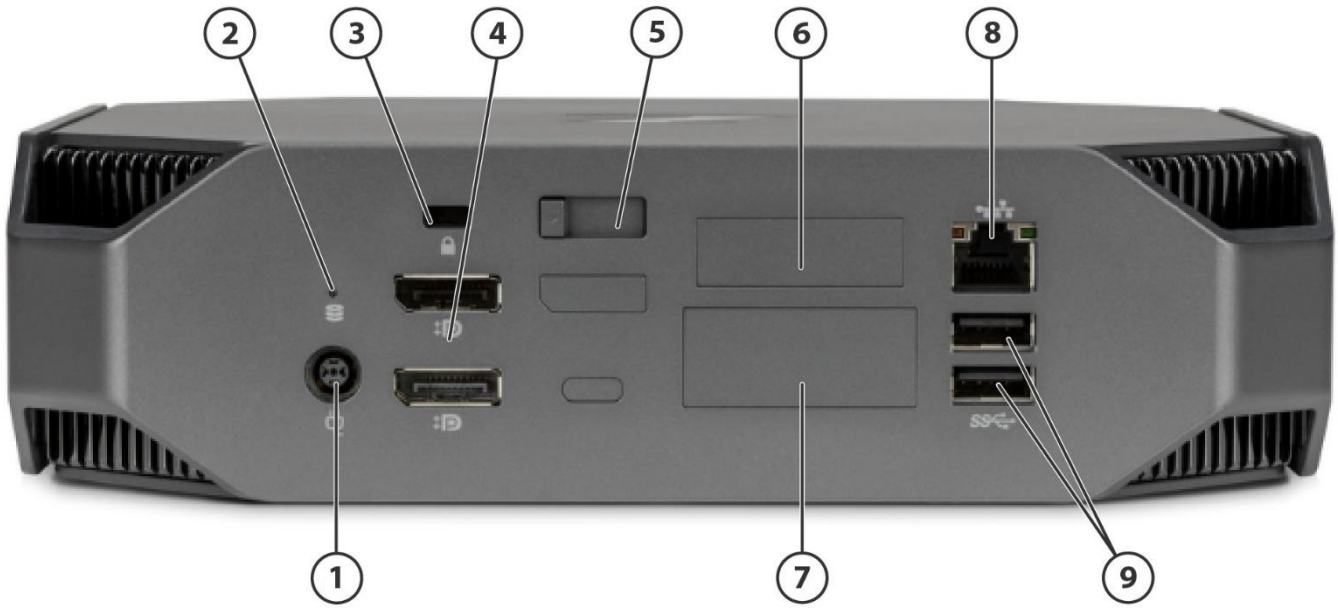
Overview

HP Z2 Mini G4 Workstation

Front View

1. Power Button
2. Headphones/Microphone combo port
3. 1 USB 3.0 Battery Charging Port
4. 1 USB 3.0 Port
5. 1 USB 3.1 Gen2 Type-C™ Battery Charging Port

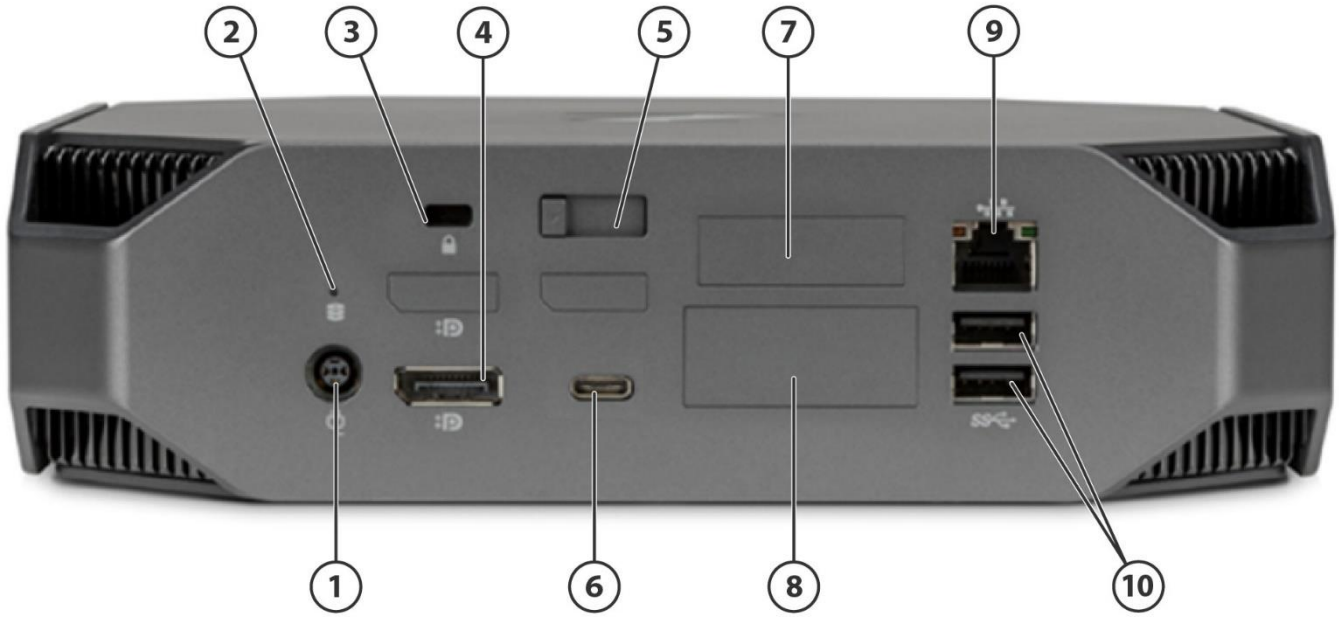
Overview



HP Z2 Mini G4 Entry, back view

1. DC In
2. HDD LED Status
3. Security Slot
4. (2) DisplayPorts™
5. Cover Latch
6. Optional Serial Port
7. Optional Flexible IO: Not loaded (Flex IO supports VGA/HDMI/DisplayPort™/2nd RJ-45/USB-C™ 3.1 Gen2 Charging Port with Alt mode)
8. RJ-45 (Ethernet
9. (2) USB 3.0 Ports

Overview



HP Z2 Mini G4 Performance with no discrete graphics, back view

1. DC Power Plug
2. HDD LED status
3. Kensington Lock slot
4. (1) DisplayPort™ Port
5. Cover latch
6. USB 3.1 Gen2 Type-C™ Port
7. Optional Serial Port
8. Optional Flex-Port: No Load (Options include: VGA/HDMI/DisplayPort™/2nd RJ-45/USB-C™ 3.1 Gen 2 Charging Port with Alt mode)
9. RJ-45 (Ethernet)
10. (2) USB 3.0 Ports

