Steps Toward Faster Multibeam Editing

By Mike Kalmbach

Most people who use our multibeam editor (MBMAX) would prefer that it operate faster. OK, everyone who uses it--us included. So, we embarked on a *speedup* campaign earlier in the year and now have a version that runs 2 to 5 times faster. That's a nice improvement!

The new version has circulated HYPACK HQ and been made available to a few outside testers. A wider beta release will occur when known glitches and gotchas are gone.

What makes the program run faster? Better efficiency in two areas: (1) Usage of computer RAM and (2) Usage of multiple CPU cores. Each is explained below.

This also applies:

A good gaming computer will work great with the new multibeam editor.

In other words, the features that make a computer good for gaming (lot's of RAM, multiple CPU cores and fast graphics) will make it ideal for editing multibeam. For example, a low cost Dell Studio XPS 8100 at $1,100 uses the Intel Core i7 CPU (8 processing threads) and 8 gigabytes RAM. A bitchin' machine for multibeam *and* gaming.

More Efficient Usage of Computer RAM

MBMAX will use RAM until it's exhausted, then fall back to temporary files on disk. RAM is fast, disk is slow. That's why it's important to fully load your computer with RAM.

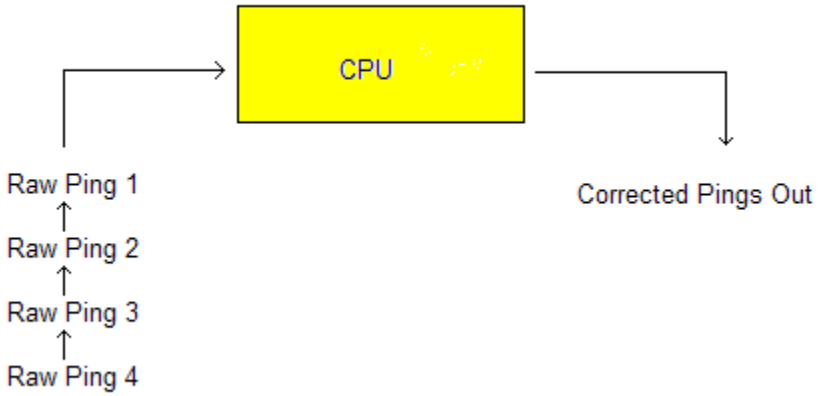
More Efficient Usage of CPU Cores:

Nowadays, even an inexpensive computer has a CPU with two processor cores. Better computers have four cores. Intel Hyper-Threading Technology makes the four cores act like 8 separate processors. You can see where they're going with this.

It's easy to imagine (and shown in the diagrams below) how multiple cores can speed up multibeam work. Consider the thousands of trig calculations required for each ping. If those calculations are run through two processing cores, the calculations will take half as long. Four processing cores, one quarter the time. And so on. The new MBMAX in multi processor mode takes advantage of this time savings.

Single Processor Mode: The single CPU core processes pings 1, 2, 3, 4, etc. sequentially. If your computer has a single CPU core, that's as fast as it can go. If your computer has multiple CPU cores, a lot of time is wasted.

FIGURE 1. *Single Processor Mode Diagram*



Multi Processor Mode: The diagram shows how MBMAX runs faster by using multiple processing cores.

FIGURE 2. *Multiprocessor Mode Diagram*