Why a Workstation?

When it comes to personal computing systems, desktop workstations are in a class of their own. Despite entry price points that can rival those of desktop PCs, workstations provide a spectrum of performance, reliability and expandability that extends well beyond the capabilities of standard business computers.
Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP Business PCs provide</td>
<td>3</td>
</tr>
<tr>
<td>HP Z Workstations also deliver</td>
<td>3</td>
</tr>
<tr>
<td>PC and workstation application segments</td>
<td>3</td>
</tr>
<tr>
<td>Take performance to new extremes</td>
<td>4</td>
</tr>
<tr>
<td>Intel® Xeon® Processor technology</td>
<td>4</td>
</tr>
<tr>
<td>High-performing storage</td>
<td>4</td>
</tr>
<tr>
<td>Leading-edge professional graphics</td>
<td>4</td>
</tr>
<tr>
<td>HP Performance Advisor</td>
<td>4</td>
</tr>
<tr>
<td>HP Remote Graphics Software</td>
<td>4</td>
</tr>
<tr>
<td>Performance on display</td>
<td>4</td>
</tr>
<tr>
<td>HP DreamColor Technology</td>
<td>4</td>
</tr>
<tr>
<td>Mission-critical reliability</td>
<td>5</td>
</tr>
<tr>
<td>A strenuous design standard</td>
<td>5</td>
</tr>
<tr>
<td>Tested beyond industry standards</td>
<td>5</td>
</tr>
<tr>
<td>Engineered BIOS</td>
<td>5</td>
</tr>
<tr>
<td>ECC memory for data integrity</td>
<td>5</td>
</tr>
<tr>
<td>Independent Software Vendor (ISV) certification</td>
<td>5</td>
</tr>
<tr>
<td>Expandable by design</td>
<td>6</td>
</tr>
<tr>
<td>Upgrade with ease</td>
<td>6</td>
</tr>
<tr>
<td>Push the processing limit</td>
<td>6</td>
</tr>
<tr>
<td>More memory, less waiting</td>
<td>6</td>
</tr>
<tr>
<td>Storage even a server would envy</td>
<td>6</td>
</tr>
<tr>
<td>Central. Secure. Solid protection</td>
<td>6</td>
</tr>
<tr>
<td>Virtually unstoppable</td>
<td>6</td>
</tr>
<tr>
<td>Linux® workstation solutions</td>
<td>6</td>
</tr>
<tr>
<td>Memory, storage and graphics that grow with your needs</td>
<td>7</td>
</tr>
<tr>
<td>Why HP Z Workstations?</td>
<td>8</td>
</tr>
</tbody>
</table>
While business PCs can provide you with excellent value, desktop workstations deliver superb performance, outstanding reliability and wide-ranging scalability.

**HP Business PCs provide**

**Performance suitable for business tasks**
- PC-grade Intel and AMD processors
- Consumer-grade graphics cards
- Standard SATA HDDs

**Solid reliability**
- Over 115,000 hours of testing through the HP Total Test Process
- Non-ECC memory

**Convenient form factors**
- Convertible Minitower
- Microtower
- Small Form Factor
- Ultra-Slim

**Security features**
- Built-in software security measures
- External hardware locking devices

**HP Z Workstations also deliver***

**Improved performance**
- Intel® Xeon® processors with a choice of more cores, greater memory bandwidth, larger cache and higher frequencies
- Windows 8.1 Pro 64-bit
- Dual Intel® Xeon® processors options*
- Professional-class graphics from integrated graphics to multiple 2D and 3D solutions
- Optional Thunderbolt™ 2 for up to 4 times the bandwidth of USB 3.0
- HP Z Turbo Drive PCIe SSD for double the performance of SATA SSDs

**Mission-critical reliability**
- Tested beyond industry standards for always-on operations
- ECC memory as well as storage options that use server-class technology

**Professional ISV application certification**
Out-of-the-box compatibility between HP Z Workstations and professional applications

