Solution guide

Why choose 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.

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While business PCs can provide you with excellent value, desktop workstations deliver superb performance, outstanding reliability, and wide-ranging scalability.

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.

HP Business PCs provide

Performance suitable for business tasks
- PC-grade Intel and AMD processors
- Windows 10 Pro 64-bit[5]
- Consumer-grade graphics cards
- Standard SATA HDDs
- Thunderbolt™ 2[4]

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

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
- Dual Intel® Xeon® processors options*
- Professional-class graphics from integrated graphics to multiple 2D and 3D solutions
- HP Z Turbo Drive G2 PCIe SSD for up to 4x the performance of SATA SSDs and up to 14x faster sequential read performance over a SATA HDD

Mission-critical reliability
- Tested beyond industry standards for always-on operations
- HP Z Desktop Workstations are tested to a minimum of 368,000 total test hours
- ECC memory as well as storage options that use server-class technology

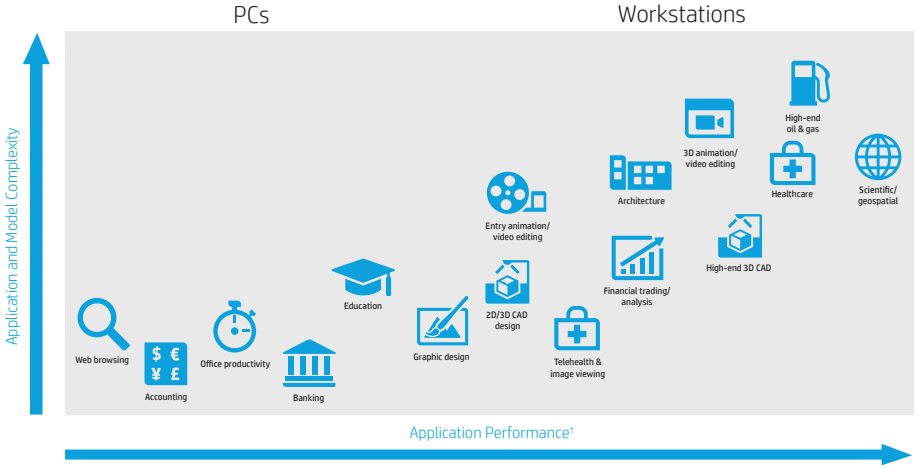
Professional ISV application certification
Out-of-the-box compatibility between HP Z Workstations and professional applications

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

Maximum expandability
- Up to 1 TB[1] of memory
- Up to 20 TB[2] of storage

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

PC and workstation application segments



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

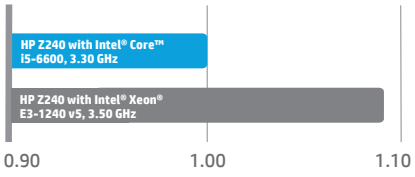
†Multi-threaded/multi-tasking

HP Z Workstations help you spend less time waiting and more time creating with industry-leading processing, graphics, and innovative technologies.

Up to 29%
performance gains[3]

Cinebench CPU Results

Dassault Systems SOLIDWORKS 2015 SPECapc CPU composite



Relative performance (higher is better)

Performance comparison: 5th Gen Intel® Xeon® E3-1240 v5 compared to 6th Gen Intel® Core™ i5

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[3] over equivalent Intel® Core™ processors on the HP Entry Workstations (see performance comparison charts on left). Other benefits include a higher processor frequency bin on HP Entry Workstations, greater memory bandwidth, and choice of more than four cores and dual processor options on the higher-end HP 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 G2 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 up to 200% performance improvements over SATA SSDs and up to 14 times faster sequential read performance over a SATA HDD. To learn more, see hp.com/go/zturbo.

Leading-edge professional graphics

Extensive HP testing over a wide-range of graphics cards, simulating real-world customer workloads and 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 your 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)[8] standard on every HP Z Workstation and an HP RGS receiver that can be downloaded for any PC or Mac®, 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 ultra-high definition (UHD) videos, images, and technical drawings to life. Get high-resolution images with outstanding color accuracy even at wide angles. Take on demanding projects 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.

Immerse yourself in your projects with HP's specialty displays. HP's curved display, the HP Z34c, brings 34 diagonal inches of an immersive, curved visual and audio experience in a thin, ultra-high resolution display that boasts a 21:9 aspect ratio to enhance your visual perception.