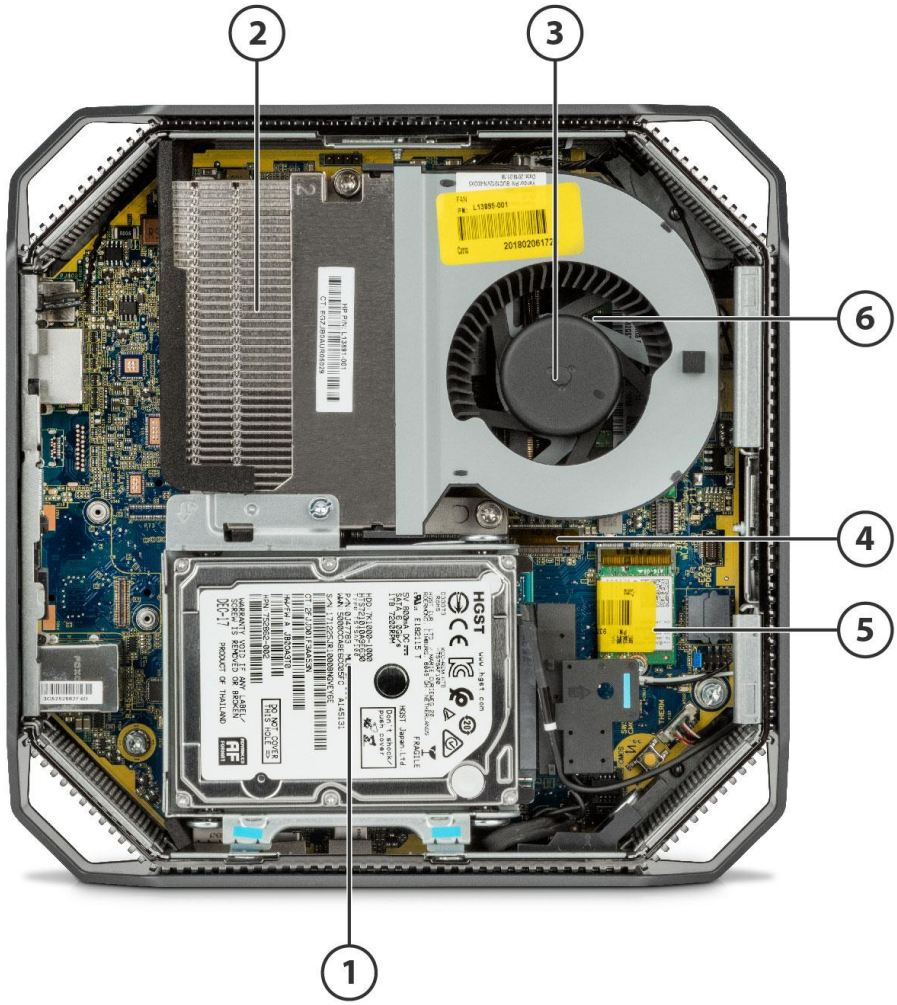
Overview

HP Z2 Mini G4 Performance with discrete graphics, back view

1. DC Power Plug
2. HDD LED status
3. Kensington Lock slot
4. (3) DisplayPort™ Port
5. Cover latch
6. USB 3.1 Gen2 Type-C™ Port
7. Optional Serial Port
8. Optional Flex-Port: No Load (Options include: VGA/HDMI/DisplayPort™/2nd RJ-45/USB-C™ 3.1 Gen 2 Charging Port with Alt mode)
9. RJ-45 (Ethernet)
10. (2) USB 3.0 Ports
11. Optional Flex-Port: DisplayPort™ (Options include: VGA/HDMI/DisplayPort™/2nd RJ-45/USB-C™ 3.1 Gen 2 Charging Port with Alt mode/No Load)

	Mini Entry	Mini Performance – no Nvidia/AMD graphics	Mini Performance – Nvidia/AMD graphics
DisplayPort™ Ports	2	1	3
Flex IO Port DisplayPort™ Port	1	1	1
Total possible DisplayPorts™ with Flex IO Port set as DisplayPort™	3	2	4

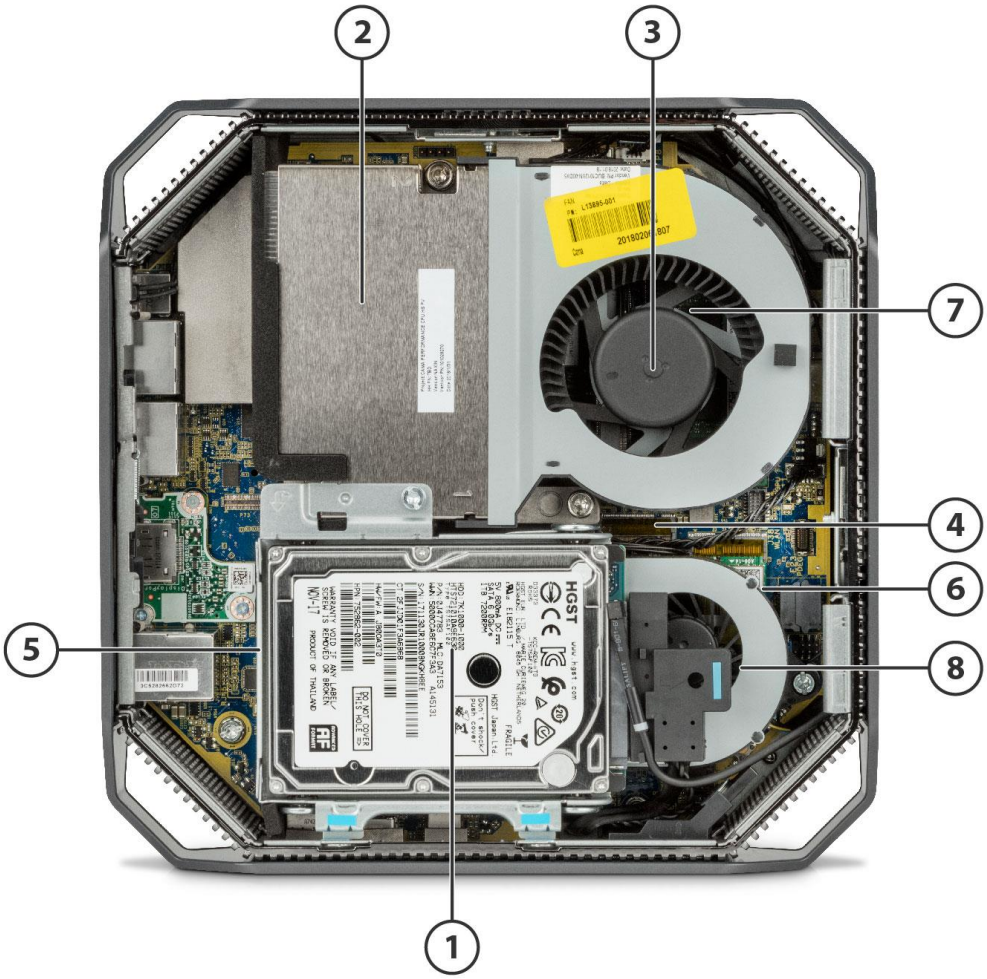
Overview



HP Z2 Mini G4 Entry, Internal View

1. SATA HDD/SSD (9.5mm 2.5”)
2. CPU heatsink
3. CPU blower
4. M.2 80mm (PCIe SSD)
5. M.2 30mm WLAN/BT (location change, TBD)
6. (2) SODIMM memory slots

Overview



HP Z2Mini G4 Performance, Internal View

1. SATA HDD/SSD (9.5mm 2.5”)
2. CPU heatsink
3. CPU blower
4. M.2 80mm (PCIe SSD)
5. GPU heatsink (underneath HDD/SSD cage)
6. M.2 30mm WLAN/BT (location change, TBD)
7. (2) SODIMM memory slots
8. GPU blower

Overview

HP Z2 G4 Mini, bottom view

Removable bottom feet for access to integrated VESA mounting holes

Overview

Form Factor	Mini Form Factor
Operating Systems	Preinstalled: • Windows 10 Home 64[1] • Windows 10 Pro 64[1] • Windows 10 Pro (National Academic License)[1] • Windows 10 Pro for Workstations – HP recommends Windows 10 Pro [1] • HP Linux®-ready Supported: • Red Hat® Enterprise Linux Workstation (1 year paper license available; Preinstall not available) **Notes:** For detailed OS/hardware support information for Linux, see: http://www.hp.com/support/linux_hardware_matrix • 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 http://www.windows.com

Overview

Processors*

Name	Cores	Clock Speed (GHz)	Intel® Turbo Boost Technology[3]	Cache (MB)	Memory Speed (MT/s)	Hyper-Threading	Integrated Graphics	Featuring Intel® vPro™ Technology[4]	16GB Intel® Optane™ memory[2]	TDP (W)
Z2 Mini G4 Performance base unit										
Intel® Xeon® processor E-2286G[1]	6	4.0	4.9	12	2666	Y	Intel® UHD Graphics P630	Y	N	80W
Intel® Xeon® processor E-2278G[1]	8	3.4	5.0	16	2666	Y	Intel® UHD Graphics P630	Y	N	80W
Intel® Xeon® processor E-2276G[1]	6	3.8	4.9	12	2666	Y	Intel® UHD Graphics P630	Y	N	80W
Intel® Xeon® processor E-2274G[1]	4	4.0	4.9	8	2666	Y	Intel® UHD Graphics P630	Y	N	80W
Intel® Xeon® processor E-2244G[1]	4	3.8	4.8	8	2666	Y	Intel® UHD Graphics P630	Y	N	80W
Intel® Xeon® processor E-2236[1]	6	3.4	4.8	12	2666	Y	N/A	Y	N	80W
Intel® Xeon® processor E-2226G[1]	6	3.4	4.7	12	2666	Y	Intel® UHD Graphics P630	Y	N	80W
Intel® Xeon® processor E-2224G[1]	4	3.4	4.6	8	2666	Y	Intel® UHD Graphics P630	Y	N	80W
Intel® Xeon® processor E-2176G[1]	6	3.7	4.7	12	2666	Y	Intel® UHD Graphics P630	Y	N	80W
Intel® Xeon® processor E-2174G[1]	4	3.8	4.7	8	2666	Y	Intel® UHD Graphics P630	Y	N	71W
Intel® Xeon® processor E-2144G[1]	4	3.6	4.5	8	2666	Y	Intel® UHD Graphics P630	Y	N	71W
Intel® Xeon® processor E-2136[1]	6	3.3	4.5	12	2666	Y	N/A	Y	N	80W
Intel® Xeon® processor E-2126G[1]	6	3.3	4.5	12	2666	N	Intel® UHD Graphics P630	Y	N	80W
Intel® Xeon® processor E-2124G[1]	4	3.4	4.3	8	2666	N	Intel® UHD Graphics P630	Y	N	71W
Intel® Xeon® processor E-2104G[1]	4	3.2	N/A	8	2666	N	Intel® UHD Graphics P630	Y	N	65W
Intel® Core™ i9-9900K processor[1,2]	8	3.6	5.0	16	2666	Y	Intel® UHD Graphics 630	Y	Y	95W
Intel® Core™ i9-9900 processor[1,2]	8	3.1	5.0	16	2666	Y	Intel® UHD Graphics 630	Y	Y	95W
Intel® Core™ i7-9700K processor[1,2]	8	3.6	4.9	12	2666	Y	Intel® UHD Graphics 630	Y	Y	95W
Intel® Core™ i7-9700 processor[1,2]	8	3.0	4.7	12	2666	Y	Intel® UHD Graphics 630	Y	Y	95W
Intel® Core™ i5-9600 processor[1,2]	6	3.1	4.6	9	2666	Y	Intel® UHD Graphics 630	Y	Y	95W

