Diskless Wonders, Part Two

Earlier, I promised – nay, threatened – to write about the amazing 1988 Toshiba T1000, a laptop computer with a heart of gold, and a brain of…well, a laptop computer with a heart of gold. And seeing as The Guru always keeps his promises…

The Toshiba T1000 (list price: $ 1,199 in 1988) was (and is) a solidly-built, reliable, reasonably lightweight (6.4-pound) laptop computer with a great keyboard but not too much else to recommend it. Like last month's featured diskless wonder, the DEC VT180 ("Robin"), the Toshiba machine also made it off the engineering drawing boards and into production (somehow) without a hard disk. While the Robin managed this trick with four (count 'em) floppy disk drives and built-in terminal emulation firmware, the T1000 pulls it off with just a single 3.5-inch 720KB diskette drive (an external 5.25" floppy drive was a factory option) – and some technological trickery.

The first trick is that the Toshiba's operating system, genuine Microsoft MS-DOS V2.11, is built right into the system's firmware. That's right: DOS on a chip. So forget upgrades and step-ups and startup floppy disks and what-have-you. This machine runs MS-DOS V2.11 straight from silicon, and will likely ALWAYS run DOS 2.11 straight from silicon, unless you want to boot a later DOS version from a floppy (SLOW), or unless somebody, somewhere hot rods the machine somehow with a custom DOS chip. It sure won't be me.

Remember, the T1000 has a fully-functional parallel port in the back, which means you can plug in a full-size portable "backpack" hard disk from companies such as MicroSolutions. But that would change the fundamental nature of the machine – and defeat the purpose of this article. We're talking sow's ears here, remember, not silk purses.

Back To Grim Reality…

So, with MS-DOS V2.11 on a chip, the T1000 gives you reasonably fast boot-ups (actually, the system memory test is painfully slow, but it can be turned off in CMOS setup, or bypassed by pressing the space bar during startup), and when you're done, you're actually staring at a real MS-DOS C:\ prompt! Most of the familiar, basic DOS functions and utilities (copy, format, delete) are there, but forget "memmaker" or "defrag" or "scandisk" or "drivespace" or any of the newer stuff.

So how can you run any programs on this machine, equipped as it is with just one floppy drive and no hard disk? After all, you can't "write" files to Drive C, because C: is the DOS Chip, and it's a read-only "drive." Well, there's a tricky little feature on the T1000 that lets you store customized copies of your "Autoexec.bat" and "Config.sys" files in a small section of base system RAM, since the standard Autoexec.bat and Config.sys" files that come on the chip are "hard-wired" and can not be modified.

You'll never run Windows on this 80C88-equipped machine (an NEC clone of the ancient Intel 8088 chip, both chips have a 4.77 MHz clock speed), but Toshiba thoughtfully provided its customers with SOME solutions to this potential "software, what software?" dilemma. There is a single 720KB 3.5" floppy diskette drive on the T1000 which can work as Drive "A" or Drive "B" or both. Thus, with some judicious disk swapping, you can actually stuff some programs into the system's 640KB of main memory. Remember, this sucker will run early DOS versions of Lotus 1-2-3, but the performance would make true power users weep in their sleep.

The REAL trick to making the Toshiba T1000 a useful machine is the factory-supplied Toshiba "Internal 768KB Memory Expansion Board," an add-on option that provides the Toshiba T1000 with a full .768

Megabytes of "electronic hard disk storage" (otherwise known as "hard RAM"). This little option card is the key to making the Toshiba a workhorse (would you believe, pony?); it is hard to imagine a T1000 serving as anything but a high-tech paperweight without one.

With the expansion board installed and configured as "Drive D," the Toshiba actually has the equivalent of a perfectly usable (if *tiny*) "hard disk." And because this "disk" storage is in firmware (no moving parts or motors, like an ordinary hard disk), it is very fast and very reliable (i.e., impervious to dust, vibration, shock, drive spindle bearing failures, *et al*.).

The (Little) Laptop That (Almost) Could

Of course, this is all very comical, isn't it – with today's typical hard disks on desktop machines running from 850MB to 2.0 GB and beyond, a .768 MB (that's .000768 Gigs!) "hard disk," electronic or otherwise, is a joke, right? Well, almost but not quite. With judicious file selection and trimming, you can actually fit some useful software on this beast: like, for example, the core components of Microsoft Works Version 2.0 for DOS (core means the basic program files, but no help files or fancy international options or accessories or what-have-you).

