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Crystal Ball Gazing

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Over the last seven years, the CPU on my desk has increased speed by two orders of magnitude, from around 1 MIP to more than 100 MIPS; more important is that it is about as fast as any uniprocessor of any type available for any price, for compute bound problems. Memory on the system is also about 100 times as big, while disk is only about 10 times as big. Local network and I/O performance have increased greatly, though not quite at the same rate as processor speed. More important, I will argue, is that the CPU's address space is 64 bits, rather than 32 bits, allowing us to rethink some time honored presumptions.

The Internet has gone from a few hundred machines to a million, and now have grown to span the entire globe, and wide area networks have now becoming commercial services.

"PC's" are now real computers, bringing what was top of the line computing capability to the masses only a few years behind the leading edge.

So even a year or two from now, we can anticipate commonplace desktop machines running at speeds hundreds of MIPS, with main memories in the hundreds of megabytes to a gigabyte, able to draw millions of vectors/second, and all capable of some reasonable 3D graphics. And only a few years later, this will be the $1500 PC.

So the 1990's certainly brings:

- 64 bit processors becoming standard
- BIP/BFLOP class uniprocessors
- Large scale multiprocessors for special purpose applications
- I/O as the most significant computer engineering problem
- Hierarchical data servers in everyday use
- Routine access to archived data around the world
- And what else?

What do systems such as those we will have this decade imply to those building data analysis systems today? Many of the presumptions of the 1970's and 1980's need to be reexamined in the light of 1990's technology.