Overview

Intel® Core™ i5-9500 processor[1,2]	6	3.0	4.4	9	2666	Y	Intel® UHD Graphics 630	Y	Y	95W
Intel® Core™ i3-9100 processor[1]	4	3.6	4.2	8	2666	Y	Intel® UHD Graphics 630	Y	N	95W
Intel® Core™ i7-8700 processor[1]	6	3.2	4.6	12	2666	Y	Intel® UHD Graphics 630	Y	Y	65W
Intel® Core™ i5-8600 processor[1]	6	3.1	4.2	9	2666	N	Intel® UHD Graphics 630	Y	Y	65W
Intel® Core™ i5-8500 processor[1]	6	3.0	4.0	9	2666	N	Intel® UHD Graphics 630	Y	Y	65W
Intel® Core™ i3-8100 processor[1]	4	3.6	N/A	6	2400	N	Intel® UHD Graphics 630	N	N	65W
Intel® Pentium™ G5400 processor[1]	2	3.7	N/A	4	2400	Y	Intel® UHD Graphics 610	N	N	54W
Z2 Mini G4 Entry base unit										
Intel® Xeon® processor E-2104G[1]	4	3.2	N/A	8	2666	N	Intel® UHD Graphics P630	Y	N	65W
Intel® Core™ i7-8700 processor[1]	6	3.2	4.6	12	2666	Y	Intel® UHD Graphics 630	Y	Y	65W
Intel® Core™ i5-8600 processor[1]	6	3.1	4.2	9	2666	N	Intel® UHD Graphics 630	Y	Y	65W
Intel® Core™ i5-8500 processor[1]	6	3.0	4.0	9	2666	N	Intel® UHD Graphics 630	Y	Y	65W
Intel® Core™ i3-8100 processor[1]	4	3.6	N/A	6	2400	N	Intel® UHD Graphics 630	N	N	65W
Intel® Pentium™ G5400 processor[1]	2	3.7	N/A	4	2400	Y	Intel® UHD Graphics 610	N	N	54W

[1]Multicore 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, branding and/or naming is not a measurement of higher performance.

[2]Intel® Optane™ memory system acceleration does not replace or increase the DRAM in your system.

[3]The specifications shown in the Intel® Turbo Boost Technology column represent the maximum turbo frequency with one core active. Turbo boost stepping occurs in 100MHz increments. Processors that do not have turbo functionality are denoted as N/A. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See http://www.intel.com/technology/turboboost for more information.

[4]vPro. Some functionality of this technology, 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 third-party software providers. Compatibility of this generation of Intel vPro technology-based hardware with future "virtual appliances" is yet to be determined.

NOTES:
Integrated Intel® UHD graphics P630 is supported on select Intel® Xeon® E processors.
Intel® Xeon® E, Intel® Core™ i3 and Pentium can support either ECC or non-ECC memory; Intel® Core™ i5/i7 processors only support non-ECC memory.

Overview

NOTE: In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on http://www.support.hp.com.

Color	Space grey with black chrome accents
Convertibility	The Z2Mini G4 can either be placed flat on the desktop or mounted behind a display* or under a desk. * Mounting hardware sold separately.
Expansion Slots (see system board section for more details)	1 MXM slot (PCIe Gen3 x16) * 1 80mm M.2 Storage slot (PCIe Gen3 x4) 1 30mm M.2 WLAN slot (PCIe Gen3 x1 / Intel CNVI) ** * Performance only ** For WLAN/BT M.2 module only
Expansion Bays (see system board section for more details)	1 internal 2.5" bay (for SATA HDDs & SSDs only)
Front I/O	Power button
Slide I/O	1 USB-A 3.0 Charging Data Port, 1 USB 3.0 data port, combo headset/microphone port and 1 USB-C 3.1 Gen2 Charging Data Port.
Rear I/O	**Z2 Mini G4 Entry:** 2 DisplayPort™ (DP 1.2) outputs from Intel® UHD graphics, 2 USB 3.0 ports, 1 serial port (optional), RJ-45 (LOM) 1 Flexible module port output (Optional Flexible module required) **Z2 Mini G4 Performance[1]:** 3 DisplayPort™ (DP 1.2) outputs from discrete graphic module, 2 USB-A 3.0 ports, 1 USB 3.1 G2 Type-C™ ports, 1 serial port (optional), RJ-45 (LOM) 1 Flexible module port output (Optional Flexible module required) **NOTE 1:** Performance system is capable of supporting 6 displays. 6 display solution is achieved using a combination of Intel® UHD graphics and discrete graphics and is ONLY supported on Windows 10.
Chassis Dimensions (H x W x D)	Standard desktop orientation: 58 x 216 x216 mm (2.28 x 8.5 x 8.5 in)
Weight	Exact weights depend upon configuration; Minimum Weight: 1.93 kg (4.25 lb) Typical Weight*: 2.18 kg (4.80 lb) Maximum Weight: 2.23 kg (4.91 lb) Max Supported Weight (desktop orientation): 35 kg (77 lb) * Configured with 1 2.5" hard drive, 1 PCIe SSD, WLAN module, 2 DIMMs and 1 NVIDIA® Quadro® graphics card
Power Supply	Z2 Mini G4 Entry: 135W 89% Efficiency Z2 Mini G4 Performance: 200W 89% Efficiency 230W 88% Efficiency **NOTES:** Customers placing their system in an enclosure should design their solution to accommodate the size of the external power supply for the Z2 Mini G4
Chipset	Intel® C246 chipset
Memory	2 SODIMM slots, supporting up to 64GB ECC/non-ECC, DDR4 2666 MT/s

Overview

The CPUs determine the speed at which the memory is clocked. If a 2666 MT/s capable CPU is used in the system, the maximum speed the memory will run at is 2666 MT/s regardless of the specified speed of the memory.
Note: Transfer rates up to 2666MT/s

Workstation ISV Certifications	See the latest list of certifications at http://www.hp.com/united-states/campaigns/workstations/partnerships.html

Supported Components

Processors	Factory Configured	Option Kit
Intel® Xeon® processor E-2100 family[2]		
Intel® Xeon® processor E-2286G	Y	N
Intel® Xeon® processor E-2278G	Y	N
Intel® Xeon® processor E-2276G	Y	N
Intel® Xeon® processor E-2274G	Y	N
Intel® Xeon® processor E-2244G	Y	N
Intel® Xeon® processor E-2236	Y	N
Intel® Xeon® processor E-2226G	Y	N
Intel® Xeon® processor E-2224G	Y	N
Intel® Xeon® processor E-2176G[1]	Y	N
Intel® Xeon® processor E-2174G[1]	Y	N
Intel® Xeon® processor E-2144G[1]	Y	N
Intel® Xeon® processor E-2136[1]	Y	N
Intel® Xeon® processor E-2124G[1]	Y	N
Intel® Xeon® processor E-2104G	Y	N
9th generation Intel® Core™ processor family		
Intel® Core™ i9-9900K 3.6 2666 8C CPU	Y	N
Intel® Core™ i9-9900 3.1 2666 8C CPU	Y	N
Intel® Core™ i7-9700K 3.6 2666 8C CPU	Y	N
Intel® Core™ i7-9700 3.0 2666 8C CPU	Y	N
Intel® Core™ i5-9600 3.1 2666 6C CPU	Y	N
Intel® Core™ i5-9500 3.0 2666 6C CPU	Y	N
Intel® Core™ i3-9100 3.6 2666 4C CPU	Y	N
8th generation Intel® Core™ processor family[3]		
Intel® Core™ i7-8700 3.2 26666 6C CPU	Y	N
Intel® Core™ i5-8600 3.1 2666 6C CPU	Y	N
Intel® Core™ i5-8500 3.0 2666 6C CPU	Y	N
8th generation Intel® Core™ i3/Pentium processor family[2]		
Intel® Core™ i3-8100 3.6 2400 4C CPU	Y	N
Intel® Pentium® G5400 3.7 2400 2C CPU	Y	N

NOTE 1: Only supported on Z2 Mini G4 Performance Base Unit
NOTE 2: These processor support either ECC or non-ECC memory
NOTE 3: These processors support only non-ECC memory
NOTE 4: Intel® Integrated Graphics P630 for Xeon® processors supports workstation-specific graphics drivers for improved compatibility and performance on select professional applications, compared to Intel® UHD Graphics 630.
NOTE 5: Intel® Optane™ memory system acceleration does not replace or increase the DRAM in your system.

