

FAQ

HP Z Workstations

Frequently asked questions

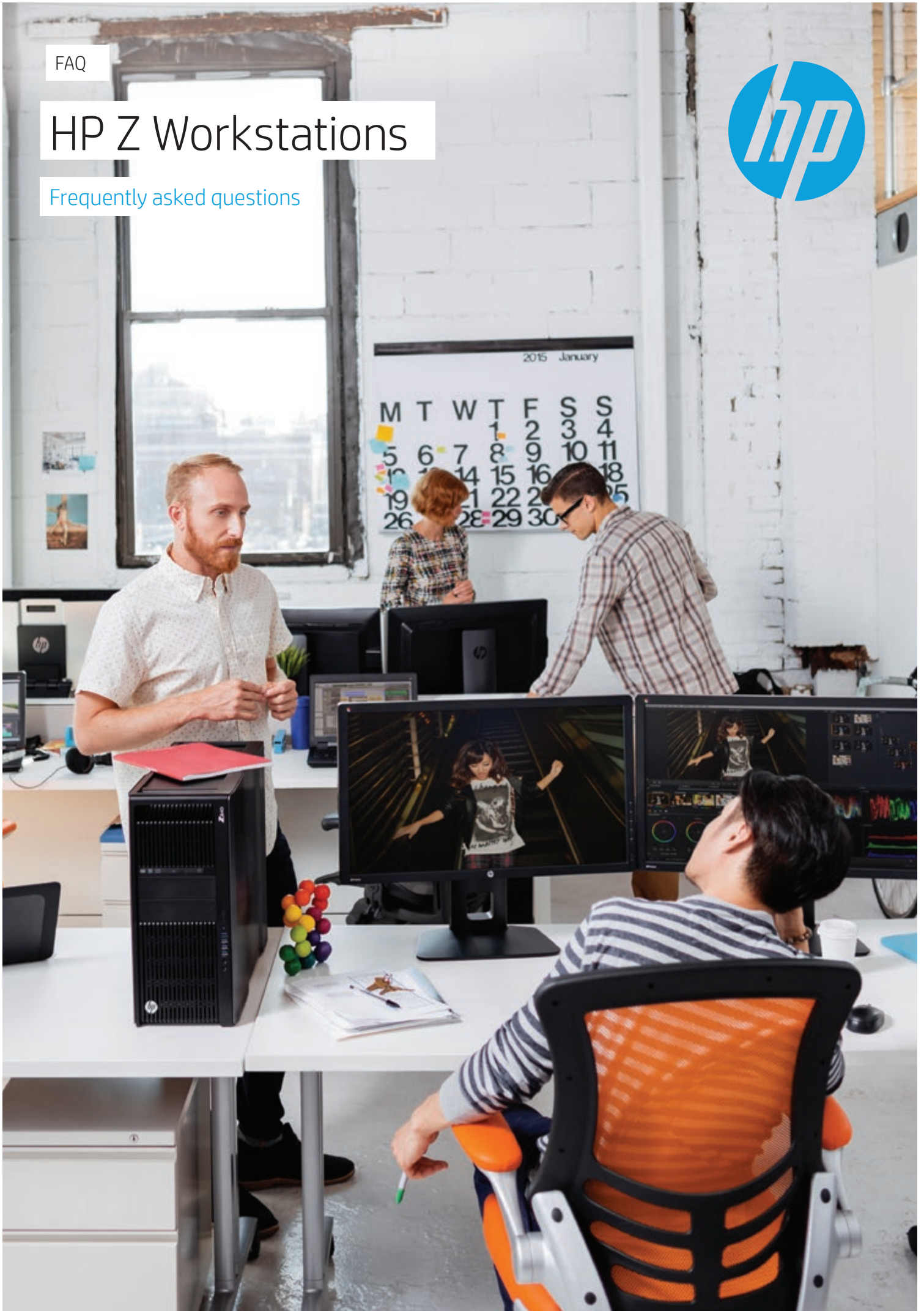


Table of contents

Family basics	3
HP Z1 Workstation	3
HP Z2 Mini Workstation	4
HP Z240 Workstations.....	4
HP Z240 SFF Workstation	5
HP Z240 Tower Workstation	6
HP Z440 Tower Workstations	6
HP Z640 Tower Workstations	7
HP Z840 Tower Workstations	8
HP ZBook 15u G3 Mobile Workstation.....	9
HP ZBook Studio G3 Mobile Workstation.....	10
HP ZBook 17 G3 Mobile Workstation.....	13
HP Z Displays.....	15
HP Specialty Displays.....	15
HP DreamColor Displays	16
HP Z Workstations innovations.....	16
HP Z Turbo Drive.....	16
HP Z Turbo Drive Quad Pro	17
HP Z Cooler	18
HP Remote Graphics Software	18
Thunderbolt™ 3	19
HP ZBook Dock with Thunderbolt™ 3.....	20
Intel processors	21
DDR4 memory.....	22
Graphics.....	22
Storage and optical drives	23
Operating systems	23
Manageability.....	24
Security.....	24
Options and modules.....	25
Warranty and support	25

Family basics

What is a workstation and how is it different from a high-end business PC?

Workstations are powerful computers designed for professional applications and usage, and generally offer faster performance, more expandability and more reliability choices than business PCs. The extent varies by model and individual components chosen. HP offers a wide range of workstation models to suit every need including desktop, all-in-one, and mobile workstations. HP Z Workstations are designed for always-on usage models, and are fully tested with and certified for a broad variety of professional applications in Product Development, Architecture, Engineering and Construction, Financial Services, Media and Entertainment, and many other vertical segments.

For more details, refer to [Why a Workstation](#).

What are HP Z Workstations?

HP Z Workstations have been on the market for over 30 years. Combining bold design, world-class engineering, robust tools and visual collaboration solutions, the HP Z Workstation Family—the HP Z1, HP Z240 SFF, HP Z240 Tower, HP Z440, HP Z640, HP Z840, HP ZBook 15u, HP ZBook Studio, HP ZBook 15, and HP ZBook 17—takes innovation, performance, and reliability to the next level giving you and your business a competitive edge. HP Z Workstations are engineered to optimize the way processor, memory, graphics, OS, and software components work together to deliver massive, whole-system computational power that helps you accomplish more with every minute of your time. All HP Z Workstations also come standard with advanced software such as HP Performance Advisor to help optimize your system for peak performance and HP Remote Graphics Software (RGS) that allows you to access, share, and broadcast your Windows and Linux® workstation and virtual workstation apps from any remote PC, Mac®, MacBook®, Windows tablet or thin client.

For more details, refer to the [HP Workstations Solutions Brochure](#).

How are HP Z Workstations sold and distributed?

HP Z Workstations are sold on hp.com, via distributor/VARs (indirect/direct channels), and HP sales force.

For more details, visit hp.com/zworkstations.

HP Z1 Workstation

What's special about the HP Z1 G3 Workstation?

The HP Z1 G3 Workstation is HP's most innovative all-in-one workstation with a brilliant 23.6-inch diagonal display in an elegant, easily customizable design. Take computing performance to another level with the latest Intel® processors and a wide range of professional 3D graphics from NVIDIA. Connect in a flash and increase productivity with dual, easily accessible Thunderbolt™ 3 ports¹. See your ideas shine on the brilliant, next generation anti-glare UHD 4K display.

What are the at-a-glance features of the HP Z1 G2 Workstation?

- Windows 10 Pro and other editions and downgrades available³
- Intel® C226 chipset
- Intel® Xeon® processor E3-1200 v5 family (quad-core) and next Generation Intel® Core™ i3, i5 Processors^{4, 7}
- Intel® Turbo Boost Technology⁵
- Intel® vPro™ Technology⁶
- Professional 3D NVIDIA® Quadro® Graphics
- 2 Thunderbolt™ 3^{1, 2} ports for up to 4x bandwidth of USB 3.1
- Up to 64 GB⁷ of total DDR4⁸ 2133 MHz ECC or non-ECC system memory
- 23.6" diagonal anti-glare UHD 4K display with 3840 x 2160 resolution
- HP Remote Graphics Software (RGS) included for high-end screen sharing or remote access to a workstation from home

For full product details, refer to the [HP Z1 G3 QuickSpecs](#).

What are the enhancements of the HP Z1 G3 Workstation as compared to the previous generations of the HP Z1 Workstation?

HP has designed the HP Z1 G3 to build upon the customer base of the HP Z1 G2 and continue to drive the product forward with innovation and the latest generation technologies. Some of the latest innovations in the HP Z1 G3 include:

- Smaller, thinner, lighter than the HP Z1 G2
- Dramatic price reductions—over 20% on starting configurations—as compared to the HP Z1 G2
- 47% smaller and 51% lighter than the HP Z1 G2
- 23.6" diagonal UHD, 4K 3840 x 2160 resolution display as compared to the 27" diagonal 2560x1440 display on the HP Z1 G2
- Intel® Skylake generation Xeon® and Core™ i3/5/7 processors^{4,27} as compared to the Intel® Haswell generation⁴ on the HP Z1 G2
- Latest Maxwell generation professional NVIDIA® Quadro® graphics as compared to the NVIDIA® Kepler generation on the HP Z1 G2
- ECC Memory—up to 64 GB supported as compared to the 32 GB supported on the HP Z1 G2
- Dual, side-access Thunderbolt™ 3 ports providing up to 40 Gbps performance and USB 3.1 as compared to the Thunderbolt™ 2 providing up to 20 Gbps performance and USB 3.0 on the HP Z1 G2
- Support for two HP Z Turbo Drives and two SSDs or HDDs as compared to support for only two SSDs or HDDs on the HP Z1 G2
- Precision pen and multi-touch option (planned for future availability) as compared to multi-touch options only on the HP Z1 G2
- Display Port out only as compared to Display Port in and out on the HP Z1 G2

HP Z2 Mini Workstation

What's special about the 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. The HP Z2 Mini Workstation offers full, un-throttled performance in a footprint that is 10x smaller than the HP EliteDesk 800 G2 Tower* and 5x smaller than the HP Z240 Small Form Factor** (SFF). It is also HP's most flexible workstation ever, with the ability to be mounted behind displays, or on or under desks.

What are the at-a-glance features of the HP Z2 Mini Workstation?

- Windows 10 Pro and other editions and downgrades available³
- Intel® Xeon® E3-1200v5 family and Intel® Core™ processors
- Intel® Core™ 6th generation processor family (65 W)^{4,27}
- Intel® C236 chipset
- Improved Intel® Hyper-Threading and Intel® Turbo Boost technologies^{5,12} (only available on select processors)
- Intel® vPro™ Technology⁶
- 4 DIMM slots, up to 64 GB of total DDR4 2133 MHz system memory¹⁰
- 2 USB 3.0 ports in the front and 6 in the rear
- PCIe Gen 3 lanes on all slots for enhanced I/O capacity
- 240 W 90% or 200 W 85% efficient power supply
- Slim-line optical drive
- Embedded M.2 slot (for HP Z Turbo Drive G2 and enhanced flexibility with I/O slot choices)
- HP Remote Graphics Software (RGS) included for high-end screen sharing or remote access to a workstation from home

*HP EliteDesk 800 G2 Tower = 28.1317 cubic L volume; Z2 Mini = 2.71 cubic L volume, or 10.38x smaller than the Tower.

