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Sun Ultra 3 Mobile Workstation review

Portable power computing

Martin C Brown

Sun have made some headlines in recent months through the release of their Ultra 20 workstation and a number of new servers based on the AMD CPUs. For some this is seen as major change of direction for a company that is well known for the use (and continued interest and development) of the SPARC (Scalable Processor Architecture) CPU. With so many new machines being based on the AMD CPU it will be surprising to some that Sun's new mobile units are based on SPARC technology.

You get the distinct impression though that Sun see their key market as developers who want a portable, binary compatible, workstation for developing Solaris software

The Sun Ultra 3 Mobile Workstation is based on a 64-bit UltraSPARC CPU. There are two main models, a 15" unit that comes with a UltraSPARC IIi CPU at 550 or 650MHz, and a 17" model with a 1.2GHz UltraSPARC IIIi CPU. Both are standard CPUs—these are not cut down or restricted versions designed to work within a laptop—and that is a key parameter for identifying the target market for the unit. Each mobile workstation supports up to 2GB DDR ECC SDRAM—unusual for a laptop, but common in the equivalent desktop and server environments on which the mobile workstation is based. The RAM is backed up by up to 80GB

The 17" Workstation



of hard drive storage and a full range of ports, including Gigabit Ethernet (100Mbps on the UltraSPARC IIi models), four USB ports (2 USB 2.0 and 2 USB 1.1), PS/2 ports for keyboard and mouse and two serial ports (RS-422). The unit also includes a set of stereo speakers and full-audio capability with microphone and line in and dual headphone sockets through a set of four jacks on the back of the unit. Wireless networking at 11Mbps (802.11b) is also available as an option.

The displays are either a 15" unit at 1400x1050 or a 17" widescreen unit at 1440x900. The displays are coupled to

The 17" Workstation, closed



the mobile equivalent of a high-performance 2D graphics card supporting 24-bit colour. For a Sun workstation the lack of 3D support is unusual, but there are obvious limitations to supporting high-end 3D hardware in a unit that is tightly packed with enough heat-generating electronics as it is. You can also connect the unit up to a monitor through the standard VGA connector on the rear.

The CD-RW/DVD-ROM combo drive is a useful addition, and it has the added bonus that the drive can be used independently of the computer for audio playback. A set of buttons on the front left of the unit are used to control the drive. Also on the front, on the right hand side, is a smart-card reader slot which works with Sun's security software to enable authorized use and network authentication only by those with a suitable smart-card.

Prices range from \$3400 for a basic, UltraSPARC Ii/15" model up to over \$9000 for the UltraSPARC IIIi/17" model. I tested a 17" unit with 1GB of RAM, the UltraSPARC IIIi CPU and a 60GB hard drive, just below the top end of the scale.

First impressions

What probably isn't clear from the specifications is the size of the mobile workstation. It dwarfs my Sony Vaio with a 15" display. It even makes my 17" Powerbook feel svelte and handy by comparison. The Ultra 3 Mobile Workstation is slightly wider and deeper than the Powerbook, and over 1.5" thick. There is also a fairly large power brick when you want to power the unit from the wall.

However, you shouldn't judge everything by its outer dimensions or appearance. It is the components under the hood that make the difference. The Ultra 3 Mobile Workstation isn't marketed as a laptop. In fact, I've had my wrist slapped on that count a couple of times. The correct de-

scription for the unit is in the title—"mobile workstation". And that is exactly what you are getting. Big it may be, but it is a lot smaller than a comparable Ultra IIIi desktop unit, and it comes with a handy built-in display!

To get the level of power that is on offer within this unit would be difficult, even when looking at some of the "desktop replacement" units available within the Intel/AMD space. Actually, a desktop unit with the configuration of this workstation would be impressive. In a portable unit it is astounding. And key to that power is the Ultra IIIi CPU.

The use of a SPARC CPU in a laptop is not new—Tadpole have been producing laptops based around different SPARC processors for many years. The main appeal with this unit is the full-blown, 64-bit, CPU—normally only found in a workstation or server that has been squeezed into a portable form factor.

Software and binary compatibility

The UltraSPARC CPU provides full binary compatibility between your laptop and SPARC-based server environments. The unit comes with a standard version of Solaris 10 installed and therefore includes the Sun Java Desktop System and Gnome for the user interface. Also included is a suite of software designed to aid developers, including Sun Studio 10, Studio Enterprise and Studio Creator.

You can also see a market for this unit from users moving in the other direction—the execution of existing applications in a mobile environment. The SPARC CPU is frequently used within military and government departments. Having a mobile unit that is binary compatible with existing applications and environment would save on redevelopment costs. I can also imagine a workstation like this being used in environments where server power is required in a portable size, for example as a server for trade shows or for use in training environments.