Monitors / Displays	Factory Configured	Option Kit	Option Kit Part Number
HP Z Display Z27n G2 27-inch IPS LED Backlit Monitor		Y	1JS10AA

Supported Components

	HP Z Display Z24n G2 24-inch IPS LED Backlit Monitor	Y	1JS09AA
	HP Z Display Z24nf G2 23.8-inch IPS Backlit Monitor	Y	1JS07AA
	HP Z Display Z23n G2 23-inch IPS LED Backlit Monitor	Y	1JS06AA
	HP Z Display Z22n G2 21.5-inch IPS LED Backlit Monitor	Y	1JS05AA
Notes	Supported by all Operating Systems available from HP Screen Size Diagonally Measured		

Supported Components

SATA Hard Drives		Factory Configured	Option Kit	Option Kit Part Number
	500GB SATA 7200 rpm 6Gb/s SFF HDD	Y	Y	T0K73AA
	1TB SATA 7200 rpm 6Gb/s SFF HDD	Y	Y	T0K74AA
	2 TB SATA 5400 rpm SFF HDD	Y	N	
SATA Solid State Drives	HP 256GB SATA 6Gb/s SSD	Y	Y	A3D26AA
	Storage Acceleration			
	16GB Intel® Optane™ memory*	Y	Y	2EB68AA

*Intel® Optane™ memory (cache) is sold separately. Intel® Optane™ memory system acceleration does not replace or increase the DRAM in your system. Available for HP commercial desktops and notebooks and for select HP workstations (HP Z2 Tower/SFF/Mini G4, ZBook Studio, 15 and 17 G5) and requires a SATA HDD, 7th Gen or higher Intel® Core™ processor or Intel® Xeon® processor E3-1200 V6 product family or higher, BIOS version with Intel® Optane™ supported, Windows 10 version 1703 or higher, M.2 type 2280-S1-B-M connector on a PCH Remapped PCIe Controller and Lanes in a x2 or x4 configuration with B-M keys that meet NVMe™ Spec 1.1, and an Intel® Rapid Storage Technology (Intel® RST) 16.5 driver.

PCIe SSDs	PCIe SSDs for HP Workstations*	Factory Configured	Option Kit	Option Kit Part Number
	HP Z Turbo Drive G2 256GB TLC (Z2 Mini G4)	Y	Y	Y7B60AA
	HP Z Turbo Drive G2 512GB TLC (Z2 Mini G4)	Y	Y	5SA16AA/AT
	HP Z Turbo Drive G2 1TB TLC (Z2 Mini G4)	Y	Y	5RR60AA
	HP Z Turbo Drive G2 2TB TLC (Z2 Mini G4)	Y	Y	3KP44AA
	HP Z Turbo Drive G2 256GB SED TLC (Z2Mini G4)	Y	Y	5RR63AA
	HP Z Turbo Drive G2 512GB SED TLC (Z2 Mini G4)	Y	Y	5RR64AA
	HP Z Turbo Drive G2 1TB SED TLC (Z2 Mini G4)	Y	Y	6YT78AA
	** Installed in native M.2 storage slot on Z2 Mini G4 motherboard			

*M.2 card heatsink is required for M.2 storage.

NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB (for Windows 10) of system disk is reserved for system recovery software.

Graphics		Factory Configured	Option Kit	Option Kit Part Number	Supported # of cards
Integrated Graphics	**Integrated Intel® UHD Graphics (Z2G4)**				
	Intel® UHD Graphics P630	Y	N		1
	Intel® UHD Graphics 630	Y	N		1
	Intel® UHD Graphics 610	Y	N		1
Discrete Graphics	NVIDIA® Quadro® P600 4GB Graphics[1]	Y	Y	3TQ28AA	1
	NVIDIA® Quadro® P1000 4GB Graphics[1]	Y	Y	3TQ30AA	1
	AMD Radeon™ Pro WX 4150 4GB Graphics[1,2]	Y	Y	3TQ29AA	1
	HP DisplayPort™ To DVI-D Adapter	Y	Y	FH973AA	

Supported Components

Graphics DisplayPort™ Cable Adapters	HP DisplayPort™ To VGA Adapter	N	Y	AS615AA
	HP DisplayPort™ to Dual Link DVI Adapter	N	Y	NR078AA
	HP DisplayPort™ to HDMI Adapter	N	Y	TBD
	HP USB-C to VGA Adapter	N	Y	4SH06AA
	HP USB-C to HDMI Adapter	N	Y	4SH07AA
	HP USB-C to DP Adapter	N	Y	4SH08AA

Notes

NOTE 1: Only offered on Z2 Mini G4 Performance base unit

NOTE: Intermixing integrated Intel® UHD graphics and discrete graphics cards to drive more than three displays can be enabled using the Computer (F10) Setup Utility. However, HP recommends using only discrete graphics when four or fewer displays are required to be supported. 6 display solution is achieved using a combination of Intel® UHD graphics and discrete graphics and is ONLY supported on Windows 10.

Supported Components

Memory

DDR4-2666 ECC Unbuffered SODIMMs - CTO

HP 8GB (1x8GB) DDR4-2666 ECC SODIMM
HP 16GB (2x8GB) DDR4-2666 ECC SODIMM
HP 32GB (2x16GB) DDR4-2666 ECC SODIMM
HP 64GB (2x32GB) DDR4-2666 ECC SODIMM

DDR4-2666 non-ECC Unbuffered SODIMMs - CTO

HP 4GB (1x4GB) DDR4-2666 nECC SODIMM
HP 8GB (2x4GB) DDR4-2666 nECC SODIMM
HP 8GB (1x8GB) DDR4-2666 nECC SODIMM
HP 16GB (2x8GB) DDR4-2666 nECC SODIMM
HP 32GB (2x16GB) DDR4-2666 nECC SODIMM
HP 64GB (2x32GB) DDR4-2666 nECC SODIMM

NOTES: Intel® Xeon® E, Intel® Core™ i3 and Intel® Pentium® processors can support either ECC or non-ECC memory; Intel® Core™ i5/i7 processors only support non-ECC memory.

Two channels of DDR4 memory are supported. To realize full performance at least one DIMM must be inserted into each channel.

The CPUs determine the speed at which the memory is clocked. If a 2666 MT/s capable CPU is used in the system, the maximum speed the memory will run at is 2666 MT/s regardless of the specified speed of the memory.

AMO	Option Kit Part Number
DDR4-2666 ECC Unbuffered SODIMMs - AMO	
HP 8GB (1x8GB) DDR4-2666 ECC RAM	3TQ37AA
HP 16GB (1x16GB) DDR4-2666 ECC SODIMM	3TQ38AA
HP 32GB (1x32GB) DDR4-2666 ECC SODIMM	6FR90AA
HP 4GB (1x4GB) DDR4-2666 nECC RAM	3TQ34AA
HP 8GB (1x8GB) DDR4-2666 nECC RAM	3TQ35AA
HP 16GB (1x16GB) DDR4-2666 nECC RAM	3TQ36AA
HP 32GB (1x32GB) DDR4-2666 nECC SODIMM	6FR89AA

NOTE: Only unbuffered DDR4 SODIMMs are supported.

Multimedia and Audio Devices	Factory Configured	Option Kit	Option Kit Part Number
Integrated Conexant CX20632 5.1 HAD Audio	Y	N	

Optical and Removable Storage	Factory Configured	Option Kit	Option Kit Part Number
HP SlimTray Optical Drives			
HP External Ultra-Slim DVD-RW Drive	N	Y	Y3T76AA

Supported Components

Actual speeds may vary. Does not permit copying of commercially available DVD movies or other copyright protected materials. Intended for creation and storage of your original material and other lawful uses. Double Layer discs can store more data than single layer discs. However, double-layer discs burned with this drive may not be compatible with many existing single-layer DVD drives and players.