** HP Z240 SFF volume= 13 L; HP Z2 Mini volume is 2.7 L, or 1/5 the volume of the Z240 SFF.

HP Z240 Workstations

The world's number one choice for entry level workstations features a choice of Tower or Small Form Factor (SFF) configurations.⁹ The HP Z240 packs the performance, features, and reliability of a workstation into the price point of a desktop PC. Powerful processors, graphics, memory and up to two ultra-fast HP Z Turbo Drive G2s² make the HP Z240 a true workstation-class solution. Handle your growing and complex workloads with performance for any stage of your work process. HP's most affordable workstation allows you to customize your experience while still balancing your IT budget. HP's reliability, thorough testing, and ISV certifications means your HP Z240 is designed as a long-term budget-friendly solution.

What are the key differences between the HP Z230 and the HP Z240?

The next generation HP Z240 comes with the latest generation Intel® processors,^{4,27} along with the next generation Intel® chipset, and NVIDIA® and AMD graphics cards.

	HP Z230 Workstations	HP Z240 Workstations
Processors ^{4,10,27}	Intel® Xeon® processor E3/1200 v3 product family Intel® Core™ i3/i5/i7 4th Generation processor family	Intel® Xeon® processor E3 product family Intel® Core™ i3/i5/i7 6th Generation processor family
Chipset	Intel® C226	Intel® C236
Graphics	NVIDIA® Quadro® AMD FirePro™	NVIDIA® Quadro® (latest generation) AMD FirePro™ (next generation)
Memory ¹⁰	Up to 32 GB DDR3 ECC Unbuffered 1600 MHz	Up to 64 GB DDR4 ECC Unbuffered 2133 MHz
USB	HP Z230 SFF • Front: 2 x USB 2.0, 2 x USB 3.0 • Rear: 4 x USB 2.0, 2 x USB 3.0 HP Z230 Tower • Front: 2 x USB 2.0, 2 x USB 3.0 • Rear: 4 x USB 2.0, 2 x USB 3.0	HP Z240 SFF • Front: 2 x USB 2.0, 2 x USB 3.0 • Rear: 6 x USB 3.0 HP Z240 Tower • Front: 2 x USB 2.0, 2 x USB 3.0 • Rear: 4 x USB 2.0, 2 x USB 3.0
PCI slots ¹¹	HP Z230 SFF • 1 PCIe Gen 3 x16 • 2 PCIe Gen 3 x1 (x1 connector) • 1 PCIe Gen 3 x4 (x16 connector) HP Z230 Tower • 1 PCIe Gen 3 x16 • 1 PCIe Gen 2 x4 (x16 mechanically) • 2 PCIe Gen 2 x1 • 1 PCI legacy 32-bit	HP Z240 SFF • 1 PCIe Gen 3 x16 • 2 PCIe Gen 3 x1 (x1 connector) • 1 PCIe Gen 3 x4 (x16 connector) HP Z240 Tower • 1 PCIe Gen 3 x16 • 1 PCIe Gen 3 x4 (x16 mechanically) • 1 PCIe Gen 3 x4 (x4 mechanically) • 1 PCIe Gen 3 x1 • 1 PCI legacy 32-bit (optional)
Chassis	HP Z230 SFF (HxWxD) • 13.3" x 3.95" x 15.1" • 337 mm x 100 mm x 384 mm HP Z230 Tower (HxWxD) • 15.7" x 6.7" x 17.4" • 399 mm x 170 mm x 442 mm • <4U in rack • Optional front handle	HP Z240 SFF (HxWxD) • 13.3" x 3.95" x 15.1" • 337 mm x 100 mm x 384 mm HP Z240 Tower (HxWxD) • 15.7" x 6.7" x 17.4" • 399 mm x 170 mm x 442 mm • <4U in rack • Integrated front handle ledge and rear ledge • Optional front handle
LAN	2 x integrated GbE LAN	1 x integrated GbE LAN

Note: Blue text signifies a generational improvement

HP Z240 SFF Workstation

What's special about the HP Z240 SFF Workstation?

Take back your workspace. At 57% smaller than the Tower, the HP Z240 SFF conserves space and maintains workstation performance. And with HP's no compromise reliability, your HP Z240 is designed to work today and well into the future.

What are the at-a-glance features of the HP Z240 SFF?

- Windows 10 Pro and other editions and downgrades available³
- Intel® Xeon® processor E3 product family (80 W)^{4,27}
- Intel® Core™ 6th generation processor family (65 W)^{4,27}
- Intel® C236 chipset
- Improved Intel® Hyper-Threading and Intel® Turbo Boost technologies^{5,12} (only available on select processors)
- Intel® vPro™ Technology⁶
- 4 DIMM slots, up to 64 GB of total DDR4 2133 MHz system memory¹⁰
- 2 USB 3.0 ports in the front and 6 in the rear
- PCIe Gen 3 lanes on all slots for enhanced I/O capacity
- 240 W 90% or 200 W 85% efficient power supply
- Slim-line optical drive
- Embedded M.2 slot (for HP Z Turbo Drive G2 and enhanced flexibility with I/O slot choices)
- Optional dust filter (serviceable and replaceable)
- HP Remote Graphics Software (RGS) included for high-end screen sharing or remote access to a workstation from home

How does the HP Z240 SFF compare to the HP Z230 SFF?

Configured with the next generation Intel® Skylake processors²⁷, NVIDIA® and AMD graphics, and the HP Z Turbo Drive G2, the HP Z240 SFF is faster and more capable to handle professional applications. It also offers more expansion bays, expanded memory, and up to two HP Z Turbo Drive G2s via an embedded M.2 slot on the motherboard. The new dust filter option helps to reduce ingress of dust particles into the system. In comparison, the HP Z240 SFF is more user friendly and a more powerful machine, giving the user more capabilities than the HP Z230 SFF.

What differences do I need to be aware of (lack of, removal of, etc.)?

- The media card reader option has been removed; this has been replaced by an optional SD card reader slot in every system.
- The HP Z240 SFF will no longer offer an external 5.25" bay (primarily used for the optical drive). This has been replaced by a slim-line ODD bay.

HP Z240 Tower Workstation

What's special about the HP Z240 Tower Workstation?

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. When you're ready for workstation-class features like professional ISV certifications, the HP Z240 Tower is the right first step.

What are the at-a-glance features of the HP Z240 Tower?

- Windows 10 Pro and other editions and downgrades available³
- Intel® Xeon® processor E3 product family^{4,27} up to 80 W
- Intel® Core™ 6th generation processor family²⁷ (up to 91W), including the Intel® Core™ i7-6700K processor with Intel® HD Graphics 530 (4.0 GHz, up to 4.2 GHz with Intel® Turbo Boost, 8 MB cache, 4 cores)^{4,27}
- Intel® C236 chipset
- Improved Intel® Hyper-Threading and Intel® Turbo Boost technologies^{5,12}
- Intel® vPro™ Technology⁶
- 4 DIMM slots, up to 64 GB of total DDR4 2133 MHz system memory¹⁰
- 2 USB 3.0 ports on the front and 2 in the rear
- PCIe Gen 3 lanes on all slots for enhanced I/O capacity

- Replaced one of the x1 PCIe slots with a x4 slot for additional expandability
- Standard 400 W 92% or 280 W 90% efficient power supply
- Embedded M.2 slot (for HP Z Turbo Drive G2 and enhanced flexibility with I/O slot choices)
- Optional dust filter (serviceable and replaceable)
- HP Remote Graphics Software (RGS) included for high-end screen sharing or remote access to a workstation from home

How does the HP Z240 Tower compare to the HP Z230 Tower?

The HP Z240 Tower offers all the next generation Intel® 6th generation processors²⁷, NVIDIA® and AMD graphics, and the availability of 2 HP Z Turbo Drive G2s via an embedded M.2 slot on the motherboard. The HP Z240 Tower offers more memory at a higher performance than the HP Z230 Tower. The new dust filter option helps to reduce ingestion of dust particles into the system. In comparison, the HP Z240 Tower is more user friendly and a more powerful machine, giving the user more capabilities than the HP Z230 Tower.

HP Z440 Tower Workstations

What's special about the HP Z440 Workstation?

The HP Z440 Workstation is the performance single-processor workstation platform and is positioned above the HP Z240 Workstation. It brings a higher level of performance and expandability to the mainstream workstation space with support for higher-end quad-core, six-core, and eight-core Intel® Xeon® processors⁴, greater memory bandwidth with four-channel memory architecture, and enhancements that support up to 128 GB⁷ of DDR4 memory. This is complemented by a range of new graphics cards from both AMD and NVIDIA. The HP Z440 chassis has been slimmed down from last generation to fit in 4U rack mounting. Along with the recessed accessory tray on the top, integrated handle on the back, and slim optical drive, the HP Z440 is more versatile for a broad range of user environments.

What are the at-a-glance features of the HP Z440 Workstation?

- Windows 10 Pro and other editions and downgrades available³
- Choice of Intel® Xeon® processor E5-1600 v3/v4 and E5-2600 v3/v4 families⁴ supporting 4-8 cores of processing power
- Intel® C236 chipset
- Improved Intel® Hyper-Threading¹² and Intel® Turbo Boost Technologies⁵
- Intel® vPro™ Technology⁶
- 8 DIMM slots, up to 128 GB⁷ of total DDR4⁸ 2400 MHz system memory
- Optional high-performance Thunderbolt™ 2 port^{1,2} for up to 4x bandwidth of USB 3.0
- 4 USB 3.0 ports on the front and 4 in the rear
- PCI Express Gen3 lanes for enhanced I/O capacity
- HP Z Turbo Drive G2 PCIe SSD for 4x the performance of SATA SSDs
- 525W 85% or 700W 90% efficient power supply
- 4U rack mountable
- HP Remote Graphics Software (RGS) included for high-end screen sharing or remote access to a workstation from home

For more information, refer to the [HP Z440 QuickSpecs](#) and [FAQs](#).

What changes from the HP Z420 to the Z440 do I need to be aware of?

- Integrated 1394a, present on HP Z420, has been removed. This functionality is provided by an optional add-in card.
- The HP Z440 uses the HP standard air cooling with incredibly low acoustics specifically measured for optimal performance, but will no longer have the option of liquid cooling. However, HP has introduced the HP Z Cooler on the Z440 and Z840 platforms. The HP Z Cooler decreases the acoustic levels by up to 25% as compared to the standard air coolers currently used.
- The HP Z420 included 3 internal 3.5" storage bays, whereas the HP Z440 includes 2 internal 3.5" storage bays. This allows for improved cooling of the new higher-power architecture.

Why do we continue to offer two power supplies (US)?

