

"Visible Computer Futures"

by

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A lot depends on what you want to do now, and what you want to do tomorrow and the month after that. I realize this is a difficult question to answer, because most of us do not have special knowledge of the future, but it's still a good question to ask ...

If all you really want to do **RIGHT NOW** can be handled easily by a used dual-core machine *e.g.* LGA-775 with 16 GB of RAM, great deals can be had in the used & refurb marketplace.

(We LUV our ASUS P5Q Premium with Q9550 and 4 x 4 GB of DDR2.)

If/when current standards get implemented in hardware, you can demote your dual-core machine to a simple storage server *e.g.* for backups of important data sets like drive images of your system software partition.

Hard drives have become so huge, it's most practical now to make multiple copies of key data sets, distributed across multiple machines: switch your storage server OFF to guarantee virus and malware protection!

There are several reasons for waiting to spend your whole budget now, including but not limited to:

- (1) widespread availability of SATA/6G and SAS/6G SSDs: hopefully, this development will depress market prices for SATA/3G SSDs across the board: *e.g.* SandForce SF-2000 series;
- (2) native support for SAS/6G and SATA/6G in chipsets: AMD's 890FX chipset is a good example of leadership in this category;
- (3) ever greater integration of micro-circuitry producing powerful systems with lower power consumption and less heat dissipation *e.g.* systems-on-a-chip, particularly hand-held wireless devices and very small desktop footprints *e.g.* mini-ITX;
- (4) quad-channel memory controllers integrated into CPUs, hopefully also available for the ATX standard using 4 x DIMM slots instead of 8 x DIMM slots (as predicted

by some writers): think of highly integrated ATX and micro-ATX motherboards with memory bandwidths in the neighborhood of 50,000 MB/second (seriously!);

(5) PCI-Express 3.0, which is planned to ramp up to a 130/128 jumbo frame at the bus level, finally doing away with the 10/8 protocol that was originally designed for dial-up modems now obsolete;

(6) my favorite, which is only theoretical at the moment: upgrading the SATA protocol to exploit 130/128 jumbo frames in chipsets and WD's 4K "advanced format" in storage media, ideally using 4K jumbo frames during transmission with a minimum of ECC overhead bits; I can see this happening sooner than later, using driver enhancements and even HDD jumpers until it becomes standard: see WD's recent 3 TB HDD which comes with an add-on controller to overcome the 2 TB barrier;

(7) native chipset support for TRIM and similar garbage collection features in all RAID modes, not just JBOD with AHCI enabled;

(8) wider availability of very high-density RAM *e.g.* 8 GB and 16 GB per DIMM at affordable prices: this development should emerge with the migration to sub-30nm technology at high-volume fabs like GlobalFoundaries;

(9) widespread adoption of 64-bit OS and application software;

(10) minimum broadband speeds approaching 1 GHz for wired and 100 MHz for wireless Internet access;

(11) UEFI (Unified Extensible Firmware Interface) which is currently a real "sleeper" as far as publicity is concerned, but I predict it will revolutionize the task of configuring machine settings for various system and application tasks: imagine a machine with enough RAM to load the entire OS into a ramdisk in the upper H/W addresses: and you thought SSDs were fast :)

So, plan accordingly. If all you need is a minivan to take the kids to soccer games, and shop for groceries or garden tools, you definitely would NOT want to spend tons of money on a Ferrari if it meant you couldn't afford the minivan too :)

Cheers! MRFS (aka Memory Resident File Systems)

Sincerely yours,
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