Networking and Communications	Factory Configured	Option Kit	Option Kit Part Number
Integrated Intel® I219LM PCIe GbE Controller (Intel® vPro™ with Intel® AMT 12.0)	Y	N	
Intel® 9560 Wireless LAN (802.11ac) and Bluetooth® 5 Module	Y	N	
Allied Telesis 1GbE LC Fiber 2pc Module	Y	N	

NOTE 1: The integrated network connection is required to support Intel® vPro™ Technology.
NOTE 2: If AMT is provisioned, then network teaming with the integrated LAN port is not possible.
NOTE 3: "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

Racking and Physical Security	Factory Configured	Option Kit	Option Kit Part Number
HP Keyed Cable Lock 10mm	N	Y	T1A62AA
Z2 Mini ePSU Sleeve	N	Y	3RW68AA
HP Z2 Mini Vertical Stand	N	Y	3RW66AA

Input Devices	Factory Configured	Option Kit	Option Kit Part Number
HP USB Optical Mouse	Y	Y	QY777AA
HP USB Hardened Mouse	Y	Y	P1N77AA
3Dconnexion CADMouse	N	Y	M5C35AA
HP USB Business SlimCCID SmartCard Keyboard	Y	Y	
HP USB Business Slim Keyboard	Y	Y	N3R87AA
HP USB Premium Keyboard	Y	Y	Z9N40AT
HP Wireless Business Slim Keyboard & Mouse	Y	Y	N3R88AA

Other Hardware	Factory Configured	Option Kit	Option Kit Part Number
HP Serial Port Adapter	Y	N	PA716A
HP Z2 Mini G4 VESA Sleeve	N	Y	Y7B61AA
Z2 Mini G4 Z Display VESA Mount Solution - Current Displays	N	Y	N6N00AA*

Supported Components

Z2 Mini G4 Z Display VESA Mount Solution - Legacy Displays	N	Y	E5J35AA**

* Current: "n" displays. This mounting kit supports the following displays: Z2G42n/Z2G43n/Z2G44n/Z2G45n/Z2G47n, /Z2G44nf/Z2G44nq/Z2G44s/Z2G47q/Z32s/Z32x/HC240/HC270/E240c/E272.

** Legacy: "I" displays. This mounting kit supports the following displays: Z2G44i/Z2G47i/Z30i, /Z30i/Z2G44x/Z2G47x.

Rear Module Options

	Factory Configured	Option Kit	
HP Flex IO module (VGA)	Y	Y	3TK80AA
HP Flex IO module (HDMI)*	Y	Y	3TK74AA
HP Flex IO module (DP)	Y	Y	3TK72AA
HP Flex IO module (USB-C)	Y	Y	4KY84AA
HP Flex IO module (Thunderbolt™ 3.0)	Y	Y	3TQ25AA
HP Flex IO module (1 GbE LAN)	Y	Y	3TQ26AA
HP Serial Port Mini module	Y	Y	3TQ27AA

*HP Flex IO module (HDMI) is only supported with Intel UHD graphics. The Z2 Mini G4 will automatically switch to Intel(R) UHD graphics on the Flex IO port when this module is inserted into the system.

Software

	Factory Configured	Option Kit	Support Notes
HP Performance Advisor	Y	N	See Note 1
HP Velocity	Y	N	
HP Client Security Software	Y	N	
HP Remote Graphics Software (RGS) 7.x	Y	N	
HP PC Hardware Diagnostics UEFI	Y	N	See Note 2

NOTE 1: Supports, and preinstalled with Windows 10 only. Also available as a free download from http://www.hp.com/go/performanceadvisor
NOTE 2: Windows OS only

Operating Systems

Windows 10 Home 64
Windows 10 Pro 64
Windows 10 Pro (National Academic License)
Windows 10 Pro for Workstations – HP recommends Windows 10 Pro
Red Hat® Enterprise Linux® (RHEL) Workstation - Paper License (1yr)

NOTE: For detailed QS/hardware support information for Linux, see: http://www.hp.com/support/linux_hardware_matrix

Supported Components

HP BIOS

Key features of the HP BIOS include:

- Deployment and manageability – HP BIOS provides several technologies that help integrate the HP Z2 G4 Workstation into the enterprise, such as PXE, remote recovery, remote configuration, remote control, and BIOS (F10) Setup support for 14 languages.
- Network firmware updates – Update your BIOS via the cloud or standardize on a BIOS version hosted on an Enterprise network.
- Stability – HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.
- UEFI specification version 2.6
- Absolute Persistence agent – For tracking and tracing services, available in select countries, separate software and purchase of a subscription is required.
- Thermal and power management – The HP BIOS provides and enables thermal and power management technologies so component temperatures are managed for high reliability and to assist in operating the HP Business Desktop computer in any enterprise environment.
- Acoustic performance – Industry leading acoustic emissions across the range of operating conditions.
- Serviceability – HP BIOS provides diagnostic and detailed service information.
- Upgrades and recovery – HP BIOS provides numerous ways to upgrade HP Business Desktop computers, including BIOS updates from within Windows (HP Firmware Update and Recovery), HP Client Manager, and fail-safe recovery. In addition, the HP BIOS Configuration Utility enables replication of BIOS settings within Windows while the Replicated Setup feature provides the same capability within BIOS (F10) Setup. The BIOS Configuration Utility is available from the HP support website.
- HP BIOS uses PKI signing of the BIOS for trusted BIOS upgrades and recovery.

Additional HP BIOS Features:

- Power-On password – Helps prevent an unauthorized user from powering on the system.
- Administrator password – Also known as the BIOS Setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS cannot be updated and changes cannot be made to BIOS settings using BIOS Setup or under the OS. and changes cannot be made to BIOS settings using BIOS Setup or under the OS. and changes cannot be made to BIOS settings using BIOS Setup or under the OS.
- S4/S5 Maximum Power Savings setting supports EU Lot6 requirement and allows the computer to power down below 0.5W in S4/S5 (when turned off). When S4/S5 Maximum Power Savings feature is enabled below features are turned off:
  -Power to expansion connectors / slots
  -Wake events other than power buttons (such as wake on LAN)
  -USB charging ports

HP Sure Start Gen4 Start

- BIOS Integrity checking – Sure Start protection ensures that only trusted BIOS code is executed and not rootkits, viruses and malware. Verification is done upon boot up, shutdown and while the system is on.
- Sure Start is set by default to automatically repair the BIOS if corrupted or compromised but is policy driven for better manageability. Start is set by default to automatically repair the BIOS if corrupted or compromised but is policy driven for better manageability. Start is set by default to automatically repair the BIOS if corrupted or compromised but is policy driven for better manageability.

Supported Components

- Protecting beyond BIOS – Integrity checking and repair is extended to other data that should be protected such as network configuration parameters, platform specific information (i.e. system IDs), secure boot credentials, and other code the system needs to boot. and repair is extended to other data that should be protected such as network configuration parameters, platform specific information (i.e. system IDs), secure boot credentials, and other code the system needs to boot. and repair is extended to other data that should be protected such as network configuration parameters, platform specific information (i.e. system IDs), secure boot credentials, and other code the system needs to boot.
- Audit enabled – System Audit via Sure Start Event Logs capture data such as incident, repair date and time for troubleshooting and investigating

HP Sure Start Gen4 is available on HP Workstation products equipped with Intel® 8th generation processors.

Remote Power On

Benefits of the Remote Power:

- Make it easier to power-on HP Z2 Mini G4 Workstation by USB keyboard/mouse in some use scenarios.
- Support wired/wireless, USB low speed/full speed keyboards and mousses.
- Easy setup in BIOS menu.
- Support waking from both S4 (Hibernate) and S4/S5 (Shutdown).

Limitations:

- Waking from S4/S5 is limited to only via keyboard/mouse device.

Instructions:

1. Connect USB keyboard/mouse to USB port.
2. System must recognize USB keyboard/mouse in S0 first. (USB full speed keyboard/mouse, such as wireless keyboard/mouse or Smart card keyboard need to connect to system over 60 seconds in S0 to be recognized on charging port.)
3. Sleep to S4 or S5.
4. Wake system by any key on keyboard or clicking/movement* on mouse.