- Many HP Z440 configurations do not require the amount of power provided by the larger, 700W power supply. For this reason, we offer customers the choice of a lower power, lower cost option.

HP Z640 Tower Workstations

What's special about the HP Z640 Workstation?

With up to 44 discrete processor cores, the HP Z640 Workstation packs a lot of compute and visualization power into a whisper-quiet, compact design. It offers increased configurability with the option of dual processors in addition to the full range of graphics cards and memory configurations.

What are the at-a-glance features of the HP Z640 Workstation?

- Windows 10 Pro and other editions and downgrades available³
- Support for both dual Intel® Xeon® processor E5-1600 v3/v4 and E5-2600 v3/v4 processor families⁴ up to 145W
- Intel® C612 chipset
- Improved Intel® Hyper-Threading¹² and Intel® Turbo Boost Technologies⁵
- Intel® vPro™ Technology⁶
- Optional high-performance Thunderbolt™ 2 port^{1,2} for up to 4x bandwidth of USB 3.0
- Up to 8 DIMM slots, up to 256 GB⁷ of total DDR4⁸ 2400 MHz system memory (with 2 CPUs installed)
- 4 USB 3.0 ports on the front and 4 in the rear
- PCI Express Gen3 lanes for enhanced I/O capacity
- HP Z Turbo Drive G2 PCIe SSD for 4x the performance of SATA SSDs
- Standard 925W 90% efficient power supply
- HP Remote Graphics Software (RGS) included for high-end screen sharing or remote access to a workstation from home

For more information, refer to the HP Z640 [QuickSpecs](#) and [FAQs](#).

How does the HP Z640 compare to the HP Z620?

- The HP Z640 offers all the next generation Intel® processors, up to 22 cores, as well as NVIDIA and AMD graphics and the HP Z Turbo Drive G2 PCIe storage. The Z640 offers more USB 3.0 ports than the previous generation with an optional Thunderbolt™ 2¹ add-in card and six SATA 6 GB/s ports.

What changes from the HP Z620 to the Z640 do I need to be aware of?

- Integrated 1394a, present on HP Z620, has been removed. This functionality is provided by an optional add-in card.
- The HP Z620 included 3 internal 3.5" storage bays, whereas the Z640 includes 2 internal 3.5" storage bays. This allows for improved cooling of the new higher-power architecture.
- The HP Z620 included 2 embedded 1GbE LAN ports, whereas the Z640 includes 1 embedded 1GbE LAN port.
- The HP Z620 included 8 memory DIMM slots on the primary system board, whereas the Z640 includes 4 memory DIMM slots on the primary system board.

HP Z840 Tower Workstations

What's special about the HP Z840 Workstation?

The HP Z840 is a high-end solution that provides the most configurability and highest compute capability of any HP Z Workstation. The HP Z840 Workstation offers one of the industry's most expandable, rack mountable, chassis and the latest, high performing I/O technologies for ultimate performance. Easily deploy HP Z840 Workstations into your mission-critical design, analysis, and content creation environments knowing that HP is there to support you every step of the way.

What are the at-a-glance features of the HP Z840 Workstation?

- Windows 10 Pro and other editions and downgrades available³
- Intel® Xeon® processor E5-1600 v3 and E5-2600 v3/v4 families⁴ up to 160W
- Intel® C612 chipset
- Intel® vPro™ Technology⁶
- Optional high-performance Thunderbolt™ 2 port^{1,2} for up to 4x bandwidth of USB 3.0
- 16 DIMM slots, up to 1 TB⁷ of total DDR4⁸ 2400 MHz system memory
- 4 USB 3.0 ports on the front and 4 in the rear
- PCI Express Gen 3 lanes for enhanced I/O capacity

- HP Z Turbo Drive G2 PCIe SSD for 4x the performance of SATA SSDs
- Standard 850W 88% or 1125W (1450W at 200V Input Voltage) 90% efficient power supply
- HP Remote Graphics Software (RGS) included for high-end screen sharing or remote access to a workstation from home

For full product details, refer to the [HP Z840 QuickSpecs](#) and [FAQs](#).

How does the HP Z840 compare to the HP Z820?

- The HP Z840 offers all the next generation Intel® processors, NVIDIA and AMD graphics and HP Z Turbo Drive.
- Additional USB 3.0 ports on the front and rear of the chassis along with the optional Thunderbolt™ 2¹ add-in card allows users to transfer data with increased speed compared to the HP Z820.

What changes from the HP Z820 to the Z840 do I need to be aware of?

- Integrated 1394a, present on HP Z820, has been removed. This functionality is provided by an optional add-in card.
- The HP Z840 chassis implements an updated industrial design encompassing updated materials and finishes. See the question above relating to the new industrial design elements.

Why do we continue to offer two power supplies (US)?

- Many HP Z840 configurations do not require the amount of power provided by the larger, 1125W (1450W at 200V Input Voltage) power supply. For this reason, we offer customers a choice of a lower power, lower cost option.

How much power can be supplied by the larger, 1125W (1450W at 200V Input Voltage) power supply?

- Our 1125W power supply is capable of providing 1275W when the input voltage is greater than 105V and capable of providing 1450W of output power when connected to greater than 200V.

Output power is dependent on the input voltage level as described in the table below:

Input voltage	Rated output power
100V	1125W
115V-127V	1275W
200-240V	1450W

HP ZBook 15u G3 Mobile Workstation

What is special about the HP ZBook 15u G3 Mobile Workstation?

The HP ZBook 15u G3 is HP's next generation workstation Ultrabook™¹³ sporting a new, thinner industrial design than the previous generation. If it's value in a lightweight design you want, look no further. This customizable workstation contains the latest Intel® Core™ processors²⁷, professional AMD FirePro™ 3D graphics (2 GB VRAM) with AMD Enduro™ Technology, up to 32 GB memory, and is designed to pass various MIL-STD14 tests. It can handle up to 2 internal storage devices (up to 1.5 TB), including the HP Z Turbo Drive (NVMe PCIe SSD), and has an optional FHD resolution touch display, numeric keypad, and Ultrabook-class long battery life. It also comes standard with HP Remote Graphics Software (RGS) for high-end screen sharing or remote access to a workstation from home.

How does the HP ZBook 15u G3 compare to the HP ZBook 15u G2?

		HP ZBook 15u G2	HP ZBook 15u G3
Dimensions	Depth	253.6 mm/9.9"	257.7 mm/10.1"
	Width	375.5 mm/14.8"	383.3 mm/15.1"
	Height (front)	21.4 mm/.84"	20.1 mm/.83"
Weight w/o ODD		1.92 kg/4.23 lb	1.95 kg/4.31 lb
Display ¹²		FHD SVA, FHD (UWVA)	FHD SVA, FHD UWVA, FHD SVA Touch, UHD UWVA
Chipset		N/A	N/A

Processor ^{4,27}	5th generation dual-core ULT Intel® Core™ i7 and i5 CPUs	6th generation dual-core ULT Intel® Core™ i7 and i5 CPUs
Graphics	AMD FirePro™ M4170 (1 GB GDDR5)	AMD FirePro™ W4190M (2 GB GDDR5)
Memory ¹⁵	DDR3L 1600MHz up to 16 GB	DDR3L 1600MHz up to 32 GB
Internal storage ¹⁶	Up to 1 TB 2.5" HDD Up to 512 GB SATA SSD Up to 512 GB HP Z Turbo Drive PCIe SSD (ACHI)	Up to 1 TB 2.5" HDD Up to 512 GB SATA SSD Up to 512 GB HP Z Turbo Drive PCIe SSD (NVMe)
ODD ¹⁷	N/A	N/A
Battery	3-cell long life 50 WHr	3-cell long life 46 WHr
Battery life ²⁶	Awaiting battery life benchmarks	Awaiting battery life benchmarks
Adapter	Smart AC Adapter (65 W)	Smart AC Adapter (65 W)
Ports	(1) USB 3.0 charging (3) USB 3.0 DisplayPort 1.2 RJ-45 (Ethernet) VGA Combo headphone/microphone Side docking connector Power connector	(1) USB 3.0 charging (1) USB 3.0 (1) USB-C (USB 3.1 Gen 1) RJ-45 (Ethernet) VGA Combo headphone/microphone Side docking connector Power connector Secondary battery connector

What processors does the HP ZBook 15u G3 offer?

The HP ZBook 15u G3 offers 6th generation Intel® Core™ dual core processors^{4,27}. These are ULT (low power) 15 W processors that will only be available on the HP ZBook 15u G3.

- Intel® Core™ i7-6600U with Intel® HD Graphics 520 (2.6 GHz, up to 3.4 GHz with Intel Turbo Boost technology, 4 MB cache, 2 cores)
- Intel® Core™ i7-6500U with Intel® HD Graphics 520 (2.5 GHz, up to 3.1 GHz with Intel® Turbo Boost technology, 4 MB cache, 2 cores)
- Intel® Core™ i5-6300U with Intel® HD Graphics 520 (2.4 GHz, up to 3.0 GHz with Intel® Turbo Boost technology, 3 MB cache, 2 cores)
- Intel® Core™ i5-6200U with Intel® HD Graphics 520 (2.3 GHz, up to 2.7 GHz with Intel® Turbo Boost technology, 3 MB cache, 2 cores)

How will the Intel® Ultrabook™ (UTL) processors perform on real-world, workstation-class applications?

The ULT processors on the HP ZBook 15u G3 will work with the discrete AMD FirePro™ graphics to provide up to mid-level workstation-class performance. However, for heavily threaded applications or users requiring the greatest CPU performance, the HP ZBook Studio G3, HP ZBook 15 G3 and HP ZBook 17 G3 should be considered.

What is the docking solution for the HP ZBook 15u G3?

The HP ZBook 15u G3 will continue to use a side docking solution (same as HP ZBook 15u G2) due to its thin design. The HP ZBook Studio G3, HP ZBook 15 G3 and HP ZBook 17 G3 will transition to the new ZBook dock with Thunderbolt™ 3 due to support of Intel®'s next generation of Thunderbolt. This side docking solution will continue to be shared by several other HP Commercial Notebook systems, including the EliteBook 840 G3 and 850 G3.

HP ZBook Studio G3 Mobile Workstation

What is special about the HP ZBook Studio G3 Mobile Workstation?

The HP ZBook Studio is an exciting new category for the HP ZBook family. It is the industry's first true ground-up mobile device designed for commercial-class customers and delivers a thin & light user experience with full performance workstation class capabilities. The HP ZBook Studio G3 contains Intel® 6th generation quad-core processors²⁷, Intel® HD Graphics 530 available as standalone configurable graphics, next generation professional NVIDIA® Quadro® graphics with Optimus® technology, Intel® Iris™ Graphics and Intel® HD Graphics options, up to 32 GB memory¹², dual Thunderbolt™ 3¹, and is designed to pass an expanded set of MIL-STD¹⁴ tests. It can handle up to 2 internal storage devices (up to 2.0 TB) including up to 2 simultaneous next-generation 1 TB HP Z Turbo Drive G2 (NVMe PCIe SSD) devices. It has a new UHD UWVA and features optional UHD DreamColor or FHD Touch displays. It also comes standard with HP Remote Graphics Software (RGS) for high-end screen sharing or remote access to a workstation from home.