Now remember, even this early version of MS Works provides a word processor, a spreadsheet, a database, an address book, and a communications package, and since they're Microsoft programs, they work more or less as advertised, which is to say, pretty well. I also have a Microsoft Mouse driver (V 9.0) installed, and "Laplink 3.0" for DOS (a very useful yet compact file transfer package), and a few word processing files scattered about the "disk" here and there. All this, and there's STILL approximately 30K of free space left on that 768KB Hard (RAM) Disk!

A Miracle Machine

So now, is this a well-equipped laptop, or what? You be the judge. You can write letters on it, save them to the "hard drive" (and/or a floppy diskette), and when you get home, pop the floppy out of the laptop into a desktop machine, and (after a simple file translation) suck those files up into a "real" word processor like Microsoft Word 7.0 for Windows 95. Same goes for the spreadsheet – seamless data translations. If it looks like a duck and it quacks like a duck…it must be a duck.

With the amazing Toshiba T1000, you can process words, crunch numbers, track names and addresses, even dial up remote computers with the built-in 1200 baud modem! In fact, you can act like Thurber's Walter Mitty and pretend the T1000 is actually an $ 8,500 IBM ThinkPad with Windows 95 and Microsoft Office installed!

One Man's Garbage, Another Man's Treasure

So in some ways the Toshiba T1000 is pretty lame, but in other ways, considering how much you can squeeze into it, it's remarkable. Like I said earlier, the keyboard is excellent – perhaps its very best feature. The battery life is pretty good too (roughly five hours per charge) because there's no hard disk or fancy screen to soak up all the juice.

Speaking of battery life, you have to watch the battery like a hawk, because if it goes TOTALLY dead you lose everything on the hard RAM disk – the program and data files just vanish into the ether, never to be heard from again. So it's best to keep a backup floppy close at hand, with all the stuff from Drive D: on it, so you can restore the contents of the Hard Ram Drive if and when you have to. Hey, now there's an innovation – a "hard disk" you can back up with a single floppy!

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This machine's Achilles' Heel (some uncharitable folks might say the entire MACHINE is an Achilles Heel) may not even be the lack of a hard disk, so much as the rather mediocre LCD screen. It's a greenish-bluish kind of muddy-looking half-height LCD affair, with a rather odd "aspect ratio." That is, the screen is plenty long enough (even too long), but not tall enough. Not that you could ever find a graphics program that would run on this beast, but if you could, the graphics would look oddly squashed!

As regards general screen visibility, the screen is at its best in very bright but indirect sunlight, not so great in direct sunlight, awful in low-light, and unusable in the dark. And even under the best of conditions, the screen can be somewhat difficult to read because (like the DEC LA34 printer mentioned in last month's Guru Views), the Toshiba T1000 screen can not reproduce typographical "descenders."

But all in all, the Toshiba T1000 really isn't that bad – like a sweet pound dog, it's hard to really dislike, because, well, it TRIES. The Guru picked up his copy for just $ 200, overpaying a little perhaps, but it has served him well as a poor man's road warrior. Only real computer snobs (like The Guru himself) know how primitive and limited the machine really is; to most observers, it's plenty high-tech (looks are everything, and to the untrained eye, the T1000 looks just like a "real" laptop computer).

Like a mediocre mate, as long as you don't expect too much from it, The Toshiba T1000 will never really stir you up, but never really let you down, either. By the way, I suspect the T1000 would be a much-less usable machine were it not for the very satisfactory way that Microsoft Works V2.0 software happens to fit on it and run on it. I tried Works 3.0 and it was WAY too big to run on the T1000!

Here is a very rare example of when older, less capable software can actually fill a computing need better than the newer stuff. It's also an example of one of the very few times I actually lucked out here in Santa Fe because the only software readily available in town (from "Santa Fe Computer Works" on Second Street; this was in the pre-Office Depot days) was this older version of Works, which was outdated and generally useless for most purposes, but still being sold by SFCW off-the-shelf at full price!