**Tool-less chassis with intuitive touch points**
Easy end-user upgrades

**Maximum expandability**
- Up to 512 GB\(^1\) of memory
- Up to 20 TB\(^2\) of storage**

**Additional features**
- Productivity-boosting software tools such as HP Performance Advisor and HP Remote Graphics Software preloaded
- Longer lifecycles than HP Business PCs
- Support for Linux® Operating Systems

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**HP Z Workstations are designed for the demands of users who work with professional and technical applications, large and complex datasets or intricate 3D models.**

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**PC and workstation application segments**

- **PCs**
  - Web browsing
  - Email
  - Productivity
  - Design
  - Graphic design
  - Banking
  - Education

- **Workstations**
  - Medical imaging
  - Geographic Information System (GIS)
  - Scientific compute
  - High-end video editing
  - High-end 3D CAD
  - Financial trading/analysis
  - High-end oil & gas

---

*Many workstation technologies are selectable options. Specifications can vary by workstation platform.

**20 TB planned availability early 2015

\(^1\)Multi-threaded/multi-tasking
Take performance to new extremes

Leave the performance bottleneck behind with HP Z Workstations. With industry-leading processing, storage, graphics, and system management components HP has engineered a total system approach to define new levels of overall performance.

Intel® Xeon® Processor Technology
A wide choice of high-performance Intel® Xeon® processors are validated and tested by Intel and HP for demanding workstation applications. Besides supporting greater reliability with ECC memory, Intel® Xeon® processors offer up to 29% performance gains over equivalent Intel® Core™ processors on the HP Z230 entry workstation (see performance comparison charts on left). Other benefits include a higher frequency bin on the HP Z230 Workstations, and greater memory bandwidth and choice of more than four cores and dual processor options on the higher-end HP Z Workstation platforms.

High-performing storage
Business PCs usually have 7200 rpm SATA drives, while HP Z Workstations offer an additional choice of 10K rpm SATA as well as 10K and 15K SAS hard drives, which provide better reliability and better performance than standard 7200 rpm SATA drives.

The HP Z Turbo Drive is a remarkably affordable and innovative PCIe-based SSD storage solution. It revolutionizes how your HP Z Workstation handles large files—significantly reducing boot up, calculation and graphics response times (even with 4K video). Experience over 100% performance improvements over SATA SSDs, and 6 times faster sequential read performance over a SATA HDD. To learn more, see hp.com/go/zturbo.

Leading-edge professional graphics
100,000 hours of testing per year over a wide-range of graphics cards, simulating real-world customer workloads, as well as stress tests that far exceed typical usage, translate into higher quality drivers that customers trust. Strong relationships with NVIDIA®, AMD and Intel help us quickly resolve any issues. That’s how we give you HP Z Workstations graphics cards that feature optimized thermal and power design, wide-ranging application certification and a three-year limited warranty.

HP Performance Advisor
Further enhancing application performance on your workstation, this exclusive HP software wizard helps you configure, customize and optimize your system for each new application and driver you install. To learn more, see hp.com/go/performanceadvisor.

HP Remote Graphics Software
Feel the freedom of working remotely while still accessing the high-performance 3D or media-rich applications you count on. With HP Remote Graphics Software (RGS) standard on every HP Z Workstation, you can take your graphics-intensive workstation applications wherever you go. From the remote worker to the road warrior, get complete access to the power of your workstation from any computer in any location. Collaborate with colleagues around the office or around the world. With advanced touch recognition features on HP RGS 7 you can easily do real work with workstation-class applications on your tablet. To learn more, see hp.com/go/rgs.

Performance on display
Expand your productivity with a multiple display workspace with HP Z Displays—the perfect companions to your HP Z Workstation. HP Z Displays deliver top-tier graphics resolution and color accuracy to bring high-definition (HD) videos, images and technical drawings to life. Get high-resolution images with outstanding color accuracy, even at wide angles. Take on the projects clients demand with multiple ports designed to handle the latest digital video and audio content. Stay comfortable and productive with height, tilt, swivel and pivot adjustability for proper ergonomics.