How does the HP ZBook Studio G3 compare to the HP ZBook 15 G2?

	HP ZBook 15 G2	HP ZBook Studio G3
Dimensions	Depth	257 mm/10.1"
	Width	381.5 mm/15.0"
	Height (front)	30.5 mm/1.52"
Weight	2.82 kg/6.20 lbs (w/o ODD)	2.04 kg /4.49 lbs
Display¹²	FHD (1920 x 1080, SVA) FHD (1920 x 1080 UWVA) FHD DreamColor ² (1920 x 1080, AG/WVA) QHD+ (3200 x 1800, AG/UWVA)	FHD (1920 x 1080, UWVA) UHD (3840 x 2160, UWVA) UHD DreamColor ² (3840 x 2160, UWVA)
Chipset	Mobile Intel® QM87	Mobile Intel® CM236
Processor^{4,27}	4th generation quad-core Intel® Core™ i7 processors 4th generation dual-core Intel® Core™ i7 and i5 CPUs (refresh)	6th generation quad-core Intel® Xeon® processors 6th generation quad-core Intel® Core™ i7 processors
Graphics	NVIDIA® Quadro® K2100M (2 GB GDDR5) NVIDIA® Quadro® K1100M (2 GB GDDR5) AMD FirePro™ M5100 (2 GB GDDR5) NVIDIA® Quadro® K610M (1 GB GDDR5)	Intel® HD Graphics 530 available as standalone configurable graphics HP ZBook Studio special edition: NVIDIA® Quadro® M1000M with 4 GB dedicated GDDR5 graphics memory <i>(Extra 2 GB of graphics memory provides enhanced application performance with larger graphics datasets)</i>
Memory¹⁵	DDR3L 1600 MHz up to 32 GB	DDR4 2133 MHz up to 32 GB (non-ECC, ECC)
Internal storage¹⁶	Up to 1 TB Up to 500 GB Up to 512 GB SATA SSD Up to 512 GB HP Z Turbo Drive PCIe SSD (AHCI)	Up to 1 TB Up to 512 GB SATA SSD Up to 1 TB HP Z Turbo Drive PCIe SSD (NVMe)
ODD¹⁷	DVD R/W Blu-ray ROM + DVD R/W Blu-ray R/W + DVD R/W	No optical bay
Battery	8-cell 83 WHr 8-cell long life 75 WHr Secondary batteries: HP ST09 Extended Life HP BB09 Ultra Extended Life	4-cell long life 64 WHr

Battery life²⁶	11:15	9:30
Adapter	Smart AC Adapter (150w/200w)	SLIM Smart AC Adapter (150w)
Ports	(1) Thunderbolt™ 2 ¹ (mini-DP 1.2) (2) USB 3.0 (1) USB 3.0 w/ USB powered/charging (1) USB 2.0 DisplayPort 1.2 RJ-45 (Ethernet) VGA Combo headphone/microphone Docking connector Secondary battery connector Power connector	(2) Thunderbolt™ 3 ¹ (USB-C) (3) USB 3.0 (1) USB 3.0 w/ USB powered/charging (1) HDMI RJ-45 (Ethernet) Combo headphone/microphone Power connector

What processors does the HP ZBook Studio G3 offer?

The following 6th generation Intel® Core™ i5 and i7 processors^{4,27} will be offered:

- Intel® Xeon® E3-1545M v5 with Intel® Iris Pro Graphics P580 (2.9 GHz, up to 3.8 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)
- Intel® Xeon® E3-1505M v5 with Intel® HD graphics P530 (2.80 GHz, up to 3.70 GHz with Intel® Turbo Boost Technology, 8 MB L3 cache, 4 cores)
- Intel® Core™ i7-6820HQ with Intel® HD graphics 530 (2.70 GHz, up to 3.60 GHz with Intel® Turbo Boost Technology, 8 MB L3 cache, 4 cores)
- Intel® Core™ i7-6700HQ with Intel® HD graphics 530 (2.60 GHz, up to 3.50 GHz with Intel® Turbo Boost Technology, 6 MB L3 cache, 4 cores)
- Intel® Core™ i5-6440HQ with Intel® HD graphics 530 (2.30 GHz, up to 3.5 GHz with Intel® Turbo Boost Technology, 6 MB L3 cache, 4 cores)
- Intel® Core™ i5-6300HQ with Intel® HD graphics 530 (2.60 GHz, up to 3.5 GHz with Intel® Turbo Boost Technology, 6 MB L3 cache, 4 cores)

What is the UHD/4K display panel and UHD/4K DreamColor display panel choice on the HP ZBook Studio G3?

UHD/4K panels offer extremely high resolutions (3840 x 2160) for maximum screen real estate and vibrant, clear pictures. Two versions of the UHD panel will be offered on the HP ZBook Studio: UHD UWVA display and UHD UWVA with DreamColor technology. We've decided to bring the DreamColor technology to this screen resolution of a display for customers who desire color accuracy for their workflows. The panel will be color calibrated out of the factory and come outfitted with the HP Mobile Display assistant software application.

How does the HP ZBook 15 G3 compare to the HP ZBook 15 G2?

		HP ZBook 15 G2	HP ZBook 15 G3
Dimensions	Depth	257 mm/10.1"	264 mm/10.4"
	Width	381.5 mm/15.0"	386 mm/15.2"
	Height (front)	30.5 mm/1.52"	26.0 mm/1.0"
	Height (rear)	35.5 mm/1.40"	26.0 mm/1.0"
Weight		2.82 kg/6.20 lbs (w/o ODD)	2.63 kg/5.80 lbs
Display¹²		FHD (1920 x 1080, SVA) FHD (1920 x 1080 UWVA) FHD DreamColor ² (1920 x 1080, AG/WVA) QHD+ (3200 x 1800, AG/UWVA)	FHD (1920 x 1080, SVA) FHD (1920 x 1080, AG/UWVA) UHD DreamColor ² (3840 x 2160, UWVA)
Chipset		Mobile Intel® QM87	Mobile Intel® CM236

Processor^{4,27}	4th generation quad-core Intel® Core™ i7 4th generation dual-core Intel® Core™ i5 and i7 CPUs (refresh)	6th generation quad-core Intel® Xeon processors 6th generation quad-core Intel® Core™ i5 and i7 processors
Graphics	NVIDIA® Quadro® K2100M (2 GB DDR5) NVIDIA® Quadro® K1100M (2 GB DDR5) AMD FirePro™ M5100 (2 GB DDR5) NVIDIA® Quadro® K610M (1 GB GDDR5)	NVIDIA® Quadro® M2000M (4 GB DDR5) NVIDIA® Quadro® K1000M (2 GB GDDR5) AMD FirePro™ W5170M (2 GB DDR5) Intel® integrated graphics (GT2 and GT4e)
Memory¹⁴	DDR3L 1600MHz up to 32 GB	DDR4 2133MHz up to 64 GB (non-ECC, ECC)
Internal storage¹⁵	Up to 1 TB 7200 rpm Up to 500 GB 5400 rpm Up to 512 GB SATA SSD Up to 512 GB HP Z Turbo Drive PCIe SSD (ACHI)	Up to 500 GB 7200 rpm Up to 1 TB 5400 rpm Up to 256 GB SATA SSD Up to 1 TB HP Z Turbo Drive PCIe SSD (NVMe)
ODD¹⁶	DVD R/W Blu-ray ROM + DVD R/W Blu-ray R/W + DVD R/W	No optical bay
Battery	8-cell 83 WHr 8-cell long life 75 WHr Secondary Batteries: HP ST09 Extended Life HP BB09 Ultra Extended Life	9-cell long life 90 WHr
Battery life²⁶	11:15	15:45
Adapter	Smart AC Adapter (150w/200w)	SLIM Smart AC Adapter (150w)
Ports	(1) Thunderbolt™ 2 ¹ (mini-DP 1.2) (2) USB 3.0 (1) USB 3.0 w/ USB powered/charging) (3) USB 2.0 DisplayPort 1.2 RJ-45 (Ethernet) VGA Combo headphone/microphone Docking connector Secondary battery connector Power connector	(2) Thunderbolt™ 3 ¹ (USB-C) (3) USB 3.0 (1) USB 3.0 w/ USB powered/charging) (1) HDMI RJ-45 (Ethernet) VGA Combo headphone/microphone Power connector

What processors does the HP ZBook 15 G3 offer?

The following 6th generation Intel® Core™ i5 and i7 processors^{4,27} will be offered:

- Intel® Xeon® E3-1545M v5 with Intel® Iris Pro Graphics P580 (2.9 GHz, up to 3.8 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)
- Intel® Xeon® E3-1505M v5 with Intel® HD graphics P530 (2.80 GHz, up to 3.70 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)
- Intel® Core™ i7-6820HQ with Intel® HD graphics 530 (2.70 GHz, up to 3.60 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)
- Intel® Core™ i7-6700HQ with Intel® HD graphics 530 (2.60 GHz, up to 3.50 GHz with Intel® Turbo Boost Technology, 6 MB cache, 4 cores)
- Intel® Core™ i5-6440HQ with Intel® HD graphics 530 (2.60 GHz, up to 3.50 GHz with Intel® Turbo Boost Technology, 6 MB cache, 4 cores)

What is the UHD/4K DreamColor display panel choice on the HP ZBook 15 G3?

UHD/4K panels offer extremely high resolution (3840 x 2160) for maximum screen real estate and vibrant, clear pictures. We've decided to bring the DreamColor technology to this screen resolution for our customers who desire color accuracy for their workflows. The panel will be color calibrated out of the factory and come outfitted with the HP Mobile Display assistant software application.

Are the batteries and other accessories from the HP ZBook 15 G2 compatible with the new HP ZBook 15 G3?

Although the internal batteries are similar, they are not forward or backward compatible between HP ZBook and HP EliteBook Mobile Workstations. The ZBook 15 G2's battery is accessible from the outside rear of the unit. In order to achieve significant thinness reduction, the HP ZBook 15 G3's 9-cell Long Life Polymer battery is enclosed within the chassis.

The common docking stations used on the HP EliteBook 857 and HP ZBook 15 G2 will not work with the HP ZBook 15 G3, 17 G3, or Studio G3 systems. HP is driving the industry forward with the new exciting docking solution: HP ZBook Dock with Thunderbolt™ 3.

HP ZBook 17 G3 Mobile Workstation

What is special about the HP ZBook 17 G3 Mobile Workstation?

HP's biggest and most powerful mobile workstation just got 25% thinner with a stunning industrial redesign. The HP ZBook 17 G3 contains Intel® 6th generation quad-core processors^{4,27}, next generation professional NVIDIA® Quadro® graphics with Optimus® technology or the choice of AMD FirePro™ graphics with AMD Enduro™ Technology, Intel® Iris™ Graphics and Intel® HD Graphics options, up to 64 GB memory¹², dual Thunderbolt™ 3¹, and is designed to pass an expanded set of MILSTD14 tests. It can handle up to 4 internal storage devices (up to 4.0 TB) including up to 2 simultaneous next generation HP Z Turbo Drive G2 (NVMe PCIe SSD) and has a new UHD DreamColor display option. It also comes standard with HP Remote Graphics Software (RGS) for high-end screen sharing or remote access to a workstation from home.