HP's virtual reality display delivers a virtual-holographic 3D image[6] that allows you to enjoy real-time, natural interaction with your 3D[6] objects. The display's full-motion parallax sensors track the movement of your head and respond to exactly where you look. The stylus manipulates objects in the 3D atmosphere providing haptic feedback so you know exactly where you are interacting.

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.

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.

368,000
minimum total test hours

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 a minimum of 368,000 total test hours 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.

HP Z Workstations offer a range of configurable features so that you can quickly and easily grow your workstation at your own pace.

20 TB storage

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 44 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.

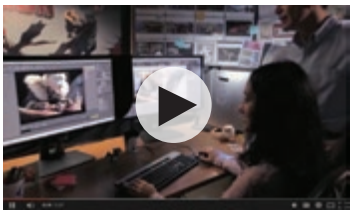
Storage even a server would envy
HP Z Workstations offer impressive storage options that balance performance, endurance, capacity, and data security. Select HP Z Workstations come with up to 10 internal storage bay slots to satisfy your storage demands. And, with configurations ranging all the way up to 20 TB[2], you can say goodbye to your external drives.

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

	Available operating systems[5]	Maximum memory[1]	Maximum storage[2]	Maximum graphics
HP Z1 G3	Windows 10 Pro 64 Windows 7 Professional Red Hat® Enterprise Linux® Desktop	64 GB	4 TB	NVIDIA® Quadro® M2000M
HP Z2 Mini[7]	Microsoft Windows 10 Pro 64 Windows 7 Professional	Up to 32 GB	Up to 1.5 TB	NVIDIA® Quadro® M620
HP Z240 SFF[7]	Windows 10 Pro 64 Windows 7 Professional HP Linux® Ready	64 GB	8 TB	NVIDIA® Quadro® K1200 or NVIDIA® NVS™ 510 + NVS 310; AMD FirePro™ W4300
HP Z240 Tower[7]	Windows 10 Pro 64 Windows 7 Professional HP Linux® Ready	64 GB	12 TB	NVIDIA® Quadro® M4000 or NVIDIA® NVS™ 510 + NVS 310; AMD FirePro™ W7100 (AMO only)
HP Z440	Windows 10 Pro 64 Windows 7 Professional Red Hat® Enterprise Linux® Desktop	128 GB	16 TB	NVIDIA® Quadro® M5000 or dual NVIDIA® Quadro® M4000; AMD FirePro™ W7100
HP Z640	Windows 10 Pro 64 Windows 7 Professional Red Hat® Enterprise Linux® Desktop	256 GB	16 TB	NVIDIA® Quadro® M6000 or dual NVIDIA® Quadro® M5000; Dual AMD FirePro™ W7100
HP Z840	Windows 10 Pro 64 Windows 7 Professional Red Hat® Enterprise Linux® Desktop	1 TB	20 TB	Dual NVIDIA® Quadro® M6000 or Triple NVIDIA® Quadro® M5000; Dual AMD FirePro™ W7100

30+
years in the industry



Why HP Z Workstations?

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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 23.6-inch diagonal UHD 4K 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 Z2 Mini Workstation
HP has reinvented what a workstation should be with a new category: The HP Z2 Mini. Drawing inspiration from customer needs for a dramatically smaller workstation with full performance and reliability, and an iconic design language, the HP Z2 Mini is truly a workstation that's built for the masses and designed for the selective.

HP Z240 SFF and Tower Workstations
The world's best selling workstation* just got better. HP's most affordable workstation allows you to customize your experience while still balancing your IT budget. Now, get monster-class performance with support for up to 4.2 GHz of processing power, plus the essential features of the HP Z240 Tower to easily support your workload with slots and ports to spare. And at 57 percent smaller than the tower, the HP Z240 SFF conserves space and maintains workstation performance.

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.

*Source: IDC WW WS Historical Tracker 2016Q1 – 06.29.16.

HP recommends Windows.

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 36 GB (For Windows 10) of hard drive (or system disk) is reserved for the system recovery software.
3. Results based on the SPECapc benchmarks for DS SolidWorks 2015 CPU Composite and the Cinebench CPU benchmark test; comparing an HP Z240 Tower Workstation with an Intel® Core™ i5-6600 processor to an HP Z240 Tower Workstation with an Intel® Xeon® E3-1240 v5 Processor. All other system configurations were selected to be as equal as possible.
4. Thunderbolt™ 2 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, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See microsoft.com.
6. 3D content is required for 3D performance.
7. This system is pre-installed with Windows® 7 Pro software and also comes with a license and media for Windows 10 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.
8. HP RGS requires a Windows, Linux®, or Mac OS X 10.10 and newer operating system and network access.

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