HP DreamColor technology
Take color accuracy to the next level and achieve maximum impact with HP DreamColor. Designed by color professionals and digital content creators, HP DreamColor is the power tool they use to produce trusted results. Featuring a palette of over one billion colors, you’ll get precise color accuracy and predictable color across your entire digital workflow.
Mission-critical reliability
HP Z Workstations are designed and engineered to optimize the way the processor, memory, graphics, operating systems, and application software components work together in all configurations. This whole-system focus, combined with efficient power and cooling solutions, helps you accomplish more with each minute of your time. And, the ultra-quiet performance of HP Z Workstations is perfectly suited for use in quiet office environments.

Tested beyond industry standards
Our customers put their workstations through the toughest trials, so we do too—before they can. Our HP Z Workstation engineers conduct 115,000 hours of rigorous testing to ensure world-class reliability. We subject components to rigorous testing to verify their performance under extreme conditions. In brutal three-axis testing—where frequency, voltage, and temperature are varied—our engineers push the limits of processors, memory, and other system parts. This three-axis testing uses proprietary tools and techniques, and stresses components in ways that help detect potential design or component weaknesses that would otherwise go unnoticed. In some cases, rigorous qualification enables us to find issues that have been previously overlooked by our component vendors. Our strong relationships and influence with these partners enable us to obtain and integrate improved components into our systems, many of which are unique to HP Z Workstations.

Carefully chosen components
We design our systems based on professional application demands, a full-time customer use model and a five-year design life. This strenuous design standard drives the types of components we use and how we design our machines. Our engineers physically deconstruct workstation components to study the materials and the chemicals used in them. Even the smallest and most common electronic components, like resistors and capacitors, are carefully chosen based on quality, reliability and top performance.

Engineered BIOS
HP BIOS helps hardware compatibility and increases workstation reliability by reducing power consumption through preset sleep states, adjustable fan speeds that maximize operating efficiency, and power management features.

ECC memory for data integrity
Memory errors can happen anywhere, anytime—with consequences as disastrous as a system crash in the middle of a critical operation. Error Correction Code (ECC) memory detects and corrects soft errors in the memory system on the fly, preserving the integrity of your data. HP offers ECC memory on our workstations so your mission-critical applications can run smoothly with minimized memory errors.

Independent Software Vendor (ISV) certification
HP supports an extensive list of application partners and works closely with many software vendors to ensure that these applications work smoothly and flawlessly on HP Z Workstations in all possible configurations. HP also provides a test suite to graphics vendors, to help increase the reliability and stability of industry-standard graphics products. Learn more about how our relationships power you.

Ultimately, our intense focus on reliability gives you greater peace of mind when running professional applications on an HP Z Workstation. You know that you have a system that is designed, tested, and proven for the work you do.
Expandable by design

More memory and faster I/O channels are critical for workstation applications and the large files they generate. HP Z Workstations are designed to provide more memory, storage, and I/O expandability by supporting a range of PCI Express slots, hard drives, solid state drives, optical drives, RAID configurations, and flexible storage bays.

Upgrade with ease

Work isn’t static. Expand your system capabilities with ease as your workflow demands grow over time. HP Z Workstations featuring smart tool-less chassis, easy open access doors, and easy rack accessibility makes swapping parts and upgrading a breeze.

Push the processing limit

On dual socket workstations, a second processor can be added when you need it, delivering up to 24 discrete processor cores of computing and visualization power.

More memory, less waiting

The high-performance models of HP Z Workstations employ a scalable memory subsystem that provides more bandwidth, reduces latency, and helps reduce power consumption, so workstations can be configured with more memory without substantially increasing power and cooling requirements. And now you can benefit from larger, faster, and more efficient memory with DDR4 technology.

Storage even a server would envy

HP Z Workstations offer impressive storage options that balance performance, endurance, capacity, and data security. Select HP Z Workstations come with up to 10 internal storage bay slots to satisfy your storage demands. And with configurations ranging all the way up to 20 TB, you can say goodbye to your external drives.*

*20 TB planned availability early 2015


Centrally control deployment and management for different user profiles with flexible provisioning and multiple configuration options.