How does the HP ZBook 17 G3 compare to the HP ZBook 17 G2?

		HP ZBook 17 G2	HP ZBook 17 G3
Dimensions	Depth	272 mm/10.7	280mm/11.0"
	Width	416 mm/16.37"	420mm/16.50"
	Height (front)	34.0 mm/1.33"	30.0mm/1.2"
	Height (rear)	40.0 mm/1.57"	30.0mm/1.2"
Weight (w/o ODD)		3.36 kg/7.4 lbs	3.52kg/7.75lb
Display¹²		HD+ (1600 x 900, SVA) FHD (1920 x 1080, WVA) FHD DreamColor ² (1920 x 1080, UWVA)	HD+ (1600x900, SVA) FHD (1920x1080, UWVA) UHD DreamColor ² (3840x2160, UWVA)
Chipset		Mobile Intel® QM87	Mobile Intel® CM236
Processor^{4,27}		4th generation quad-core Intel® Core™ i7 processors 4th generation dual-core Intel® Core™ i5 and i7 processors (refresh)	6th generation quad-core Intel® Xeon® processors 6th generation quad-core Intel® Core™ i5 and i7 processors
Graphics		NVIDIA® Quadro® K5100M (8 GB GDDR5) NVIDIA® Quadro® K4100M (4 GB GDDR5) NVIDIA® Quadro® K3100M (4 GB GDDR5) NVIDIA® Quadro® K2200M (2 GB GDDR5) NVIDIA® Quadro® K1100M (2 GB GDDR5) AMD FirePro™ M6100 (2 GB GDDR5) NVIDIA Quadro® K610M (1 GB GDDR5)	NVIDIA® Quadro® M5000M (8 GB GDDR5) NVIDIA® Quadro® M4000M (4 GB GDDR5) NVIDIA® Quadro® M3000M (4 GB GDDR5) NVIDIA® Quadro® M2000M (4 GB GDDR5) NVIDIA® Quadro® M1000M (2 GB GDDR5) AMD FirePro™ W6150M (4 GB GDDR5) Intel® Integrated Graphics (GT2 and GT4e)
Memory¹⁴		DDR3L 1600 MHz up to 32 GB	DDR4 2133 MHz up to 64 GB (non-ECC, ECC)
Internal storage¹⁵		Up to 1 TB 7200 rpm Up to 500 GB 5400 rpm Up to 512 GB SATA SSD Up to 512 GB HP Z Turbo Drive PCIe SSD (AHCI)	Up to 1 TB 7200 rpm Up to 500 GB 7200 rpm Up to 256 GB SATA SSD Up to 1 TB HP Z Turbo Drive PCIe SSD (NVMe)
ODD¹⁶		DVD-ROM DVD R/W Blu-ray ROM + DVD R/W Blu-ray R/W + DVD R/W	N/A

Battery	8-cell 83 WHr 8-cell long life 75 WHr Secondary Batteries: HP ST09 Extended Life HP BB09 Ultra Extended Life	6-cell long life 96 WHr
Battery life²⁶	9:45	16:45
Adapter	Smart AC Adapter (200w/230w)	Slim Smart AC Adapter (200w)
Ports	(1) Thunderbolt™ 2 ¹ (mini-DP 1.2) (2) USB 3.0 (1) USB 3.0 w/ USB powered/charging) (1) USB 2.0 DisplayPort 1.2 RJ-45 (Ethernet) VGA Combo headphone/microphone Docking connector Secondary battery connector Power connector	(2) Thunderbolt™ 3 ¹ (USB-C) (3) USB 3.0 (1) USB 3.0 w/ USB powered/charging) (1) HDMI, RJ-45 (Ethernet) VGA Combo headphone/microphone Power connector

What processors does the HP ZBook 17 G3 offer?

The following 6th generation Intel® Core™ i5 and i7 processors^{4,27} will be offered:

- Intel® Xeon® E3-1575M v5 with Intel® Iris Pro Graphics P580 (3.0 GHz, up to 3.9 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)
- Intel® Xeon® E3-1535M v5 with Intel® HD graphics P530 (2.90 GHz, up to 3.80 GHz with Intel® Turbo Boost Technology, 2133 MHz, 8 MB L3 Cache, 4 cores)
- Intel® Core™ i7-6820HQ with Intel® HD graphics 530 (2.70 GHz, up to 3.60 GHz with Intel® Turbo Boost Technology, 2133 MHz, 8 MB L3 Cache, 4 cores)
- Intel® Core™ i7-6700HQ with Intel® HD graphics 530 (2.60 GHz, up to 3.50 GHz with Intel® Turbo Boost Technology, 2133 MHz, 6 MB L3 Cache, 4 cores)
- Intel® Core™ i5-6440HQ with Intel® HD graphics 530 (2.60 GHz, up to 3.50 GHz with Intel® Turbo Boost Technology, 2133 MHz, 6 MB L3 Cache, 4 cores)

What is the UHD/4K DreamColor display panel choice on the HP ZBook 17 G3?

UHD/4K panels offer extremely high resolution (3840 x 2160) for maximum screen real estate and vibrant, clear pictures. We've decided to bring the DreamColor technology to this screen resolution for customers who desire color accuracy for their workflows. The panel will be color calibrated out of the factory and come outfitted with the HP Mobile Display assistant software application.

HP Z Displays

What's special about the HP Z Displays?

Get outstanding image accuracy, exceptional adjustability, and mission-critical reliability optimized for commercial environments. Built with IPS Gen 2 panels, HP Z Displays deliver power savings over first-generation IPS technology and extra-wide viewing angles that foster collaboration.

What display size options do I have?

Choose from 22- to 34-inch diagonal IPS displays.

What resolutions can I get?

Depending on the HP Z Display, you can get a range of resolutions from 1920 x 1080 all the way up to ultra-high definition at 5120 x 2880.

What connectivity choices do I have?

Depending on the HP Z Display, you can get a range of inputs that include DisplayPort 1.2, DVI, VGA, HDMI 1.4, MHL, and USB 3.0 ports.

For full product details, please reference the HP Z Displays [Quick Reference Guide](#).

HP Specialty Displays

What specialty displays does HP offer?

HP offers two unique specialty displays: the HP Z34c Curved Display and the HP Zvr Virtual Reality Display.

What value does HP's curved display bring?

The HP Z34c Curved Display 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.

What is HP's virtual reality display?

HP's virtual reality display delivers a virtual-holographic 3D image¹⁸ that allows you to enjoy real-time, natural interaction with your 3D¹⁸ objects. The display's full-motion parallax sensors track the movement of your head and responds 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 Displays

What's special about the HP DreamColor Displays?

Enjoy pure, consistent 10-bit color accuracy from design to production with push-button color space selection and easy color calibration. The HP DreamColor Professional Displays produce up to 1.07 billion colors from a massive color gamut covering 99% of Adobe® RGB.

What are the at-a-glance features of the HP DreamColor Z24x Display?

- Pro-class color quality with 100% coverage of sRGB, BT.709 and 99% of Adobe RGB. Crisp and clear from 1000:1 contrast ratio¹⁹ and high brightness on a 1920 x 1200 resolution wide-angle IPS panel.
- Create your own custom color space and calibrate any of the five color space presets—sRGB, Adobe RGB, BT.709, User and Native—with the optional HP DreamColor Calibration Solution.²
- Connect to a PC, workstation, and several digital video devices with DVI, DisplayPort, and HDMI inputs. A DisplayPort output supports daisy chaining of multiple displays.²

What are the at-a-glance features of the HP DreamColor Z27x Studio Display?

- Consistently deliver rich, accurate colors and ultra-deep blacks with HP's custom-engineered 27-inch diagonal DreamColor panel. Get massive 2560 x 1440 resolution and crisp, clear presentation from 1000:1 typical, 800: minimum contrast ratio and high brightness.²⁰
- Experience up to 1.07 billion colors with 1,024 tones per channel as the HP DreamColor Engine²⁰ powers through your 4K content²¹ with 10-bit color accuracy and easily handles today's most demanding professional workflows.
- Deep, rich CRT-class blacks at any angle with custom-engineered, advanced Off-Axis Black and second-generation IPS technologies. 99% coverage of DCI-P3 and 100% coverage of sRGB and Adobe RGB.
- Instant push-button color accuracy with seven color space presets. The integrated calibration engine recalibrates with a professional color measurement device or the HP DreamColor Calibration Solution.²

What are the at-a-glance features of the HP DreamColor Z32x Display?

Get exceptional, consistent 10-bit color precision, out-of-the-box color calibration, and sRGB, BT709, and Adobe® RGB coverage from HP DreamColor technology.

Explore your creativity and get expansive views of your projects, documents and media with 8 million pixels and 4K (3840 x 2160) resolution²⁰—four times that of a traditional Full HD display—on a massive 31.5-inch diagonal screen whether in landscape or portrait mode.

Connect to an array of everyday devices right at the display with HDMI, mDP, MHL, and USB 3.0 ports. View simultaneous feeds in Full HD with picture-in-picture or picture-by-picture.²²

HP Z Workstations innovations

HP Z Turbo Drive

What is the HP Z Turbo Drive SSD?

The HP Z Turbo Drive PCIe SSD is the family name for an M.2 PCIe connected SSD. The M.2 PCIe card used in the Z Turbo Drive requires a PCIe x4 slot for maximum performance. These new storage components are compatible with many HP Z Workstations. Please refer to our datasheets for the specific compatibility.

What is the HP Z Turbo Drive G2 PCIe SSD?

The HP Z Turbo Drive G2 PCIe SSD incorporates SSD technology that uses PCIe Gen3 x4 for added bandwidth and provides roughly a 2x improvement in sequential performance. In addition, the SSD uses NVMe controller technology which provides a 3x improvement in random read performance. It features capacities from 256 GB to 1 TB on one card.

How does the performance of a PCIe SSD compare to a SATA SSD?

The HP Z Turbo Drive G2 PCIe SSD significantly outperforms a standard SATA SSD. All SATA SSDs are limited by the 6 GB/s SATA bandwidth. The sequential performance of the new HP Z Turbo Drive G2 PCIe SSD is up to 4x faster than a standard SATA SSD.

How does the HP Z Turbo Drive G2 compare to a commercial-grade HDD?

The HP Z Turbo Drive is incredibly faster than a commercial-grade HDD demonstrating sequential read performance that is more than 14 times faster. Some specific performance data follows:

	HP Z Turbo Drive G2	HP Z Turbo Drive	SATA SSD	SATA 7200 HDD
Sequential read	2150 MB/s	1,170 MB/s	550 MB/s	150 MB/s
Sequential write	1550 MB/s	950 MB/s	500 MB/s	150 MB/s
Random read	300K IOPS	122K IOPS	100K IOPS	0.46K IOPS

Which HP Z Workstation platforms support the HP Z Turbo Drive?

