HP Workstation Innovation News

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Introducing the HP Z230 Tower and Z230 SFF Workstations, Powered by Intel® Xeon® Processors

Compact, single-processor systems deliver just-right performance for 2D and occasional 3D CAD users.

In my travels as a CAD-management consultant, I see virtually every type of CAD user. A lot of them are focused on primarily 2D CAD workflows and – in all honesty – don't need computers equipped with multiple processors, 16 cores, or 192 GB of RAM. However, these users do work with large models and perform occasional 3D work, so they still need workstation-level performance, reliability, and expandability. These users, who would be underserved by a consumer-grade PC but overserved by a high-end workstation, can present a conundrum for CAD managers and IT personnel.

The new HP Z230 Workstations could be just the answer for this group of primarily-2D-and-occasionally-3D users. These single-processor professional systems deliver greater power, functionality, reliability, and long-term value than consumer PCs.

The new HP Z230 Workstations are available in small form factor (SFF) and compact tower options.

HP Z Workstation Family

The HP Z-Series Workstations include models that offer increasingly impressive specifications. The Z230 Tower and Z230 Small Form Factor (SFF) replace Z220 models, joining the Z420, Z620, Z820, and the all-in-one Z1 models to round out a comprehensive range of machines that support applications from mainstream CAD to no-holds-barred, high-end power for design analysts and animators.

Beefy Specs

Like its Z220 predecessor, the Z230 packs a lot of functionality into a small package and offers great flexibility for expansion[1]. With even higher-speed I/O, memory, graphics, and solid-state disk options, the Z230 is a step up — its only limitation being its single-processor chip architecture and the physical limitations of its case, which impacts graphics and drive options.

Speaking of specifications, let's see what's inside the compact Z230 Tower (6.7" x 17.4" x 15.7") and the Z230 SFF (3.95" x 15.0" x 13.3") (W x H x D).

Processor and RAM. The Z230's single-processor architecture is based on the Intel® c226 chipset supporting quad-core Intel® Core™ i5 and i7 processors or Intel® Xeon® processor E3 family[2] with 6 MB, 8 MB, and 8 MB of cache, respectively[3]. All processors support Intel vPro™ and Turbo Boost Technology and run at clock rates of 3.20–3.60 GHz (or 3.60–4.00 GHz with Turbo Boost). All processors address as much as 32 GB of ECC or non-ECC 1,600-MHz RAM in four DIMM slots, making memory configurations of 8, 16, or 32 GB easily achievable[4].

The Z230 Tower has front-accessible drive and media reader bays plus a variety of USB 2.0/3.0, FireWire, and audio ports. It opens to expose substantial internal options for video cards and additional drives — all accessible without tools.

Drives. The Z230 Tower and Z230 SFF offer an integrated 3- and 6-GB/sec SATA II or SATA III controller[5], respectively, which support 7200-rpm, 3.5-inch drives up to 3 TB in size; 10,000-rpm, 2.5" drives up to 1 TB; or solid-state drives (SSDs) up to 256 GB in whatever combination you'd like given the number of available drive bays[6]. For added speed, SSD drives can be configured as the boot device, and to add redundancy, RAID 0/1 configurations are supported.

The solid-state drive, an option on the new HP Z230s, consists entirely of memory, which functions much faster than a mechanical hard drive — especially helpful in data-intensive CAD applications.

Drive bays in the HP Z230 Tower chassis include two internal 3.5", one internal 2.5", and two external 5.25" half-height bays to fit a variety of hard drives and SSD devices. Drive bays in the smaller Z230 SFF include a single internal 3.5", single internal 2.5", and external 3.5"/5.25" bays, which means, obviously, that the Z230 SFF can fit substantially less storage but could still be configured with a 256-GB SSD and as much as 6 TB of disk storage.

If configured with an SSD boot device using SATA III controller technology and 32 GB of RAM, these workstations can transfer large CAD files at 6 GB/sec.

Graphics. The HP Z230 workstations feature integrated Intel HD 4600 graphics, depending on the processor selected. If you don't perform much (or any) visualization and stick to standard resolutions (1920 x 1080 or lower) and mainly 2D work, the integrated Intel graphics may be all you need.

To accelerate graphics performance, the HP Z230s offer the option to add the following NVIDIA NVS or AMD FirePro professional graphics cards:

NVIDIA NVS 310, 315, or 510 (for professional 2D)
- AMD FirePro V3900, NVIDIA Quadro 410, NVIDIA Quadro K600 (for entry-level 3D)
- NVIDIA Quadro K2000 (for mid-range 3D; tower only)
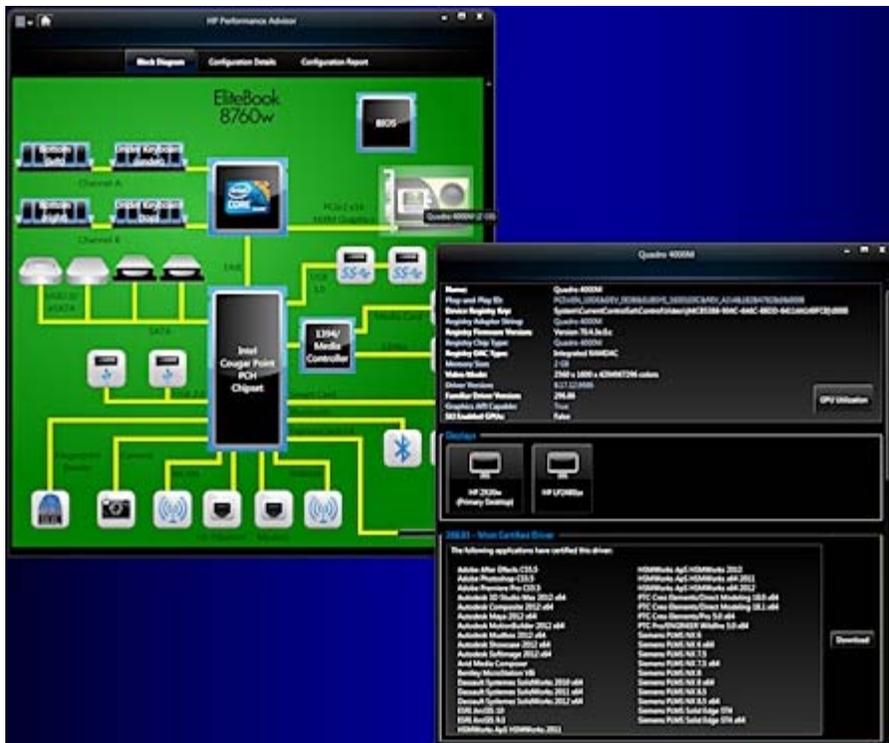- AMD FirePro W7000[7], NVIDIA Quadro K4000 (for high-end 3D; tower only)

Connectivity. The compact HP Z230 workstations are not short on connection ports. The fronts and backs of both models contain a variety of USB 2.0 and USB 3.0 connections to make it easy to link portable hard drives, memory sticks, wireless keyboards, and other devices. Optionally, you can add IEEE 1394b FireWire® ports and DVI and DisplayPort monitor outputs for Intel HD graphics. Forget the limitations of your notebook; with the HP Z230s, you won't have problems plugging in your expansion device.

Easy, Affordable Maintenance
The HP Z230's processor capabilities, high memory capacity, available solid-state disk support, and a variety of graphics options combine to pack a lot into a small package. But just because there's a lot in the box doesn't mean the box is hard to work on or cuts corners in its internal or software components.

Energy consumption. The ENERGY STAR®–qualified HP Z230 Tower has a 92% efficient, 400-W power supply that drives a full complement of disks and graphics boards, while the HP Z230 SFF has a 92% efficient, 240-W unit. As with all Z Workstations, the HP Z230 uses HP Wattsaver technology, which allows for less than 1-W power consumption in standby mode for substantial energy cost savings and lower thermal output throughout the life of the workstation.

Configuration and driver management. Like all Windows HP workstations, Z230 models are equipped with HP Performance Advisor[8], a software wizard that allows you to easily analyze and optimize your system configuration and performance. One click improves the performance of CAD and other key applications and another click lets you find and download updated graphics drivers. Customize functions such as processor prioritization to yield greater performance for the software you use most often.

Over the three-year warranty period of the HP Z230, the time saved and performance gained by using HP Performance Advisor could substantially offset your investment in this professional workstation.

Tool-free chassis. The HP Z230s, like their larger Z-Series siblings, offer a tool-free chassis design that lets IT staff quickly swap interior components, simplifying serviceability and lowering the cost of maintenance over time.

Cost, Warranty, and Support

HP Z230 Workstations are scheduled for release in mid-August. Estimated pricing will start at $999 for quad-core configurations available initially; dual-core units released later will start at a lower price[9]. All models are covered by a limited three-year warranty covering parts and labor and include 24-hour phone support[10].

Boost your CAD productivity by adding one of several dual-display options to the HP Z230.

Wrapping Up

The extreme performance of high-end workstations will always capture our attention — but the practical reality is that not every CAD user needs that level of support. Fortunately, HP is continuing its practice of delivering a range of workstation options that include affordable single-processor packages.

Users who focus on 2D and entry-level 3D CAD would do well to look beyond consumer-grade PCs and rank-and-file CAD machines and seriously consider the new HP Z230 professional workstations.

About the Author
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Robert provides CAD implementation, consulting, and programming services for a variety of companies throughout the United States and Canada. He holds a degree in mechanical engineering from the Georgia Institute of Technology and is the author of *Expert CAD Management: The Complete Guide*. Reach him via his web site at www.cad-manager.com.

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1. Some features may not be available in all regions.
2. Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel® 64 architecture–enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
3. Intel® Xeon E3, Intel Core i3 and Intel Pentium processors can support either ECC or non-ECC memory. Intel Core i5 and i7 processors only support non-ECC memory.
4. Each processor supports up to 2 channels of DDR3 memory. To realize full performance at least 1 DIMM must be inserted into each channel.
5. SATA hardware RAID is not supported on Linux systems. The Linux kernel, with built-in software RAID, provides excellent functionality and performance. It is a good alternative to hardware-based RAID.
6. For hard drives, 1 GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 10 GB of system disk (for Windows 7) is reserved for system recovery software.
7. After-market option, sold separately.
8. Requires Windows 7 or Windows 8. Please visit h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf for RAID capabilities with Linux.
9. HP Care Pack Services extends service contracts beyond the standard warranties. Service starts from date of hardware purchase. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at hp.com/go/cpc. Additional HP Care Pack Services information by product is available at hp.com/go/carepack. Service levels and response times for HP Care Packs may vary depending on your geographic location.
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