Thinkpad T61 Heat Problem Fix

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I've had an issue with laptop heat recently. For the last few months, my trusty Thinkpad T61 has been unpleasantly warm all the time, and unbearably hot some of the time, for no good reason. It seemed to start happening around the same time I installed Windows 7 (switching from Ubuntu 9.10), so part of me assumed it was some incompatible bit of power management code. But after it got to the point where I would intentionally keep my hands off the palm rest and only use my fingertips to type because my hands would get uncomfortably hot, I knew it had to be something else.

In short, the problem was that the cooling system was doing a very bad job. With no active programs running and the CPU on automatic throttling, the idle core temperature was staying between 60 and 62 degrees Celsius. I tried to find out what other people's idle temperature was running Windows 7 64-bit, but couldn't find anything conclusive. Most people were just discussing full load or GPU temperatures during gaming. So, here's an answer for anyone wondering:

The idle core temperature of a Thinkpad T61 Core 2 Duo laptop running Windows 7 64-bit should be between 45 and 50 degrees Celsius.

Here's the list of things I did in order of ease. This is a good list to do if your laptop is too hot; just stop going down the list once you're satisfied.

1. Make sure nothing is eating CPU cycles—check Task Manager or Resource Monitor.
2. Make sure your power management isn't set on maximum performance if you don't need it.
3. Make sure your cooling system isn't set on minimum noise, as this restricts fan usage.
4. Use a can of PC duster gas to clean out the ventilation system. This is best to do from the inside out, which usually means taking the keyboard off. If you just blow right into the fan grill, the dust can't really go anywhere.
5. Fix the cooling system:

- Remove the CPU cooler (this is not usually very easy).
- Clean off the CPU, GPU, and northbridge chip (wherever the cooler makes contact) with alcohol and a Q-tip.
- Clean off the cooler as well, so there is nothing but clean metal and chips left.
- Apply new thermal paste (such as Arctic Silver 5) to the chips and attach the CPU cooler again, making sure it's making solid contact with all the chips.

It was the last one that really did it for me. The old thermal "paste" was past its prime, and wasn't transferring heat very well. The new stuff is obviously much better. My idle temperature is now usually 47 degrees, a solid 15 degrees cooler than it was before. It was totally worth it. It's never too hot, and it's never uncomfortable during normal use. Sometimes it even hovers at 44 degrees.

You might need a guide for the last two steps, since taking apart a laptop isn't always intuitive. Thinkpad manuals are available online at their Hardware Maintenance Manual repository.

UPDATE: someone has pointed out to me that the power management settings are not present on some laptops. That's true, depending on your laptop manufacturer, the OS you have installed, and whether or not you have the manufacturer's special software installed. Many companies provide this for free for Windows, and some of them for Linux as well. I believe Macbooks typically include everything. The bottom line is that if you can't find anything to change those performance settings, try Googling "[laptop model] power management" and see what you find.