The HP Z Turbo Drive is supported on the HP ZBook 14 G2, ZBook 15u G2, ZBook 15 G2, ZBook 17 G2, Z240 SFF, Z240 Tower Z440, Z640 and Z840 Workstations.

Which HP Z Workstations support the HP Z Turbo Drive G2?

The HP Z Turbo Drive G2 is supported on the HP ZBook 15u G3, ZBook Studio G3, ZBook 15 G3, ZBook 17 G3, Z1 G3, Z240, Z440, Z640, and Z840 Workstations.

Do the platforms support both HP Z Turbo Drive G2 and other SATA/SAS drives?

Yes. We support many other storage components and controllers to enable various storage solutions. Most of these combinations are technically supported, yet not all of these component configurations and RAID support options are available from the factory.

Can I use the HP Z Turbo Drive in other HP systems?

The HP Z Turbo Drive has been developed exclusively for support in the stated HP Z Workstation platforms. Other HP platforms may provide support at a later date.

For full product details, refer to the [HP Z Turbo Drive G2 FAQ](#).

HP Z Turbo Drive Quad Pro

What is the HP Z Turbo Drive Quad Pro?

The HP Z Turbo Drive Quad Pro is a solution that supports four M.2 PCIe connected SSD modules. Each M.2 PCIe module used in the HP Z Turbo Drive Quad Pro requires 4 PCIe Gen3 lanes for maximum performance, thus the HP Z Turbo Drive Quad Pro requires a PCIe Gen3 x16 slot in order to support the four M.2 modules at full performance. The HP Z Turbo Drive Quad Pro is supported on the HP Z440, Z640, and Z840.

How is the new HP Z Turbo Drive Quad Pro different from the HP Z Turbo Drive G2?

The HP Z Turbo Drive Quad Pro uses the same PCIe NVMe modules as the HP Z Turbo Drive G2, but has several distinguishing features:

- It will support four PCIe NVMe M.2 modules on a single card
- For full performance, the HP Z Turbo Drive Quad Pro requires a PCIe Gen3 x16 slot, instead of a PCIe Gen3 x4 slot
- Sudden power loss protection is supported

What storage capacities are available with the new HP Z Turbo Drive Quad Pro?

The new HP Z Turbo Drive Quad Pro uses NVMe SSD modules available in 256 GB⁸ and 512 GB⁸ capacities. Thus, the maximum total capacity is 2 TB. It is possible to order the card with less than four SSD modules and then add additional SSD modules later. HP expects to offer higher capacity devices in the future as they become available in the industry.

How does the performance of a PCIe SSD compare to a SATA SSD?

The HP Z Turbo Drive G2 and HP Z Turbo Drive Quad Pro PCIe SSDs significantly outperform standard SATA SSDs. All SATA SSDs are limited by the 6 Gb/s SATA bandwidth. The sequential performance of the new HP Z Turbo Drive G2 and HP Z Turbo Drive Quad Pro PCIe SSDs are 4x faster than standard SATA SSDs.

	HP Z Turbo Drive Quad Pro* (4 SSD modules in RAID 0)	HP Z Turbo Drive G2	SATA SSD	SATA 7200 HDD
Sequential read	9000 MB/s	2150 MB/s	550 MB/s	150 MB/s
Sequential write	5800 MB/s	1550 MB/s	500 MB/s	150 MB/s
Random read	1200K IOPS	300K IOPS	100K IOPS	0.46K IOPS

* Sequential read performance tested with Iometer 1.1.0 with 12 workers, queue depth of 128, file size of 128K.

HP Z Cooler

What is the HP Z Cooler?

The HP Z Cooler uses 3D Vapor Chamber technology and HP's innovative staggered Hex Fin Heat Exchanger to dissipate processor heat faster and more efficiently than ever before on the HP Z440 and HP Z840 Workstations. This increased efficiency translates into uncompromised system acoustics with full processor performance.

Why did HP choose to develop the HP Z Cooler?

Many industry and ergonomic studies have shown that high acoustic levels have a negative effect on worker productivity. The HP Z Cooler works to provide extremely efficient removal of heat from the Central Processing Unit (CPU) using new HP innovations and available cooling technology. Please see "How does the HP Z Cooler work?" below. Efficient heat removal translates to lower acoustic levels associated with the cooling of the CPU. Over time, CPUs have increased in performance and have also increased the amount of heat they generate. CPUs have progressively become more difficult to cool while maintaining a low acoustic output. HP focuses on providing high levels of user productivity during the workstation design process. Low acoustic noise output is a key factor in enabling high user productivity. The HP Z Cooler is an example of HP's commitment to user productivity.

In addition, studies have shown certain kinds of acoustic noise are more distracting than others, especially higher frequencies and irregular modulations. When a workstation executes a heavy cyclic processor workload, the fan(s) may ramp up and down rapidly with the workload, creating these irregular modulations. The improved ability of the HP Z Coolers to efficiently remove CPU heat helps to reduce these bothersome changes in fan speed, delivering a pleasant user experience even under the most demanding processor use.

What are the benefits of the HP Z Cooler?

The primary value of the HP Z Cooler is in the reduction of acoustic levels associated with cooling the CPU, the typical primary source of system acoustic noise. Lowering system acoustic levels enhances end-user productivity. The HP Z Cooler employs a single hermetically-sealed 3D Vapor Chamber unit with no pumps or hoses, so it has the simplicity and reliability of traditional heat pipes with better thermal performance than a liquid cooling system.

How does the HP Z Cooler acoustics compare to the standard cooler of the HP Z440/ HP Z840 and the solutions provided by previous platforms?

The superior thermal efficiency of the HP Z Coolers helps deliver lower processor-induced acoustic noise at high frequency, high power processor operating states. The HP Z Cooler provides a significant reduction in system noise. These reductions in system noise create a more comfortable and productive work environment without sacrificing application performance.

HP Remote Graphics Software

What is HP RGS?

HP RGS or Remote Graphics Software is software that allows you to access, share, and broadcast your Windows and Linux® workstation and virtual workstation apps in amazing, high-speed clarity from any remote PC, Mac®, MacBook®, Windows tablet or thin client. The application has been built from the ground up with HP's workstation expertise²⁴ and gives you workstation-class performance everywhere you work, with transfer speeds up to 60 fps for your most demanding apps, to allow you to work like you're local. HP RGS looks fantastic even at 4K. And with integrated HP Velocity and advanced video compression you get a premium experience regardless of connectivity strength.

Does HP RGS work on non-HP hardware?

HP RGS should work on any hardware/software combo that meets the system requirements and support matrix in the QuickSpecs. For support purposes, customers must be able to reproduce any issue on an HP system listed in the support matrix with an HP factory installed image.

Who uses HP RGS?

HP RGS has been used as the gold standard for remote workstations and collaboration in many industries including architecture, engineering and construction, education, financial services, geospatial, media and entertainment, oil and gas, product development, and more.

What is the sender or receiver for HP RGS?

There are two parts to HP RGS. The sender software, which gets installed on the workstation that is running your professional applications, and the receiver part, which gets installed on the thin client, tablet or PC you will be connecting from. The receiver is a free download for Windows, Linux®, and Mac® OS.

How does HP RGS work?

HP RGS works by analyzing the image of the remote workstation and sending an encrypted and encoded stream to the client devices. The keyboard, mouse and USB devices on the client devices are sent back to the remote workstation.

The end result is complete control of a remote workstation that looks and feels as though you were physically working from your workstation, with all of its applications, data, graphics and processing power.

This allows you to collaborate across the room, across town, or around the world. Stream your local workstation screen across the cloud to your team's individual devices for live, interactive edits and reviews or pull multiple remote feeds to a single PC.²⁴

And you can ensure your files are secure with 256-bit encryption that only sends an image and leaves your intellectual property in the data center.²⁴ Add more security with login credentials, USB blocking, and local smart cards.²⁵

What's new in HP RGS 7?

HP RGS 7 brings the workstation productivity to Windows 8 or Windows 10 tablets. Features like gesture to hot-key mapping, zoom, virtual mouse, HP Velocity and touch controls give you touch controls to Windows 7 and Linux® applications that are not programmed for touch. Advanced touch recognition features even "teach" Windows 7 applications to recognize Windows 8 or Windows 10 gestures.

HP RGS 7.1 also comes the largest performance boost yet. Remote sessions can now perform at up to twice the frame rate of HP RGS 7.0 resulting in a more real-time interactive experience for even the most graphics rich applications.

How can I know if I will benefit from a new version of RGS?

HP posts the release notes for each version at hp.com/go/rgs. HP also offers a trial license on the same web page so you can test out new versions of HP RGS in your environment. HP offers Care Pack Services²³ to help you set up RGS in your environment. Also remember that patch and minor updates are available for free.

For more details, refer to the RGS [Datasheet](#) and [QuickSpecs](#).

Thunderbolt™ 3

Why did HP decide to include Thunderbolt™ 3¹ port on the HP Z1 G3 and the HP ZBook Studio/15/17 G3 Mobile Workstations?

Intel® announced earlier this year Thunderbolt™ 3—the industry’s fastest and most versatile connection over the new USB-C connector. Thunderbolt™ 3 provides the highest speed I/O and is required by the most demanding users to maximize the overall performance of the workstation. The HP Workstation team decided to outfit the HP Z1 G3 and the HP ZBook Studio/15/17 Mobile Workstations with dual Thunderbolt™ 3 capabilities. This would allow unique differentiation in the market but also allow for added capabilities by connecting to the new HP ZBook Dock with Thunderbolt™ and still supporting native Thunderbolt 3¹ on the system.

What is the difference between Thunderbolt™ 3 and USB-C?

Thunderbolt™ 2 was previously the fastest I/O port available and standardized on the mini-DisplayPort 1.2 (mDP). Thunderbolt™ 3 is the next generation I/O port and Intel® has chosen to standardize this technology on the new USB-C connector. The HP ZBook Studio/15/17 will feature (2) Thunderbolt™ 3 ports. The HP ZBook 15u and other EliteBook products will feature a standard USB-C port that does not support Thunderbolt™ 3. Specifically, the difference is a standard USB-C port is based on the USB 3.1 Gen 1 interface with data transfer speeds equivalent to that of a USB 3.0 port at 5 Gb/s. Thunderbolt™ 3 allows for transfer speeds of up to 40 Gb/s. See below for comparison matrix.