* If mouse has the capability to wake system by movement

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

BIOS
HP BIOSphere Gen4[17]
HP DriveLock & Automatic
BIOS Update via Network
Master Boot Record Security
Power On Authentication Authentication
Secure Erase [18]
Absolute Persistence Module[19]
Pre-boot Authentication
HP Wireless Wakeup

Software
HP Hotkey Support

Supported Components

HP Performance Advisor
HP Velocity
HP Remote Graphics Software (RGS) 7.x

Manageability Features
HP Driver Packs[22]
HP System Software Manager (SSM)
HP BIOS Config Utility (BCU)
HP Client Catalog
HP Manageability Integration Kit Gen2[23]

Client Security Software
HP Client Security Suite Gen4[25] including:
HP Security Manager[26] (including Credential Manager, HP Password Manager, HP Spare Key)
HP Device Access Manager
HP Power On Authentication Authentication
Microsoft Defender[27]

Security Management
Secure Erase[18]
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)[32]
SATA port disablement (viaBIOS))
Serial, USB enable/disable (viaBIOS))
Power-on password (viaBIOS))
Setup password (viaBIOS))
HP Sure Click[35]
HP Sure Start Gen4[30]
HP Sure Run[33]
HP Sure Recover[34]

17. HP BIOSphere Gen4 requires Intel(R) or AMD 8th Gen processors. Features may vary depending on the platform and configurations.
18. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.
19. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: http://www.absolute.com/company/legal/agreements/ computrace-agreement. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.-agreement. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
22. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
23. HP Manageability Integration Kit can be downloaded from http://www8.hp.com/us/en/ads/clientmanagement/overview.html
25. HP Client Security Suite Gen 4 requires Windows and Intel® or AMD 8th generation processors.
26. HP Password Manager requires Internet Explorer or Chrome or FireFox. Some websites and applications may not be supported. User may need to enable or allow the add-on / extension in the internet browser.. Some websites and applications may not be supported. User may need to enable or allow the add-on / extension in the internet browser.
27. Microsoft Defender Opt in and internet connection required for updates. in and internet connection required for updates.
30. HP Sure Start Gen4 is available on HP Workstation products equipped with Intel® 8th generation processors
32. Firmware TPM is version 7.63. Hardware TPM is v2.0. .
33. HP Sure Run is available on HP Workstation products equipped with 8th generation Intel® or AMD® processors.

Supported Components

34. HP Sure Recover is available on HP Elite PCs with 8th generation Intel® or AMD processors and requires an open, wired network connection. Not available on platforms with multiple internal storage drives, Intel® Optane™. You must back up important files, data, photos, videos, etc. before use to avoid loss of data.
35. HP Sure Click is available on most HP PCs and supports Microsoft® Internet Explorer, Google Chrome, and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode, when Microsoft Office or Adobe Acrobat are installed.

System Technical Specifications

System Board

System Board Form Factor	Entry: 200mm x 200mm (7.9 x 7.9 inches) Performance: 200mm x 200mm (7.9 x 7.9 inches)
Processor Socket	Single LGA 1151
CPU Bus Speed	DMI link between CPU & PCH: Performance comparable to PCIe Gen3 x4
Chipset	Intel® PCH C246
Memory Expansion Slots	2 SODIMM DDR4 memory slots
Memory Type Supported	DDR4, UDIMM (Unbuffered), ECC & non-ECC
Memory Modes	Non-Interleaved for single channel. Interleaved when both channels are populated.
Memory Speed Supported	2666MHz DDR4 for Coffeelake processors;
Memory Protection	ECC available on data *Requires ECC DIMMs to be installed, as well as a CPU that supports ECC
Maximum Memory	64GB
Memory Configuration (Supported)	4GB, 8GB, 16GB and 32GB non-ECC/ 8GB, 16GB and 32GB ECC unbuffered DIMMs are supported. ECC and non-ECC memory DIMMs cannot be mixed on the same system.
Notes	Maximum memory capacities assume 64-bit operating systems, such as Windows® 10 Professional 64-Bit or Red Hat Linux 64-bit.

Supported Drive Interfaces	**SATA**	Integrated (1) Serial ATA interfaces (6Gb/s SATA).
	Integrated Graphics	Intel® UHD Graphics 610 (on Pentium™ Gold-5xxx processors); Intel® UHD Graphics 630 (on Core™ i3/i5/i7-8xxx processors); Intel® UHD Graphics P630 for Xeon® E processors based on Unified Memory Architecture (UMA). A region of system memory is reserved and dedicated to the graphics display. Support for Microsoft DirectX 12.1, OpenGL 4.4 and OpenCL 2.0 on Intel® UHD Graphics P630. **Entry:** (2) DP 1.2 graphics ports integrated on motherboard; (1) DP 1.2 graphic capable through use of Flexible DP module. Supports up to three simultaneous displays across DP outputs. Max. resolution supported: 4096x2160 @60Hz **Performance:** (1) DP 1.2 graphics ports integrated on motherboard switchable between intel® graphic and discrete graphic; (1) DP 1.2 graphic capable through use of Flexible DP module switchable between intel®

System Technical Specifications

		graphic and discrete graphic. Supports up to three simultaneous displays from Intel® graphic across DP outputs. (2) DP 1.2 graphic port dedicated for display from discrete graphics Max. resolution supported: 4096x2160 @60Hz
	Network Controller	Integrated Ethernet PHY Connection I219LM. Management capabilities: WOL, PXE 2.1 and AMT 12.0
	Serial	1 rear port (configurable option)
IEEE 1394 Connector(s)		
USB Connector(s)	**Front**	Side I/O: 2 USB 3.0 Type-A 1 USB 3.1 G2 Type-C™
	Rear	2 USB 3.0 Type-A 1 USB 3.1 G2 Type-C™ (Z2 Mini G4 Performance only)
HD Integrated Audio	Yes; supports CTIA headset	
Flash ROM	Yes	
Chassis Fan Header	Yes Additional CPU/GFX Cooler (Z2 Mini G4 Performance only)	
Front Control Panel/Speaker Header	Side I/O: Yes	
CMOS Battery Holder - Lithium	Yes	
Integrated Trusted Platform Module	Integrated TPM 2.0	
Power Supply Headers	Yes, single DC-in jack for external power supplies	
Power Switch, Power LED & Hard Drive LED Header	1. The power and failure LED are combined in the front power switch. 2. The HDD LED & DC-in LED are combined within one port on the Rear I/O. The LED will be lit once the AC power is plugged in. As soon as the system is booted up, the LED will function as a standard HDD activity LED.	
Clear Password Jumper	Yes	
Keyboard/Mouse	USB	
Power Supply	Z2 Mini G4 Entry: 135W, 89% efficiency, wide-ranging, active PFC Power Supply Z2 Mini G4 Performance: 200W, 89% efficiency, wide-ranging, active PFC Power Supply Z2 Mini G4 Performance: 230W, 88% efficiency, wide-ranging, active PFC Power Supply The Z2 Mini G4 PSU Efficiency Report can be found at this link: TBD	
Operating Voltage Range	115-230 VAC	
Rated Voltage Range	100–240 VAC	
Rated Line Frequency	50-60 Hz	
Operating Line Frequency Range	47–63 Hz	
Rated Input Current	Z2 Mini G4 Entry: 1.9A @ 90Vac Z2 Mini G4 Performance: 2.9A @ 90Vac (200W EPS) Z2 Mini G4 Performance: 3.5A @ 90Vac (230W EPS)	

System Technical Specifications

Heat Dissipation	Typical: TBD btu/hr (TBD kcal/hr) Maximum: TBD btu/hr (TBD kcal/hr)
ENERGY STAR® certified (Config Dependent)	Yes
FEMP Standby Power Compliant	Yes, with Wake-on-LAN disabled: <1W in S4/S5- Power Off
Surge Tolerant Full Ranging Power Supply (withstands power surges up to 2000V)	Yes

System Configurations

Z2 Mini G4 Configuration #1 (TBD)
ENERGY STAR CERTIFIED

Processor Info	1x Intel® Core® i3-8100 3.6 6MB 4C
Memory Info	8GB (1x8GB) DDR4-2666 ECC SO-DIMM
Graphics Info	Intel® UHD Integrated Graphics 630
Disks/Optical/Floppy	1x 1TB 7200 RPM SATA HDD / 1x Z Turbo Drive G2 512GB PCIe 1st SSD
Power Supply	135W EPS
Other	Ethernet Capable

Energy Consumption (Watts)

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled
Windows long Idle (S0)	9.765		9.900		9.642	
Windows short Idle (S0)	10.042		10.241		10.146	
Windows Busy Typ(S0)	73.371		74.665		74.087	
Windows Busy Max (S0)	94.000		95.034		94.412	
Sleep (S3)	1.069	0.860	1.154	0.931	1.118	1.046
Off (S5)	0.858	0.748	0.928	0.815	0.856	0.755
Zero Power Mode (ErP)	0.364		0.423		0.366	

Heat Dissipation (Btu/hr)

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Enabled	LAN Disabled	LAN Enabled
Windows long Idle (S0)	33.318		6.488		32.899	
Windows short Idle (S0)	34.263		34.942		34.618	
Windows Busy Typ(S0)	250.342		254.757		252.785	
Windows Busy Max (S0)	320.728		324.256		322.133	
Sleep (S3)	3.647	2.934	3.937	3.177	3.815	3.569
Off (S5)	2.927	2.552	3.166	2.781	2.921	2.576
Zero Power Mode (ErP)	1.242		1.443		1.249	

