Cyrix Technical Connection
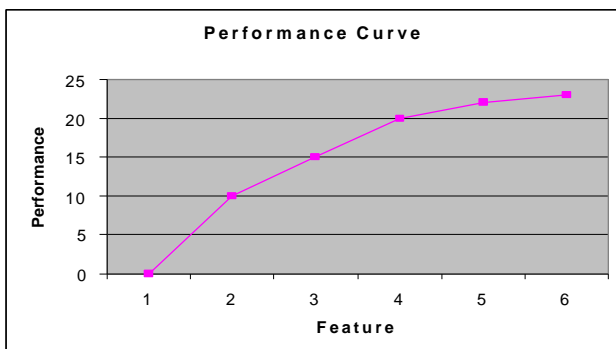
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In the interest of timely advice and communication, we have decided to use the avenue of a weekly on-line newsletter to keep you, our very important customers, informed of what is going on within our company and what good things are happening here at Cyrix. We also want to offer a few helpful hints and suggestions in order to make your Cyrix experience as positive as possible.

The Upgrade Curve

It becomes quite obvious with just the minor performance testing that we have done in the past two issues that you really have to look at the cost associated with your upgrade weighed alongside the actual performance that you are going to receive.

It has been my experience that no matter what feature you are trying to increase or expand, you reach a certain point where increasing that feature offers no more useful performance improvement to you. The curve looks something like that shown at the top of this column.

You can see that as you continue to improve the feature (x axis), add more memory, more (larger cache) etc., you see a notable improvement in performance (y axis) up to a point where the performance curve tends to "flatten out." This tells you that if you continue to invest more money in that feature you are not going to significantly increase your performance.

This may be overly simplified, but I believe it is a valid point and worth considering as you ponder upgrading your PC. The simple memory upgrades that we have done and documented over the past couple of weeks have pointed this out. Up to a point, adding more memory is good. But there is point beyond which it makes no sense to continue to add memory. Other issues must be addressed.

We will dig some more into this as we continue to chart our progress.

Upgrading Continued (Microprocessor)

Let's catch up on Cache! As you are aware, out in the real world, a cache is a storage area, usually temporary. Basically the same thing is true for computers and especially the microprocessor. A memory cache was designed because performance could be improved if the processor did not have to go all the way back to main memory every time it needed something. The cache is very "close" to the processor and is composed of memory architecture that is much faster, and more expensive, than main memory. So, if the processor can find what it needs in the cache, then it gives the appearance of working faster.

The cache that is most closely coupled to the processor is referred to as the L1 cache and these days it is internal to or on the same piece of silicon as the processor itself. Sometimes there is another cache not quite as closely coupled to the processor, but still available to it known as L2 cache. Oversimplified, if the processor can't find what it wants in the L1 it will look for it in the L2. Again, this is all in the interest of higher performance. In today's modern processor, you may find the L2 cache on the same "module" as the processor or it may be on the motherboard. As you might imagine, L3 and even L4 cache is also "out there."

As time and technology has progressed, Cache architecture, speed, and size have also progressed. Since this type of memory is expensive, what is the tradeoff for you the customer? How much L1 and/or L2 cache do you need to get your job done? Could it be that you could stay, for the time being, with your socket 7 motherboard with its L2 cache and just upgrade to another processor; one perhaps with more or faster L1 cache and enjoy a very rewarding experience as you put off deciding when you need to buy another computer all together.

Also, is it always true that more cache is better and if so, how much better? If we reach a point where increasing the size of the cache translates into only a minor improvement in performance, then is it worth it? Sometimes, that question is a little tricky to answer. However, we will take a stab at it and see if we can offer you some assistance.

You need to consider what you do with your computer and what you plan on doing in the near future and maybe we can draw some conclusions together.

We'll talk more next week.

Tech Tip: The Right Motherboard

FORMFACTOR: these days, if you are wanting to build or upgrade your system, you must be sensitive to the actual footprint of the motherboard you are interested in. Baby AT, ATX: -- which is it? What does your case require? If you are going to switch cases, you need to ask the same questions.