Re: computer keeps crashing

Source:
http://newsgroups.derkeiler.com/Archive/Alt/alt.comp.hardware.pc−homebuilt/2007−09/msg00685.html

- *From*: Paul <nospam@xxxxxxxxxx>
- *Date*: Mon, 24 Sep 2007 05:04:28 −0400

E.T. wrote:

> Ok folks, followed some of the advice in this group and tried
> testing one at a time my 2 dual shared kingston hyperx DDR2 512mb mem
> sticks. On stick#1 game application ran for like 2 hours without
> bluescreening (disabled WinXp "restart" on error or crash) Also, both
> applications (spybot1.4 & Avast antivirus) which seemed to
> mysteriously stop running about 60% thru scans, finally finnished
> their assesment with stick#1.
> Stick#2 ran for about 3 hours before bluescreening. Applications
> also finnished scans with this stick.
> Also tried both sticks and followed "w_tom" advice on using a hair
> dryer.(thanks tom, never even thought of it,but it makes sense)
> pointed it at both sticks and ran "spybot1.4" and once again the
> program stopped at about 60% scan. However....also ran cpu program
> "fox one" and noticed that cpu was slowly rising from 48C to 58C. Im
> assuming that the heat from the hair dryer was reflecting off of
> motherboard and somewhat heated the cpu. It held at 58C for about 2
> minutes and thats when "spybot1.4 failed at 60%
> Since I couldnt tell whether it was the mem sticks or the cpu temp
> that was causing the errors/bluescreens I downloaded a program called
> "Stress Prime 2004" Ran the program for a FFT cpu only test and the
> program detected a hardware failure at only 19 minutes. During this
> test and time the cpu temps slowly rose from 48C to 58C. Id say that
> it reached 58C at around 15 to16 minutes. Could this be a sign that
> the cpu is not being cooled properly. I do have a thermaltake blue orb
> II on it, but now Im begining to wonder if this cooler is sufficient.
> Also....could a small layer of dust on the heatsink cooler make a
> difference? Im assuming this since the computer ran for 2 months ok
> then in June it started crashing only on gaming.
>
> Ed

Run Stress Prime with each stick by itself. Compare test results
between the two test runs. If one case fails and the other one doesn't,
that could be confirming what your other tests are showing (that failure

follows the memory stick).

If the "good stick" of RAM can run Stress Prime for as long as you're willing to wait, then I guess that tells you that 58C is not too much.

As for whether you should tolerate a 58C CPU temperature, you are using a 3.8GHz P4, so it is bound to get hot. There are some nice heatpipe coolers you can use, to reduce the temp −− how much money do you want to spend to fix it ?

For a cooler, the Typhoon places an emphasis on quiet, and the fan should probably run a bit faster than it does. It uses a 120mm square fan.

http://www.newegg.com/Product/ProductReview.aspx?Item=N82E16835106061

And volume−wise, this is probably the biggest one you can buy. Some people have trouble fitting this inside their computer case. Tuniq Tower is the same price as the Typhoon.

http://www.newegg.com/Product/ProductReview.aspx?Item=N82E16835154001

There are plenty of other candidates on the pages of Newegg − read the reviews to see what kind of performance the customers got. Many people will be using lower power processors than a 3.8GHz P4, so you have to find reviews where people used a hot processor. For example, an AMD 6000+ X2 is 125W under load, and would be a good test for any heatsink. A puny Core2 Duo at 65W, is hardly a good test of a cooler, and a lot of people use those.

The 3.8GHz P4 here, is 115W TDP.
http://processorfinder.intel.com/details.aspx?sSpec=SL84Y

For an Intel processor, there are a couple critical temperatures. There is the throttle temperature, where internally the processor slows down, to try to cool itself off. On some processors, this temp is in the 65C to 70C range. The second temperature point, is THERMTRIP, which causes the computer to shut off. This temp varies by product family. On some older processors, it was set way high (135C). More recent processors, THERMTRIP at 20C more than the throttle temp.

So 58C is still OK, with respect to those two trip points. The first trip point robs you of performance, while the second trip point shuts the computer off. And at 58C, you've avoided both of those conditions.

The math behind coolers is pretty simple. You have the room temp (like 25C). Increasing the room temp, results in the computer temps rising to the same degree. A well cooled computer case might run around 32C (i.e. 7C more than R.T.). The CPU temp would be

CPU_temp = Case_air_temp + (Processor_Power * Thermal_Resistance)

Say you had a Zalman 9500A cooler for your CPU. The product page lists thermal resistance as 0.12C/W at max fan speed, and 0.16C/W with the fan speed adjusted for quiet.

http://www.zalman.co.kr/eng/product/view.asp?idx=247&code=009

CPU_Temp = 32C + (115W * 0.12C/W) = 45.8C at max fan speed, and running Stress Prime

If your case isn't cooled very well, then it'll run above the 32C figure. If the heatsink you buy, has a thermal resistance higher than 0.12C/W, then the resulting CPU temperature will be warmer.

Not all heatsinks have a measured thermal resistance (theta_R) value, and you may have to go looking for good review articles, to get a measured value. Note that not all review sites are equally gifted when it comes to heatsink reviews, and some sites only do the reviews to get themselves a free cooler.

Paul
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