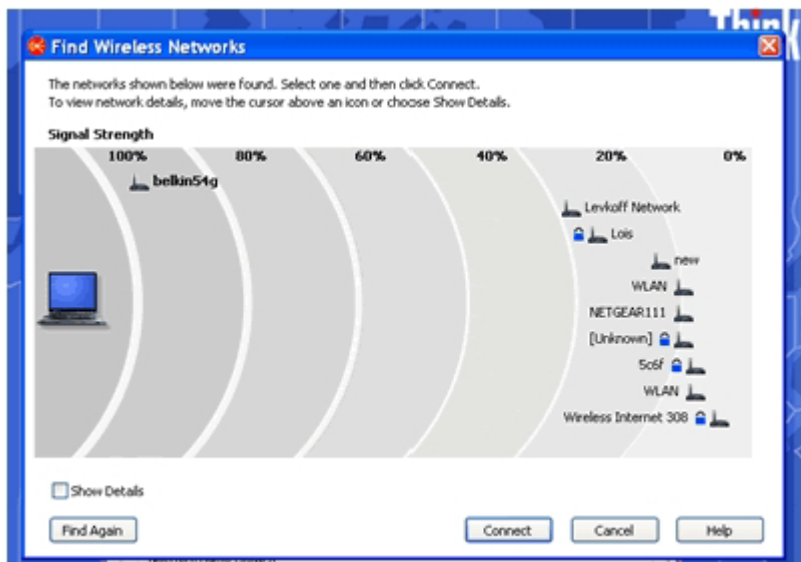
Battery

I have the 9-cell battery with the T60 being reviewed. It adds a bit of weight over the standard 6-cell and sticks out but if you want close to 4 hours of battery life with the 15" screen model you'll need this size. In using the T60 without Wi-Fi and at medium brightness (3rd notch of 7) it got **3 hours 42 minutes of battery life** when used lightly (typing review, or idling). You can expect to get over 3 hours with Wi-Fi on and finishing a DVD with the 9-cell battery shouldn't be a problem, well, unless it's Lord of the Rings.

The T60 14" screen size will do much better in terms of time of battery life per cell because a smaller screen just drains less battery. My guess is the 6-cell battery for the T60 14" will get you about what the 9-cell battery does for the 15" -- again, that's just a mildly educated guess.

Wireless

The ThinkPad T60 uses the Intel 3945 a/b/g wireless card. Reception is fine, no troubles, the antenna of the T60 is in the screen to give extra range. The T60 also comes with a new Access Connections (IBM built-in software for managing wireless) look that displays all the wireless networks in range on a little map with strength. Cool.



Wireless network management application with the T60, just click on the network you want to connect to.

You can also order the T60 with a WWAN antenna and integrated Verizon EVDO card (notice the "hump" on the right side of the T60 screen that I have, it's the WWAN antenna). I'm a huge fan of this Verizon service, it works really well in most any mid-size or larger city where Verizon has their

EVDO network setup. A monthly plan is \$80 (have to sign up for a year) or you can opt for a one time 24-hour access charge for \$15. This \$15 service is great for those who travel maybe 2-3 times a month and need ubiquitous wireless while on the road those days. Or, if you're in a pinch and desperately need the web/email for some business related task but cannot find a net connection, you'll be glad to pay \$15 to get to the net.

The T60 can also come with Bluetooth if so chosen and configured, great to use with printers, PDAs and Smartphones for transferring data wirelessly.

Service and Support

The T60 I have comes with a 3-year warranty when ordered through Lenovo.com. Service and support from Lenovo (and IBM in the past) has always been good for me. Like any vendor though, there are disaster stories, but the Lenovo ThinkPad tech support center (based in Atlanta at last check) has always been helpful for me and generally gets rated at the top of the list for notebook vendors. Sadly, the acquiring of a newly released Lenovo ThinkPad will be the most painful part of things, the tech support always seems good, the sales and buying process from the consumer side has recently been comical. In [our forums](#) there are countless people that ordered the ThinkPad Z60m in December and in mid-February are still empty handed with uncertain receive dates. A similar thing happened with the X41 Tablet release. Maybe order fulfillment issues can be blamed on excessive demand, but the Z60m was announced and released in September and 5 months later it's still a interminable wait for many orders. The Dell e1705 I ordered from Dell.com was announced January 6 and it took exactly 10-days to get it from Dell for a recently placed (February 1) order, and I know there's major demand for that machine. Lenovo needs to come in line with making its Lenovo.com ordering channel a reliable place to order something and get a product shipped in a respectable amount of time (not 3 months). Visit our [IBM/Lenovo forum](#) to keep track of customer experiences of ship dates with the T60.

Software

Windows XP Home or Pro are your two choices of OS. The ThinkPad built-in system tools for recovery, backup, system-updates, active protection system (data protection), security, managing wireless connections, screen utilities, and overall management of your notebook is best in the industry. The ThinkVantage software is a very mature suite and is constantly being improved.

One surprise is that Lenovo included Google Desktop Search and Google Toolbar search installed by default. Google reportedly paid Dell the sum of \$1 billion to slap these products on all the machines they output for the next 3-years. The ThinkPad isn't generally a product that's been used in the past to install 3rd party software to generate cash / improve margins -- so I wonder if Google is paying Lenovo to put these applications on or if Lenovo figured they're useful tools that most people will install anyway. Likely the first scenario -- Google is sure getting aggressive.

Conclusion

The [ThinkPad T60](#) is easy to recommend, if I were an [IT manager](#) and had to choose a notebook to equip a sales force with notebooks I'd go with this. It's highly durable, very easy to use, looks extremely professional and gives you a multitude of connectivity options. Furthermore, if you get the nice FlexView screen that mine came with, you'll have what I consider one of the most pleasant to view screens on the market. The input/output port selection still isn't where I'd like it to be, strangely even the latest tiny ThinkPad X60-series beats the T60 in port selection (although the X60 has no optical drive, it does have FireWire and an SD card slot in addition to everything else the T60 has -- talk about getting beaten by your younger and smaller sibling).

The new Core Duo processor veritabily tears through anything a business user will throw at it, and

with an X1400 or better graphics card installed you'll have to be somewhat concerned with the workforce blowing time on games. So if you want a T60 notebook for yourself but find that it's too pricey, and yes you do pay a pretty penny for such a premium level notebook, then you might want to start lobbying to your manager and IT department now to adopt T60 notebooks -- it's a treat to use and I'm sure can make you more productive.

Pros

Great feeling keyboard, the best there is for notebooks, and now there's a Windows key for those that missed that
The 15" FlexView screen offers a fantastic viewing experience and really makes it easy on the eyes for day long computing
2.0GHz Core Duo + X1400 128MB graphics card = fast, fast, fast
Runs cool and quiet, no overheating issues even with a fast processor and dedicated video card
Very good battery life
Docking station and port replicator options if you need more ports
Multi-Bay makes it easy to switch out the optical drive with an secondary hard drive, battery or optical drive upgrade

Cons

No FireWire, no SD card slot no S-Video ports means the T60 is behind the curve in available ports / slots
At 6.3lbs the 15" variety T60 is kind of heavy to be called portable, go with the T60 14" if you need greater portability
Expensive, but it's a premium product so you expect that
The new power and volume buttons look cheap and couldn't possibly be more boring
Smaller mouse buttons and no coloring is a bit of a downer in my book, I liked the old style better and found them slightly easier to use

ThinkPad T60 Pricing and Availability: [Lenovo ThinkPad T60](#)