Introducting HP's Z Workstations – A Quantum Leap Forward

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Today's introduction of HP's new generation [HP Z workstations](#) comes after more than three years of intensive innovative development and close collaboration with teams at Intel and BMW DesignWorks. The net result is a spectacular and well thought out quantum leap in performance, reliability, and functional style that combine to deliver a workstation family that is fast, sleek and ecologically friendly… oh, and it's cool too.

The lineup includes the HP Z800, HP Z600 and HP Z800, and I consider myself lucky to have had the chance to experience a pre-launch midrange HP Z600 workstation this past week. Even before turning the machine on its brushed aluminum cover and sleek exterior design screamed power and innovation. And, because it's been designed with integral carrying handles and has a small footprint I easily carried it, with one hand, to our test lab where I'll be running CAD and digital content creation software tasks to measure its relative performance for upcoming articles.

I also took time to dig in and learn the behind the scenes details of HP's development collaboration with Intel and BMW DesignWorks. It's been an amazing three year odyssey, and the culmination of these efforts is even more amazing. Today, both HP and Intel launched their latest technologies and BMW DesignWorks showcased its functional and sleek industrial design to the world. It really came together.

The Intel Factor

Starting from the inside, and moving out, are [Intel's Xeon® 5500 processors](#). These new generation chipset's have intelligent performance, are energy efficient, are more expandable than their predecessors, and have been tuned in to the HP architecture.

Intel's 5500 series processors are loaded with new innovations that when integrated into the HP workstations deliver very significant performance jumps. For example, the new processors boast integrated memory controllers with three DVR3 native channels which cumulatively, in HP's dual socket Z600 and Z800 workstations, translate to a 3X memory bandwidth improvement, and when you add Intel's scalable shared memory QuickPath® architecture that includes high speed point-to-point interconnect, you get another performance jump of more than 2X compared to the front side bus architecture of its previous 5400 series of processors.

HP and Intel worked hand in hand to meet the IO demands of power workstation users by increasing the overall PCI Express bandwidth. The dual chipset solution in the Z600 and Z800 workstations now feature upwards of 80 PCI Express lanes and have the flexible IO expandability to handle the most advanced, top of the line video cards and lots more.

Turbo Boost Ratchets up Performance

The star of the show is Intel's new Turbo Boost Technology that automatically ratchets up performance by as much as 400MHz additional frequency for applications that aren't designed to take advantage of all the available computing power. This innovation is measurably effective for lightly threaded applications that really benefit from this additional performance.

While Turbo Boost greatly reduces processing time for lightly threaded applications, the new Intel chipset's hyper threaded technology enables highly threaded applications to run much faster because every core enables 2 processing threads. So, for a an 8 core solution 16 processor threads are instantiated to deliver another quantum leap in the final performance numbers. HP's new dual processor Z600 and Z800 workstations exhibit a whopping overall performance improvement of 180%, which translates to a 2.8X speed improvement over previous workstation models.

HPs Green Machine

HP's built green into these machines. The Z workstations are 90% recyclable and deliver automatic energy savings.

While performance from previous generations has increased from 50% to as much as 500% the Z workstations run at 2% less power, but that's just the beginning. By taking advantage of Intel's C-state architecture the workstations provide automatic energy savings by going into idle mode when unattended to reduce power usage by 35%. In a typical midrange workstation this amounts to a power reduction of from 102 watts down to 62 watts and, if the workstation remains unattended for more than a half hour the system automatically slips into sleep mode where power consumption is further reduced to just 5 watts.

Finally, by taking advantage of HP's optional 'Watt Saver Technology' hibernate-mode power consumption is reduced to a 0.8 watt trickle compared to previous generation workstations that

consume 2.1 watts when hibernating. When you add up all these factors the overall energy and environmental impact of these new generation workstations is more than substantial.

Built from the Inside Out

I was blown away when I pulled the side latch and opened the anodized aluminum case to peek inside my evaluation Z600. No screws, no cables, and a modular design reminiscent of an aircraft's serviceable electronics bay.

Visual clues and touch points on each module intuitively allow you to remove, replace, and upgrade the workstation's major serviceable components. For example you can easily upgrade the power supply by replacing the power supply module, add RAM or swap out a traditional hard drive with a solid state one without getting tangled up in a mess of wires and connectors.

The engineers at HP must have had the word 'ergonomics' imprinted on their minds when they designed this interior. A case in point is the power supply which breaths in fresh air from the front of the workstation and exhausts it out the back, has a self diagnostic system to let you know if it's operating correctly, and can be replaced in less than 10 seconds.

BMW DesignWorks Excellence

The performance of these workstations is spectacular, the interior ergonomics are human friendly, and the exterior design makes a visual and tactile statement that reinforces this message. The people at BMW DesignWorksUSA took their years of industrial design experience, which ranges from BMW autos and motorcycles, to aircraft, wind turbines, mobile phones, and countless of other innovative products, and applied their talent and expertise to the Z workstation project.

I think the industrial designers have outdone themselves. Working hand-in hand with HP's engineering team BMW DesignWorks has delivered functional design in stylized anodized aluminum and black that shouts 'best of class!'

The Biggest Innovative Leap Forward in Years

The Z workstation launch is the biggest leap forward in innovative technology to come along for years, and its performance driven time saving benefits coupled with an entry price tag of less than $1,000 for the Z400 and less than $2,000 for the top of the line Z800 will have it on a desk or a rack near you soon.

Experience these workstations for yourself and you'll be rewarded with a quantum leap in productivity and profitability and as a bonus you'll experience the warm fuzzy feeling of knowing that you're also helping to green our planet.

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