Virtually unstoppable

Unlock your organization’s potential with the HP Z Virtual Workstation. Enjoy a true workstation experience combined with end-to-end security and easily optimized IT management in a flexible 2U form factor. Experience superb graphics and access certified workstation ISV applications on virtually any endpoint device—from virtually anywhere.

Linux® workstation solutions

Linux® offers fast, flexible and reliable operating systems for HP Z Workstations. Designed for organizations requiring security, compatibility, stability and unlimited scalability, Linux® powers millions of computers with enterprise-proven technologies. HP was the first workstation vendor to deliver a desktop Linux® platform offering advanced 3D graphics capabilities. That commitment continues today with world-class proven solutions and a dedication to high-touch service for our Linux® customers. HP Z Workstation customers directly benefit from HP’s strategic relationships with Red Hat®, Canonical, and SUSE.
### Memory, storage and graphics that grow with your needs

<table>
<thead>
<tr>
<th></th>
<th>Available operating systems</th>
<th>Maximum memory</th>
<th>Maximum storage</th>
<th>Maximum graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HP Z1 G2</strong></td>
<td>Windows 8.1 Pro 64-bit</td>
<td>32 GB</td>
<td>3.25 TB</td>
<td>NVIDIA® Quadro® K4100M</td>
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<tr>
<td></td>
<td>Windows 7 Professional</td>
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<tr>
<td></td>
<td>Red Hat® Enterprise Linux®</td>
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</tr>
<tr>
<td></td>
<td>Desktop</td>
<td></td>
<td></td>
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<tr>
<td><strong>HP Z230 SFF</strong></td>
<td>Windows 8.1 Pro 64-bit</td>
<td>32 GB</td>
<td>6 TB</td>
<td>NVIDIA® Quadro® K600 or</td>
</tr>
<tr>
<td></td>
<td>Red Hat® Enterprise Linux®</td>
<td></td>
<td></td>
<td>NVIDIA® NVS™ 510 + NVS 310;</td>
</tr>
<tr>
<td></td>
<td>Desktop</td>
<td></td>
<td></td>
<td>AMD FirePro™ V3900</td>
</tr>
<tr>
<td><strong>HP Z230 Tower</strong></td>
<td>Windows 8.1 Pro 64-bit</td>
<td>32 GB</td>
<td>9 TB</td>
<td>NVIDIA® Quadro® K4000 or</td>
</tr>
<tr>
<td></td>
<td>Red Hat® Enterprise Linux®</td>
<td></td>
<td></td>
<td>NVIDIA® NVS™ 510 + NVS 310;</td>
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<tr>
<td></td>
<td>Desktop</td>
<td></td>
<td></td>
<td>AMD FirePro™ W7000 (AMO only)</td>
</tr>
<tr>
<td><strong>HP Z440</strong></td>
<td>Windows 8.1 Pro 64-bit</td>
<td>128 GB</td>
<td>16 TB</td>
<td>NVIDIA® Quadro® K6000 (AMO only)</td>
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<tr>
<td></td>
<td>Red Hat® Enterprise Linux®</td>
<td></td>
<td></td>
<td>or dual NVIDIA® Quadro® K2200;</td>
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<tr>
<td></td>
<td>Desktop</td>
<td></td>
<td></td>
<td>AMD FirePro™ W7100</td>
</tr>
<tr>
<td><strong>HP Z640</strong></td>
<td>Windows 8.1 Pro 64-bit</td>
<td>256 GB</td>
<td>16 TB</td>
<td>NVIDIA® Quadro® K6000 or</td>
</tr>
<tr>
<td></td>
<td>Red Hat® Enterprise Linux®</td>
<td></td>
<td></td>
<td>dual NVIDIA® Quadro® K5200;</td>
</tr>
<tr>
<td></td>
<td>Desktop</td>
<td></td>
<td></td>
<td>Dual AMD FirePro™ W7100</td>
</tr>
<tr>
<td><strong>HP Z840</strong></td>
<td>Windows 8.1 Pro 64-bit</td>
<td>512 GB</td>
<td>20 TB*</td>
<td>Dual NVIDIA® Quadro® K6000 or</td>
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<tr>
<td></td>
<td>Red Hat® Enterprise Linux®</td>
<td></td>
<td></td>
<td>Triple NVIDIA® Quadro® K5200;</td>
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<tr>
<td></td>
<td>Desktop</td>
<td></td>
<td></td>
<td>Dual AMD FirePro™ W7100</td>
</tr>
<tr>
<td><strong>HP DL380 Gen9</strong></td>
<td>Windows 7 Pro 64-bit</td>
<td>3 TB</td>
<td>16 TB</td>
<td>Dual NVIDIA Grid™ K2</td>
</tr>
<tr>
<td><strong>Virtual</strong></td>
<td>RHÉL Workstation (paper license)</td>
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</tbody>
</table>

