

Innovation at the component level



When you think about the components of a workstation your mind tends to focus on the big components like the Intel® Xeon® processor, high speed RAM and a powerful graphics card right? But what about the components that support these major workstation parts so you can get the best performance from your workstation investment?

Recent component innovation from HP allows you to configure their workstations using add-ons that greatly increase the speed of disk access and cooling while decreasing acoustic noise and dust infiltration into their desktop workstations as well as providing high bandwidth docking capabilities for Thunderbolt™ equipped mobile workstations. Let's examine these innovations.

HP Z Turbo Drive Quad Pro

Autodesk users tend to work with large data sets that can grind workstations to a halt as conventional hard drives become a system bottleneck. To address this issue solid state drives (SSD's) offer a high speed alternative to mechanical drives but the new HP Z Turbo Drive Quad Pro (starting at \$779 for the 512 GB model which has 2x256 GB modules) takes the SSD to an entirely new level.

Housed in a PCIe Gen3 compliant card hosting up to four 512 GB NVMe solid state drives (for a total possible storage of 2 TB) sequential performance of up to 9.0 GB/s²—16X faster than a single drive of prior generations of SATA based SSD's—can be achieved. With its own cooling fan (at rear of card), and heatsink (shown removed for clarity), the HP Z Turbo Drive Quad Pro remains cool at full performance without throttling under the most aggressive processing loads. With a bank of super capacitors, it provides enterprise class power loss protection, and can power itself through a safe shutdown procedure during power outages.



While the huge capacity of the Z Turbo Quad Drive Pro elevates the amount of SSD storage possible in a workstation it is the up to 9X throughput increase over older SSD drives that allows the workstation to maximize its performance with large data sets like CAD files. The bottom line? Your workstation's Intel® Xeon® processor can only process data it can access quickly and the HP Z Turbo Drive Quad Pro delivers.

Thermal performance considerations

A workstation is, after all, a heat producing appliance that runs better when properly cooled. Therefore, it behooves you to configure your workstations so they can run cool to achieve maximum processor output. HP's innovation in thermal performance can be seen in two new products.



HP Z Cooler

To relieve high processor heat levels in workstations performing demanding applications, like rendering or analysis, liquid cooling and/or high air volume fans have traditionally been employed to facilitate maximum heat transfer. The problem with these solutions is that they are either bulky (liquid cooling subsystems) or noisy (fans) and therefore lead

to larger and/or louder workstations. The HP Z Cooler add-on (\$189) utilizes a 3D vapor chamber and 100% passive staggered hex fin cooling stack to provide liquid cooling level efficiency with no fan that allows the system fan to spin slower resulting in a 12.8dBA¹ reduction in noise at the user's desktop. Shown here for the HP Z840 Workstation (above) you can see how the vapor chamber attaches to the processor to conduct heat into the hex fin stack.

HP Z240 Dust Filter

If your company utilizes workstations on the shop floor, in construction trailers or other dusty locations you've likely seen how dirty the inside of a workstation's case can become over time. As dust coats the components of a workstation's mother board and memory components your system runs hotter than it should which reduces performance.

The cleanable/reusable HP Z240 TWR Dust Filter (shown in exploded view below) maximizes system performance by preventing dust ingress into the workstation's case and is easy to clean². The TWR Dust Filter is offered for the smaller Z240 Workstations that are often deployed in high traffic public spaces and industrial environments where airborne dust is common.



Helpful links

hp.com/go/AEC
hp.com/go/engineering
hp.com/go/autodesk
hp.com/go/zturbo
hp.com/go/zcooler

HP ZBook Dock with Thunderbolt™ 3

Getting the most from your mobile workstation investments is not just a function of its component performance on the road but also a matter of offloading and connecting to/from peripheral data devices back in the office. To maximize the efficiency of your in-office use of HP's ZBook Studio 17G3 or 15G3 Mobile Workstations the new HP ZBook Dock (\$229) provides not only power and high bandwidth Thunderbolt™ 3 connection ports but traditional docking station connections like LAN, USB, Display Port connectors for 4K desktop monitors and a legacy VGA port for projectors³. The ZBook Dock's compact, stick like size allows it to go with the travelling worker facilitating easy in office connectivity at construction trailers or remote offices for workstation level connectivity on the go.



In summary

No matter what type of HP desktop or mobile workstations your company uses you always want to get the best performance you can from them. So while you'll always want to equip your workstations with high performance Intel® Xeon® and Intel® Core™ i7 processors and plenty of RAM be sure to remember the supporting cast of components that allow your processor to function cool, clean and at maximum data transfer rates. Innovative components like HP's Z Turbo Drive Quad Pro, Z Cooler, Z240 TWR dust filter and the ZBook Dock will help you realize the full value of your workstation investments.

About the author

Robert Green provides CAD management consulting, programming, speaking, and training services for clients throughout the United States, Canada, and Europe. A mechanical engineer by training and alpha CAD user by choice, Robert is also well known for his insightful articles and book, Expert CAD Management: The Complete Guide. Reach Robert at rgreen@greenconsulting.com.

1. Up to 12.8 dBA lower in the Z840 as compared to HP's prior generation Z820 workstations with liquid cooling solution.

2. See User Guide for cleaning instructions.

3. Your mobile workstation must support Thunderbolt™ 3 to enable the docking station. Docking station, and monitor must all support USB-C™, USB 3.0 and DisplayPort 1.2 to benefit from the advanced speeds or features that these technologies provide. If one of the devices does not support these technologies, you will still have USB 2.0 and DisplayPort 1.1 functionality.