Port	USB 3.0	USB 3.1 (Gen 1)	USB 3.1 (Gen 2)	Thunderbolt™ 2	Thunderbolt™ 3
Port connector	USB Type A	USB -C	USB -C	Mini Display Port	USB-C
Transfer speeds	5 Gb/s	5 Gb/s	10 Gb/s	20 Gb/s	40 Gb/s
Protocols supported	USB 3.0	USB 3.1 Gen 1	USB 3.1 Gen 2 (SuperSpeed USB)	PCIe, DisplayPort	PCIe, DisplayPort, USB 3.1 Gen 2
Platforms supported	All ZBooks	HP ZBook 15u G3	HP ZBook Studio G3 HP ZBook 15 G3 HP ZBook 17 G3	HP ZBook 15 G2 HP ZBook 17 G2	HP ZBook Studio G3 HP ZBook 15 G3 HP ZBook 17 G3
Notes		USB-C port on HP ZBook 15u G3 and EliteBook G3 series is specified as USB 3.1 Gen 1	Thunderbolt™ 3 port integrates a USB 3.1 host controller	(1) Thunderbolt™ 2 port supported on the HP ZBook 15 G2 and HP ZBook 17 G2	(2) Thunderbolt™ 3 ports supported on the HP ZBook Studio G3, HP ZBook 15 G3, and HP ZBook 17 G3

What are the unique features of Thunderbolt™ 3 available on the HP Z1 G3 and the HP ZBook Studio/15/17 G3 Mobile Workstations?

- Thunderbolt™ 3 is a super-set port supporting multiple protocols over a single connection simultaneously: DisplayPort 1.2, SuperSpeed USB (USB 3.1 Gen 2), and PCI Express
- Industry leading I/O speeds at 40 Gb/s
- Support for 2 x 4K displays @ 60 Hz through a single port
- Power – 15 W to bus-powered devices
- Daisy chain up to 6 Thunderbolt™ devices
- Connectivity with the new HP ZBook Dock with Thunderbolt™ 3

How does Thunderbolt™ 3¹ compare to USB 3.0?

Thunderbolt™ 3¹ provides 8x the throughput of USB 3.0.

HP ZBook Dock with Thunderbolt™ 3

Why did HP make the decision to transition to the new HP ZBook Dock with Thunderbolt™ 3?

Thunderbolt™ 3 offers a significant leap forward in transfer speeds (40 Gb/s), presenting an opportunity to leverage connectivity over an existing port rather than needing to design a docking connector into the mobile workstation. This allowed for a thinner, lighter, and overall optimized chassis to add other expandability features that customers value. Additionally, with the continued shift towards mobility, a traditional bottom docking solution adds thickness, weight, and overall clutter to the workspace. The extremely compact and travel friendly HP ZBook Dock streamlines and frees up the workspace.

What are the key features of the HP ZBook Dock with Thunderbolt™ 3?

- Link up to 10 devices at once through ports that include Thunderbolt™ 3¹ (which also supports DisplayPort 1.2 and USB 3.1 Gen 2), four USB 3.0, RJ-45, VGA, combo audio, and two additional DisplayPorts.
- Simple, single cable connection delivering both power/charging and connectivity.
- Small, lightweight portable ID allows for optimized cable management.

Will the legacy standard and advanced docking solutions used for the HP ZBook 15/17 G2 work with the new HP ZBook G3 Mobile Workstations?

The HP standard and advanced docking station solutions used for the HP ZBook 15/17 will not work on any of the new ZBook Mobile Workstations. The previous docking connector was located on the bottom of the chassis. The new HP ZBook Studio/15/17 Mobile Workstations no longer have this bottom connector and will leverage the Thunderbolt™ 3 port to transition to the new HP ZBook Dock with Thunderbolt™ 3. The HP ZBook 15u G3 will continue to utilize the existing ultra-slim side-docking station that is available on EliteBooks and the current HP ZBook 15u G2.

Intel® processors

What can I expect from Intel® Xeon® processors?

Intel® Xeon® processors are purposely built for workstations and servers. They support Error Checking and Correcting (ECC) memory logic, and are the logical choice for environments where professionals need the performance to work efficiently and accurately by avoiding data corruption and/or computer crashes. This processor series provides PCI Express connections directly from the processor. The processor series also provides dual QuickPath Interconnects (QPI) between processors increasing the processor-to-processor communication speeds for dual processor systems.

What features does the Intel® Xeon® processor E5-2600 v3/v4 series support?

- 40 lanes of PCIe Gen 3 I/O (for each processor)
- For the HP Z840, the 1st processor will provide two PCIe3 x16 slots and one PCIe3 x4 slot. The 2nd HP Z840 processor will provide one PCIe3 x16 slot and two PCIe3 x8 slots
- Intel® Turbo¹⁹ Mode (allows processor to run faster under certain conditions)
- Intel® Hyper-Threading Technology¹²
- 22nm (v3) or 14nm (v4) Silicon Process Technology
- From 10 MB to 55 MB of processor cache. The size of the processor cache is dependent on processor model.
- 6.4GT/s, 8.0GT/s and 9.6GT/s QPI links
- The speed of the QPI is dependent on processor frequency
- 85W, 90W, 105W, 120W, 135W, 145W and 160W parts
- Integrated DDR4 memory controller
- 4 channel 2400 MHz DDR4 memory subsystem with v4 processors
- Memory frequency is dependent on processor frequency. Please refer to the [HP Workstation Intel® Xeon® Haswell to Broadwell processor and memory transition FAQ](#).

Do I have to recompile my applications to see the performance advantages of the new Intel® Xeon® processors?

No, testing and Intel® data indicate that technical applications show immediate performance increases due to the new processor and memory architecture.

What are the benefits of multi-core processors?

Intel® multi-core processors provide greater processing resources. Multi-core processors are ideal for usage models requiring multi-tasking (running many applications or simulations at once); working on spread sheets while listening to music with virus checkers and system backups running (power office); or using applications that can split a task across processors (multi-threaded), like animation/rendering in Digital Content Creation.

Multi-core. Dual-socket. Dual-core. Quad-core. Six-Core. Eight-Core? What do these terms mean?

Dual-socket	Two physical CPU sockets
Dual-core	Each CPU package has exactly two processor cores
Quad-core	Each CPU package has exactly four processor cores
Six-core	Each CPU package has exactly six processor cores
Eight-core	Each CPU package has exactly eight processor cores
Multi-core	Each CPU package has multiple (2, 4, 6...) processors cores
Dual-processor	A system with two processors in two sockets

What is Intel® Turbo Boost Technology 2.0⁵?

Intel® Turbo Boost Technology 2.0 is a way to automatically run the processor core faster than the marked frequency if the part is operating under power, temperature, and current specifications limits of the Thermal Design Power (TDP). This results in increased performance of both single and multi-threaded applications.

How much faster will my processor run with Intel® Turbo Boost 2.0 Technology⁵?

The maximum frequency of Intel® Turbo Boost Technology 2.0⁵ is dependent on the number of active cores. The amount of time the processor spends in the Intel® Turbo Boost Technology 2.0 state depends on the workload and operating environment. Any of the following can set the upper limit of Intel® Turbo Boost Technology 2.0 on a given workload:

- Number of active cores
- Estimated current consumption
- Estimated power consumption
- Processor temperature

When the processor is operating below these limits and the user's workload demands additional performance, the processor frequency will dynamically increase until the upper limit of frequency is reached. Intel® Turbo Boost Technology 2.0 has multiple algorithms operating in parallel to manage current, power, and temperature to maximize performance and energy efficiency. Note: Intel® Turbo Boost Technology 2.0 allows the processor to operate at a power level that is higher than its rated upper power limit (TDP) for short durations to maximize performance.

As an independent and complementary feature, Intel® Hyper-Threading Technology¹² (Intel® HT Technology) increases performance of both multi-threaded and single-threaded workloads.

DDR4 memory

What is DDR4 memory?

The 4th generation double data rate memory is called DDR4.

Which HP Z Workstations offer DDR4 memory?

The HP ZBook 15u G3, HP ZBook Studio G3, HP ZBook 15 G3, HP ZBook 17 G3, HP Z1 G3, HP Z240 SFF, Z240 Tower, Z440, Z640, and Z840 Workstations only support DDR4 memory.

Will DDR3 memory work in the HP ZBook G3, HP Z240, Z440, Z640, and Z840 systems?

No, users will have to transition to DDR4 for the HP ZBook G3 systems, HP Z240, HP Z440, Z640, and Z840 Workstations. DDR3 and DDR4 memory types cannot be intermixed or installed into systems in which they are not supported.

What are the advantages of DDR4 memory?

DDR4 memory is moving at 2400 MHz, up from 1866 MHz on DDR3, so potentially, when the system is running at max capacity, the user could see an increase of up to 28% in speed and higher performance.

Graphics

Graphically, what is special with the HP Z Workstations?

HP Z Workstations support one of the widest ranges of Professional 2D up to Ultra High-End 3D graphics from AMD and NVIDIA for your most visually demanding applications. Depending on the HP Workstation you choose, you can drive up to twelve displays and take advantage of PCI Express Gen3 expansion slots. Please refer to the specific workstation for the I/O slot arrangements.

And with HP RGS, included with every HP Workstation, you can access the full graphics performance of the workstation even when working remotely or from lower powered machines.

What size of graphics memory should I use?

Graphics performance is dependent upon many factors, including the amount of video memory. Higher performing cards also include bigger and faster GPUs, more memory bandwidth, and tend to have more scalable features like higher processing unit counts, larger video memory, video sync, and better multi-GPU support. The higher performance graphics cards will also have more memory (and a higher price). A dual display configuration at 1920 x 1200 pixels will allocate about 70 MB for the frame buffer. The remaining graphics memory will be used to store textures, display lists (graphics data sent by your applications), and other data specific to graphics. If your application would benefit from more storage space for these items, then you should purchase a graphics card with more memory.

For details on which graphics cards are supported on HP Z Workstations, refer to the [HP Workstation Graphics Cards Quick Reference Guide](#).

Storage and optical drives

Do HP Z Workstations offer and support SATA-III¹⁵ 6.0 GB/s hard drives?⁸

Yes, we offer SATA III 7200 rpm drives. Most of the 7200 rpm drives are 3.5-inch. HP does offer a 500 GB SED and 500 GB and 1 TB SATA options for the 2.5-inch form factor. Storage capacities for the 7200 rpm drives range up to a massive 3 TB.

Do HP Z Workstations support Serial ATA (SATA) and serial attached SCSI (SAS) RAID?¹⁵

Yes. The chipset used on the HP Z Workstations has an integrated 6-channel SATA controller with RAID support for RAID 0 (striped), RAID 1 (mirrored), RAID 5 (parity), and RAID 10 (striped and mirrored). You can choose to have a high performance RAID 0 array of hard drives where data is striped across multiple hard drives (this RAID method greatly improves data access times and system performance). You can choose to have a highly reliable RAID 1 array of hard drives, where data is duplicated to multiple hard drives at once (this RAID method creates a backup copy of all your data in real time). You can choose to implement a RAID 5 array, which protects against data loss and provides faster throughput. Data is distributed across at least two hard disks, with error correction information stored on an additional disk. Finally, you can choose to implement a RAID 10 array, which offers the advantages of RAID 0 and RAID 1 by utilizing four hard disks.

What SAS hard drives⁸ and controllers are offered?