Z2 Mini G4 Configuration #2 (TBD)

Processor Info	1x Intel® Core® i7-8700 3.2 12MB 6C
Memory Info	HP 16GB (2x8GB) DDR4-2666 non-ECC SO-DIMM
Graphics Info	NVIDIA Quadro P600 4GB next MXM
Disks/Optical/Floppy	1x 1TB Z Turbo Drive G2 M.2 SSD
Power Supply	200W EPS

System Technical Specifications

	Other	Ethernet Capable

Energy Consumption (Watts)

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled
Windows long Idle (S0)	15.577		15.580		15.528	
Windows short Idle (S0)	17.197		17.306		17.557	
Windows Busy Typ(S0)	171.57		156.86		161.7	
Windows Busy Max (S0)	196.85		192.95		204.03	
Sleep (S3)	1.169	1.05	1.206	1.111	1.174	1.111
Off (S5)	1.024	0.859	1.056	0.923	0.946	0.865
Zero Power Mode (ErP)	0.449		0.489		0.411	

Heat Dissipation (Btu/hr)

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Enabled	LAN Disabled	LAN Enabled
Windows long Idle (S0)	53.149		53.159		52.981	
Windows short Idle (S0)	58.676		59.048		59.904	
Windows Busy Typ(S0)	585.397		535.206		551.720	
Windows Busy Max (S0)	671.652		658.345		696.150	
Sleep (S3)	3.987	3.583	4.115	3.791	4.006	3.791
Off (S5)	3.494	2.931	3.603	3.149	3.228	2.951
Zero Power Mode (ErP)	1.532		1.668		1.402	

Z2 Mini G4 Configuration #3 (TBD)

ENERGY STAR CERTIFIED

Processor Info	1x Intel® Xeon™ E-2176G 3.7 12M 6C
Memory Info	32GB (2x16GB) DDR4-2666 ECC SO-DIMM
Graphics Info	AMD Radeon Pro WX 4150 4GB MXM
Disks/Optical/Floppy	1x 500 GB 7200 RPM SATA HDD
Power Supply	230W EPS
Other	Ethernet Capable

Energy Consumption (Watts)

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled	LAN Enabled	LAN Disabled
Windows long Idle (S0)	21.060		21.158		19.434	
Windows short Idle (S0)	21.114		21.427		20.238	
Windows Busy Typ(S0)	184.74		184.26		200.1	
Windows Busy Max (S0)	210.48		201.97		208.93	
Sleep (S3)	1.184	1.096	1.181	1.105	1.204	1.119
Off (S5)	0.841	0.718	0.845	0.724	0.857	0.729
Zero Power Mode (ErP)	0.435		0.441		0.436	

Heat Dissipation (Btu/hr)

	115 VAC		230 VAC		100 VAC	
	LAN Enabled	LAN Disabled	LAN Enabled	LAN Enabled	LAN Disabled	LAN Enabled
Windows long Idle (S0)	71.857		72.191		66.309	
Windows short Idle (S0)	72.041		73.109		69.052	
Windows Busy Typ(S0)	630.333		628.695		682.741	
Windows Busy Max (S0)	718.158		689.122		712.869	
Sleep (S3)	4.040	3.740	4.030	3.770	4.108	3.818
Off (S5)	2.869	2.450	2.883	2.470	2.924	2.487
Zero Power Mode (ErP)	1.484		1.505		1.488	

Declared Noise Emissions Z2 Mini G4 (Entry)

System Technical Specifications

Declared Noise Emissions (Entry-level and High-end configurations)

System Configuration (Entry level With HDD)	**Processor Info**	Intel® Core™ i3-8100 4C	
	Memory Info	1 - 8GB DDR4-2666 SO-DIMM Memory	
	Graphics Info	Intel UHD Graphics	
	Disks/SSD	1 - Hitachi 500GB SATA 7200RPM HDD 1 - Samsung 256GB PCIe M.2 SSD	
Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)		**Sound Power** (LWAd, bels)	**Deskside Sound Pressure** (LpAm, decibels)
	Idle	TBD	TBD
	Hard drive Operating (random reads)	TBD	TBD
System Configuration (Entry level Only SSD)	**Processor Info**	Intel® Core™ i3-8100 4C	
	Memory Info	1 - 8GB DDR4-2666 SO-DIMM Memory	
	Graphics Info	Intel UHD Graphics	
	Disks/SSD	N / A 1 - Samsung 256GB PCIe M.2 SSD	
Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)		**Sound Power** (LWAd, bels)	**Deskside Sound Pressure** (LpAm, decibels)
	Idle	TBD	TBD
	Hard drive Operating (random reads)	TBD	TBD
System Configuration (High-end)	**Processor Info**	Intel® Core™ i7-8700 6C	
	Memory Info	2 - 8GB DDR4-2666 SO-DIMM Memory	
	Graphics Info	Intel UHD Graphics	
	Disks/SSD	1 - Hitachi 1TB SATA 7200RPM HDD 1 - Samsung 512GB PCIe M.2 SSD	
Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)		**Sound Power** (LWAd, bels)	**Deskside Sound Pressure** (LpAm, decibels)
	Idle	3.14	19.2
	Hard drive Operating (random reads)	3.18	19.4

Declared Noise Emissions Z2 Mini G4 Performance

Declared Noise Emissions (Entry-level and High-end configurations)

System Configuration (Entry level With HDD)	**Processor Info**	Intel® Core™ i3-8100 SR2HG/3.6G/6M/4c	
	Memory Info	1 - 4GB DDR4-2666 SO-DIMM Memory	
	Graphics Info	NVIDIA® Quadro® P600	
	Disks/SSD	1 - Hitachi 500GB SATA 7200RPM HDD 1 - Samsung 256GB PCIe M.2 SSD	
		Sound Power (LWAd, bels)	**Deskside Sound Pressure** (LpAm, decibels)

System Technical Specifications

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	**Idle**	3.16	20.3
	Hard drive Operating (random reads)	3.17	20.4
System Configuration (Entry level Only SSD)	**Processor Info**	Intel® Core™ i3-8100 SR2HG/3.6G/6M/4c	
	Memory Info	1 - 4GB DDR4-2666 SO-DIMM Memory	
	Graphics Info	NVIDIA® Quadro® P600	
	Disks/SSD	N / A 1 - Samsung 256GB PCIe M.2 SSD	
Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)		**Sound Power** (LWAd, bels)	**Deskside Sound Pressure** (LpAm, decibels)
	Idle	3.06	19.1
	Hard drive Operating (random reads)	/	/
System Configuration (High-end)	**Processor Info**	Intel® Xeon® E-2144 QJ70/3.6G/8M/4c	
	Memory Info	2 - 8GB DDR4-2666 SO-DIMM Memory	
	Graphics Info	NVIDIA® Quadro® P600	
	Disks/SSD	1 - Hitachi 1TB SATA 7200RPM HDD 1 - Samsung 512GB PCIe M.2 SSD	
Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)		**Sound Power** (LWAd, bels)	**Deskside Sound Pressure** (LpAm, decibels)
	Idle	3.21	22.2
	Hard drive Operating (random reads)	3.23	22.7

System Technical Specifications

Environmental Requirements	**Temperature**	Operating: 5° to 35° C (40° to 95° F) Above 1524 m (5,000 feet) altitude, the maximum operating temperature is reduced by 1° C (1.8° F) for every 305 m (1,000 feet) increase in elevation Non-operating: -40° to 60° C (-40° to 140° F) Maximum rate of change: 10°C/hr
	Humidity	Operating: 10% to 85% RH, non-condensing, 35° C maximum wet bulb Non-operating: 10% to 90% RH, non-condensing, 35° C maximum wet bulb
	Maximum Altitude	Operating (with Rotational Hard Drives): 3,048 m (10,000 feet) Operating (with only Solid-State Drives): 5,000 m (16,404 feet) Non-operating: 12,192 m (40,000 feet) Maximum operating temperature is reduced as altitude increases. See **Temperature** for details.
	Shock (non-repetitive)	Operating ½-sine: 40g, 2-3ms (~62 cm/sec) Non-operating ½-sine: 160 cm/s, 2-3 ms (~105 g) Non-operating square: 422 cm/s, 20 g
	Vibration	Operating random: 0.5 g (rms), 5-300 Hz, up to 0.0025 g^2/Hz Non-operating random: 2.0 g (rms), 5-500 Hz, up to 0.0150 g^2/Hz