You get the distinct impression though that Sun see their key market as developers who want a portable, binary compatible, workstation for developing Solaris software. This is probably best demonstrated by the software bundle included with the laptop. The large screen makes it easy to work with multiple documents and the resulting code you develop can be executed on SPARC based servers without any recompilation or changes required.

Using a mobile workstation

The unit is really too heavy, and more importantly too hot (especially since you'll cover the vents), to keep on your lap for extended periods of time. The CPU consumes a fair amount of power and generates a lot of heat, which in turn means that the fan needs to run permanently to keep the unit cool. The fan is variable speed, but even when the computer is comparatively idle it can be a bit noisy. To be fair, it is no noisier than a typical workstation, but within a mobile unit the fan is right there under your keyboard, not under your desk. This is certainly not a portable that you can discretely use in the corner of Starbucks without drawing at least some attention to yourself.

Your first impression of the unit will be that the boot-up time seems particularly long. An old Ultra 60 workstation takes less than a minute to boot; the Ultra 3 Mobile Workstation almost twice that. I suspect this is related directly to the speed limitations of the hard drive (a typical lower performance 2.5" unit) rather than the computer as a whole. That theory is certainly borne out when using the laptop, which feels snappy and responsive, even when opening large applications like Sun Studio or StarOffice. Moving windows and resizing them is also very quick and easy. Aside from the obvious form factor difference it is quite easy to forget you are using a laptop at all.

Supporting either Solaris or OpenSolaris, the basic environment will be familiar to any Solaris user. Office applications, email and web browsing are obviously not the key markets for this unit. Although, they do demonstrate how practical a unit like this could be as the only laptop a developer, technician or engineer would ever need.

I used the laptop almost exclusively for four weeks as my main desktop machine for a combination of my writing activities and development needs. StarOffice worked fine, internet browsing was great in Firefox—albeit with a few crashes on the beta version I was running at the time. Not once did I feel frustrated by having to wait for different tasks to complete—even when running disk intensive commands in a shell.

Using the unit for its main market—software development—is where it really shines. I tested the binary compatibility by copying over applications that I'd built within Solaris 10 running on an Ultra 60 workstations, and had no problems either within the original Solaris 10 or OpenSo-

laris. Running large redevelopment and compilations was also not a problem. I tried a variety of different builds, mostly of free software like GCC, emacs and even Firefox and Mozilla and still didn't experience any problems. Even with a large compilation running in the background the machine remained usable—at times it seemed almost unfazed by what was going on in the background.

To get a feel for server projects I deployed a few applications of different sorts onto the system to check for performance. First, a web-drive and database heavy application, Cheffy (<http://cheffy.com>), which relies on a large MySQL database. The extra memory and CPU power available made a big difference here compared to executing within a comparable Intel laptop running Gentoo Linux. Even complex queries came back very quickly—in fact quicker than they do on the Dual Intel CPU server normally used for development. It is obviously not a solution designed for this use for the long term, but in the environments mentioned earlier it is a capable alternative.

I also tried a number of web-service-driven applications (using Apache's Geronimo and Axis2 platforms) as well as some Sun Studio bound Java applications. Again, I had no problem either running the applications, building them or continuing to use the laptop while these tasks were running in the background.

With all this power under the hood, you may be wondering about battery life. I had mixed experiences, but in all my tests I got almost 90 minutes out of the battery, even when it was compiling a large project like Mozilla or QT. For more typical developer use—that's lots of typing, occasional web browsing and sporadic builds—I got between 2.5 and 3.5 hours.

Conclusions

The Sun Ultra 3 Mobile Workstation is not intended as a replacement for your typical Intel Centrino or Apple laptop and comparisons to these are pointless. The name really does say it all—it is a mobile workstation and should be treated as such for any comparisons. The unit is very fast, has a useful array of ports that will come in handy to most engineers for connecting up to servers and devices that have otherwise given up on their traditional displays. All Sun computers, for example, support serial-based consoles, vital on a server without keyboard and display support.

As a portable development unit it is a dream. The ability to effectively run both a client and a deployment environment on the same machine at reasonable speeds certainly makes a difference to your ability to work while mobile. The size of the display and the speed of the unit make it ideal for working with multiple source files, or within environments like Sun Studio or Eclipse, both of which ran perfectly. The binary compatibility is obviously key for those who need a portable SPARC unit, but I could just as easily see it being used as a Java or script based development platform.

As a tool for a free software junkie like me there is little to fault. Running OpenSolaris and the ability to run the free software tools I use means that I could happily choose this unit over a more traditional Intel, AMD or Apple laptop. There are only two issues: size and price. It is an expensive unit, but the expense can be forgiven once you consider its power and the longevity that Sun hardware typically provides. To put that statement into context, my Ultra 60 workstation is 8 years old this year, but still feels quick and responsive in comparison to a 12 month old Intel-based workstation. I have no doubt that in 8 years time Ultra 3 Mobile Workstations will still be running and will still feel as powerful.

Sadly, I won't be able to confirm that as the review unit needs to be returned.

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