*20 TB planned availability early 2015
Why HP Z Workstations?

HP Z Workstations have been on the market for over 30 years. Designed from the inside out to fulfill the needs of our customers, HP Z Workstations deliver high performance and reliability with the latest innovation and industry-leading technologies.

HP Z1 Workstation
Create brilliant projects with plenty of room to work on the elegant and innovative HP Z1 All-in-One Workstation featuring a stunning touch optional 27-inch diagonal display. The intuitive design of the HP Z1 All-in-One Workstation allows for simple expansion, customization and connectivity. A complete suite of ISV certifications, professional graphics, and powerful processors provide everything you expect from a workstation in an elegantly designed package.

HP Z230 SFF and Tower Workstations
Create a totally immersive work environment for those who demand reliability and performance on a budget. Designed for always-on operations, the HP Z230 delivers next-generation processor and graphics technologies in two chassis—an impressively expandable Tower and a surprisingly capable Small Form Factor.

HP Z440 Workstation
Take your business to the next level of performance, expandability, and no compromise reliability in one complete package. Featuring a perfect mix of HP Z DNA in a performance workstation package with up to 8 discrete processor cores, up to 128 GB of RAM, and multiple storage and PCIe configuration options.

HP Z640 Workstation
Redefine versatility and flexibility. Expand your capabilities with the HP Z640 Workstation offering powerful performance, whisper-quiet computing, and tool-less access in a compact design.

HP Z840 Workstation
Push your computing boundaries with the HP Z840 Workstation that helps you keep up with your biggest projects. Built for high-end computing and visualization, it delivers outstanding performance in one of the industry’s most expandable chassis.

HP DL380z Virtual Workstation
Empowerment to work anywhere with the HP Z Virtual Workstation. Enjoy a true workstation experience, combined with end-to-end security, optimized IT management, and access to ISV applications from virtually any endpoint device from virtually anywhere.

For more information about HP Z Workstations, please visit hp.com/zworkstations

1. Maximum memory capacities assume Windows 64-bit operating systems or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.
2. For hard drives, 1 GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 20 GB (for Windows 7) and up to 30 GB (for Windows 8.1) of hard drive (or system disk) is reserved for the system recovery software.
3. Results based on the SPECapc benchmarks for DS SolidWorks 2013 and the Cinebench 11.5 CPU benchmark test; comparing an HP Z230 Tower Workstation with an Intel® Core™ i5-4690 processor to an HP Z230 Tower Workstation with an Intel® Xeon® E3-1241 v3 Processor. All other system configurations were selected to be as equal as possible.
4. Thunderbolt™ Z is available via an optional add-in card on the Z1 G2, Z230 SFF, Z230 Tower, Z440, Z640, and Z840. Thunderbolt cable and Thunderbolt device (sold separately) must be compatible with Windows. To determine whether your device is Thunderbolt Certified for Windows, see thunderbolttechnology.net/products.
5. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows functionality. See microsoft.com.

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