We offer a wide selection of SAS disk drives and controllers on the HP Z440, HP Z640 and HP Z840 Workstations. The faster spindle speeds (15K rpm, 10K rpm) and the high bandwidth controllers (6 GB/s) result in very fast access to your data. We offer two different PCIe Gen3 SAS controllers: an entry 4-channel SAS controller with basic hard drive connectivity/control and RAID functionality, and a full-featured 8-channel SAS RAID-on-Chip (ROC) controller with an external connector and comprehensive RAID functionality.

Do HP Z Workstations offer and support solid-state and self-encrypting drives?⁸ What about PCIe SSD drives?

Yes, we offer and support a variety of both branded (Intel[®], Samsung Enterprise) and unbranded solid state drives (SSDs), self-encrypting drives (SED SSDs), mSATA SSDs, and PCIe SSDs.

You can choose from 2.5-inch SATA SSDs up to 512 GB; 2.5 SATA SED SSDs up to 256 GB; 3.5-inch SATA SED hard drives up to 500 GB; and mSATA SSDs up to 256 GB.

We also offer our PCIe SSD, the HP Z Turbo Drive G2, up to 1 TB on all our desktop workstations.

What optical drives are available with HP Z Workstations?

HP offers a variety of optical drives including DVD-ROM, DVD +/-RW DL Super Multi, Blu-ray, and 15-in-1 Media Card Readers.

See the HP Z Workstations Quick Reference Guide at the end of this document for storage and optical drives options on both desktop and mobile workstations.

Operating systems

What operating systems are available on HP Z Workstations?

A variety of operating systems (OS) are available, including the following: (Please note that the exact OS carried by each workstation varies by product. For more information, see individual product QuickSpecs.)

Which Windows^{3,16} solutions are supported?

HP Z Workstations support the following Windows operating systems:

- Microsoft Windows 10 Professional 64-Bit
- Microsoft Windows 7 Professional (MSNA) 64-Bit
- Microsoft Windows 7 Professional 64-bit (available through downgrade rights from Windows 10 Pro 64-bit)
- Microsoft Windows 7 Professional 64-bit (available through downgrade rights from Windows 8.1 Pro 64-bit)
- Microsoft Windows 8.1 Pro 64-bit
- Microsoft Windows 8.1 (China) 64-bit
- Microsoft Windows 7 Professional 64-Bit

Which Linux[®] solutions are supported?

- Red Hat[®] Enterprise Linux[®] Desktop 6 and 7
- SUSE Linux[®] Enterprise Desktop 11
- SUSE Linux[®] Enterprise Desktop 12
- Ubuntu Linux[®]

Which Linux[®] solutions are available?

- Linux[®] Ready system install option (FreeDOS). Optional HP Installer Kit for Linux[®] media is available or download the Kit from HP Support. Check the individual system QuickSpecs for availability.
- HP Installer Kit for Linux[®] (includes drivers for 64-bit OS versions of RHEL 6/7, SUSE Linux[®] Enterprise Desktop 11, and SUSE Linux[®] Enterprise Desktop 12). Check the individual system QuickSpecs for availability.
- Red Hat[®] Enterprise Linux[®] Desktop (Paper license with 1 year support; no pre-installed OS)

Is dual OS preload an option?

Dual OS preload is only available through Custom Integration Services.

What is the HP Installer Kit for Linux[®]?

The HP Installer Kit for Linux[®] is FreeDOS with our driver discs included. FreeDOS is a bare-bones OS, intended for those who want to load their own Linux[®] version. This kit is also available from the HP Support web site.

What value does HP bring to Linux[®] on Personal Workstations?

- HP has a dedicated Linux[®] R&D team with 25+ years of experience in OS and driver development
- HP has close relationship with multiple third-parties to enable the complete Linux[®] workstation solution
- HP engineering provides extensive pre-sales technical support
- HP publishes detailed documents, drivers, and white papers on the support website regarding Linux[®] on HP Z Workstations

Manageability

What manageability features are available on HP Z Workstations?

HP Z Workstations meet the industry standard specifications for DASH 1.1 and support Intel[®] Active Management Technology (AMT) 9.1 and Intel[®] vPro™ Technology.¹⁶ Through these programs, IT administrators can remotely control features such as: power management, hardware inventory/alerting (including BIOS and firmware revisions), system defense filters, remote scheduled maintenance, and much more. HP Z Workstations also support software such as optional LANDesk Management Suite, Microsoft System Center Configurations Manager, and HP Client Automation Enterprise.

Security

What security features are available on HP Desktop Workstations?

Security feature	HP Z1 G3	HP Z240 SFF	HP Z240 Tower	HP Z440	HP Z640	HP Z840
Padlock support (padlock optional)		•	•	•		
Cable Lock support (cable optional)		•	•	•	•	
Serial, parallel, USB enable/disable	•*	•	•	•	•	•
Removable media write/boot control	•	•	•	•	•	•
Power-on password	•	•	•	•	•	•
Setup password	•	•	•	•	•	•
Universal chassis clamp lock (optional)		•	•	•	•	
Kensington cable lock (optional) ¹	•	•	•	•	•	•
Smart cover solenoid lock (optional)		•	•	•	•	
Chassis intrusion sensor (optional)	•		•	•	•	•

* For HP Z1 G3 USB enable/disable only

What security features are available on the HP ZBook Mobile Workstations?

Security feature	HP ZBook 15u G3	HP ZBook Studio G3	HP ZBook 15 G3	HP ZBook 17 G3
Integrated Smart Card Reader	•	•	•	•
HP Spare Key (requires initial user setup)	•	•	•	•
One-Step Logon	•	•	•	•
Common Criteria EAL4+ Augmented Certified Discrete TPM 1.2 Embedded Security Chip	•	•	•	•
Security lock slot	•	•	•	•
Support for Intel® AT	•	•	•	•
HP Fingerprint Sensor (optional)	•	•	•	•
Computrace*	•	•	•	•

*The Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S.

Please see product QuickSpecs for more information on security features.

Options and modules

What options are available for HP Z Workstations?

For a complete list of all options for the HP Z Workstations, please visit hp.com/zworkstations.

Warranty and support

What is the warranty and support for HP Z Workstations with Windows?

The standard warranty for HP Z Workstations is 3-3-3 limited warranty (three years parts, three years labor, and three years next business day on-site). HP Care Packs²³ extend 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/lookuptool. 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.

What is the warranty and support for HP Z Workstations with Linux®?

The warranty for HP Z Workstations with Linux® is the standard 3-3-3 limited warranty with 90 days of OS configuration and installation assistance.

Will HP stand behind Linux® when I have problems?

HP is the first place for support. Hardware and software warranties for the workstations with Linux® will be the same as that of the Windows workstations. Extended hardware warranties and software support options will also be available for purchase for if you need extended coverage.

Additional resources

hp.com/zworkstations

hp.com/go/whitepapers

[HP Z Workstations Quick Reference Guide](#)

- 1 Thunderbolt™ is standard on HP ZBook Studio G3, 15 G3, and 17 G3 Mobile Workstations and the HP Z1 G3 and is available via an optional add-in card on HP Desktop Workstations. Thunderbolt is new technology. 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.
- 2 Sold separately or as an optional feature.
- 3 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.
- 4 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. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel®'s numbering is not a measurement of higher performance.
- 5 Intel® Turbo Boost technology requires a PC with a processor with In Intel® Turbo Boost capability. Intel® Turbo Boost performance varies depending on hardware, software, and overall system configuration. See intel.com/technology/turboboost for more information.
- 6 Some vPro functionality, such as Intel® Active management technology and Intel® Virtualization technology, requires additional 3rd party software in order to run. Availability of future "virtual appliances" applications for Intel® vPro technology is dependent on 3rd party software providers. Microsoft Windows required.
- 7 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.
- 8 For hard drives, 1 GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 20 GB is reserved for system recovery software.
- 9 Source: IDC WW WS Historical Tracker 2016Q1 - 06.29.16.
- 10 Each processor supports up to 4 channels of DDR4 memory. To realize full performance at least 1 DIMM must be inserted into each channel. Actual memory speeds dependent on processor capability.
- 11 PCIe Gen3 is new technology and it is expected that there will be limited cards available supporting this technology for a period of time.
- 12 Intel® Hyper-Threading Technology (HT) is designed to improve performance of multi-threaded software products and requires a computer system with a processor supporting HT and an HT-enabled chipset, BIOS and OS. Please contact your software provider to determine compatibility. Not all customers or software applications will benefit from the use of HT. See intel.com/info/hyperthreading for more information.
- 13 Not all configurations will qualify as an Ultrabook.
- 14 All HP ZBooks are designed to MIL-STD 810G testing. Testing was not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions.
- 15 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. Please visit h10032.www1.hp.com/ctg/Manual/c00060684.pdf for RAID capabilities with Linux®.
- 16 This system is pre-installed with Windows 7 Pro software and also comes with a license and media for Windows 8.1 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.
- 17 The power supply, graphics card, hard drives, optical drive, system cooling blower, and memory can be accessed, and removed without tools. Tools may be required for all other components.
- 18 3D content is required for 3D performance.
- 19 1.07 billion viewable colors through A-FRC technology. All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.
- 20 All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.
- 21 4K content required to view 4K resolution.
- 22 MHL 2.0 port will charge an MHL-compatible smart phone and tablet battery. Requires the smart phone or tablet to be enabled for MHL or have an HDMI dongle (sold separately) to connect to the monitor. See your mobile device specifications. Max display resolution of content from a smart phone or tablet is dependent on the max resolution of those devices.
- 23 Care Packs are optional. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit hp.com/go/cpc.
- 24 HP RGS requires a Windows, Linux®, or Mac OS X 10.10 and newer operating system and network access.
- 25 Smart cards are sold separately.
- 26 Battery life results based on MobileMark benchmark measured in hours:minutes. HP ZBook G2 configurations were measured with MM07 and HP ZBook G3 configurations were measured with MM14.
- 27 The following applies to HP systems with Intel® 6th Gen and other future-generation processors on systems shipping with Windows 7, Windows 8, Windows 8.1 or Windows 10 Pro systems downgraded to Windows 7 Professional, Windows 8 Pro, or Windows 8.1: This version of Windows running with the processor or chipsets used in this system has limited support from Microsoft. For more information about Microsoft's support, please see Microsoft's Support Lifecycle FAQ at support.microsoft.com/lifecycle.

Learn more

hp.com/zworkstations
hp.com/go/whitepapers



Share with colleagues



Rate this document

© Copyright 2016 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Intel, Xeon, Core, vPro and Thunderbolt are trademarks of Intel Corporation in the U.S. and other countries. AMD and FirePro are trademarks of Advanced Micro Devices, Inc. NVIDIA, NVS, Tesla, Optimus and Quadro are trademarks and/or registered trademarks of NVIDIA Corporation in the U.S. and other countries. Microsoft and Windows are U.S. registered trademarks of the Microsoft group of companies. Red Hat is a trademark of Red Hat, Inc. Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries. Apple, Mac, and MacBook are registered trademarks of Apple Inc.