Physical Security and Serviceability

Access Panel	Tool-less Includes system board and memory information
Hard Drives	HDD cage requires the use of a screwdriver to remove the HDD
Expansion Cards	M.2 module requires a screwdriver to service and replace. An option card requires a screwdriver to service and replace.
Processor Socket	Tool-less, except for the processor heatsink.
Color-coordinated Cables and Connectors	Yes
Memory	Tool-less
System Board	Screw-In
Dual Color Power and HD LED on Front of Computer	The Power LED is on the front of the system, but the HDD LED is located on the Rear of the system
Configuration Record SW	Yes
Over-Temp Warning on Screen	Yes
Restore CD/DVD Set	Consists of an operating system DVD (OSDVD) and a driver DVD (DRDVD). OSDVD restores the original operating system. DRDVD will provide all drivers for the system. The DRDVD may also contain applications that originally shipped with the system for optional installation. Applications can also be obtained from HP.com. OSDVD and DRDVD are orderable with the system and available from HP Support.
Dual Function Front Power Switch	Yes, causes a fail-safe power off when held for 4 seconds (default) or 15 seconds (can be configured by F10 BIOS setup\Advanced\System Options\Power button override)
Cable Lock Support	Yes, Kensington Cable Lock (optional): Locks top cover from being opened and secures chassis to furniture to prevent theft 3 mm x 7 mm slot at rear of system
Serial, Parallel, USB, Audio, Network, Enable/Disable Port Control	Yes, enables or disables serial, USB, audio, and network ports (parallel port is not supported on the Z2 Mini G4 G4)
Removable Media Write/Boot Control	Yes, prevents ability to boot from removable media on supported devices (and can disable writes to media)
Power-On Password	Yes, prevents an unauthorized person from booting up the workstation

System Technical Specifications

Setup Password	Yes, prevents an unauthorized person from changing the workstation configuration
NIC LEDs (integrated) (Green & Amber)	Yes
CPUs and Heatsinks	A T-15 Torx or flat blade screwdriver is needed to remove the CPU heatsink before the CPU can be removed. CPU removal is tool-less
Power Supply Diagnostic LED	Yes; this is located on the Rear of the chassis and combined with the HDD LED. When the PSU adapter is plugged in, and the unit is powered off, the Power OK LED will glow.
Front Power LED	Yes, white (normal), red (fault)
Internal Speaker	Yes, on the side of the chassis
System/Emergency ROM Flash Recovery	Recovers corrupted system BIOS.
Cooling Solution	Air cooled forced convection
CPU Heatsink Fan	Z2 Mini G4 Entry & Performance CPU blower solution: 11.1 mm x 65mm x 82.1mm Z2 Mini G4 Performance GPU blower solution: 29mm x 103.6mm x 102.2mm
Chassis Fan	Z2 Mini G4 Entry: Single system blower Z2 Mini G4 Performance: Dual system blower
Memory Heatsink Fan	No
HP PC Hardware Diagnostics UEFI	HP PC Hardware Diagnostics (UEFI) enables hardware level testing outside the operating system on many components. The diagnostics can be invoked by pressing F2 at POST, and is available as a download from HP Support.
Access Panel Key Lock	The Kensington lock slot on the chassis serves this purpose
ACPI-Ready Hardware	Advanced Configuration and Power Management Interface (ACPI). • Allows the system to wake from a low power mode. • Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system
Trusted Platform Module Chip	Yes
M.2 Card Retention	Yes, all M.2 modules are retained by a single screw M.2 storage card requires heatsink, which has another screw.
Flash ROM	Yes
Diagnostic Power Switch LED on board	Yes
Clear Password Jumper	Yes

System Technical Specifications

Clear CMOS Jumper	Yes
CMOS Battery Holder	Yes: Z2 Mini G4 Entry Yes: Z2 Mini G4 Performance
DIMM Connectors	Yes

Social and Environmental Responsibility

Eco-Label Certifications & Declarations

This product is low halogen except for power cords, cables and peripherals. Service parts obtained after purchase may not be Low Halogen.

- ENERGY STAR® (energy-saving features available on selected configurations –Windows® only)
- US Federal Energy Management Program (FEMP)
- China Energy Conservation Program (CECP)
- IT ECO declaration

Batteries

The battery in this product complies with EU Directive 2006/66/EC
Battery size: CR2032 (coin cell)
Battery type: Lithium Metal

The battery in this product does not contain:

- Mercury greater than 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 40ppm by weight

Restricted Material Usage

This product meets the material restrictions specified in HP's General Specification for the Environment. http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf
HP Inc. is committed to compliance with all applicable environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide basis.

End-of-Life Management and Recycling

HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. This product is greater than 90% recyclable by weight when properly disposed of at end of life.

HP Inc. Corporate Environmental Information

For more information about HP's commitment to the environment:
Living Progress Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html

Eco-label certifications
http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html

ISO 14001 certificates:
http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

Additional Information

- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.
- Plastic parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product is >90% recycle-able when properly disposed of at end of life
- EPEAT®2019 Gold registered in the United States*

*Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit www.epeat.net for more information.

Packaging

HP Workstation product packaging meets the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/society/gen_specifications.html

- Does not contain restricted substances listed in HP Standard 011-1 General Specification for the Environment
- Does not contain ozone-depleting substances (ODS)
- Does not contain heavy metals (lead, mercury, cadmium or hexavalent chromium) in excess of 100 ppm sum total for all heavy metals listed
- Maximizes the use of post-consumer recycled content materials in packaging materials
- All packaging material is recyclable
- All packaging material is designed for ease of disassembly
- Reduced size and weight of packages to improve transportation fuel efficiency
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards formatting

Packaging Materials	
Internal	Cushions made from fabricated recycled expanded-polyethylene (EPE) or recycled expanded-polypropylene (EPP). May also be made from recycled molded paper-pulp (MPP).
External	Carton made from corrugated fiberboard with at least 35% recycled content.

Manageability

Intel® Active Management Technology (AMT) v12	An advanced set of remote management features and functionality which provides network administrators the latest and most effective tools to remotely discover, heal, and protect networked client systems regardless of the system's health or power state. AMT 12 includes the following advanced management functions: • Support for configuration of Intel AMT 12.0 new capabilities • No reset after provisioning • Support for Microsoft Windows Server 2012 R2 • Support for New Microsoft SQL Server Versions including Standard and Enterprise editions • Support for Intel SSD Prop 2500 Series • Support for Intel Enterprise Digital Fence • The Platform Discovery Utility can now discover these additional Intel products: • Intel SSD Pro 2500 Series; Enterprise Digital Fence • Intel Identity Protection Technology with One Time Password; Public Key Infrastructure; Multi Factor Authentication • Intel Identity Protection Technology with Intel WiGig • New Profile Editor and Profile Editor Plugin Interface • New Required Permissions for Solutions Framework
HP Image Assistant	Visit: http://ftp.hp.com/pub/caps-softpaq/cmit/HPIA.html
System Software Manager	Visit: http://www.hp.com/go/ssm
Service, Support, and Warranty	• Program to proactively communicate Product Change Notifications (PCNs) and Customer Advisories by email to customers, based on a user-defined profile. • PCNs provide advance notification of hardware and software changes to be implemented in the factory providing time to plan for transition. • Customer Advisories provide concise, effective problem resolution, greatly reducing the need to call technical support.

Stable & Consistent Offerings

As part of its commitment to hardware, software, and solution innovation, HP is proud to introduce this breakthrough platform configuration stability to HP Workstation customers. HP Stable & Consistent Offerings are built on the foundation of a carefully chosen set of hardware and software designed and tested to work with all HP Z Workstation platforms through their end of life. These components and their corresponding HP Workstation platform compatibility are outlined in this section.

HP Stable & Consistent Offerings are available worldwide to all HP Workstation customers-no special programs, no additional cost, no kidding. Simply select your hardware and software components when you customize your HP Workstation and be assured that you'll be able to buy that same configuration throughout the lifecycle of the product.

Processors	Product #	Offering
		Intel® Xeon E-2124 3.4 8M GT2 4C
		Intel® Xeon E-2144 3.6 8M GT2 4C

Hard Drives	Product #	Offering
		HDD 1TB 7200RPM SATA 2.5
		SSD 512GB TLC M.2

Graphics	Product #	Offering
		NVIDIA® Quadro® P600 4GB Graphics

Technical Specifications - Processors

Intel® Xeon® processor E-2100 family

Intel® Xeon® processor E-2286G
Intel® Xeon® processor E-2278G
Intel® Xeon® processor E-2276G
Intel® Xeon® processor E-2274G
Intel® Xeon® processor E-2244G
Intel® Xeon® processor E-2236
Intel® Xeon® processor E-2226G
Intel® Xeon® processor E-2224G
Intel® Xeon® processor E-2176G
Intel® Xeon® processor E-2174G
Intel® Xeon® processor E-2144G
Intel® Xeon® processor E-2136
Intel® Xeon® processor E-2124G
Intel® Xeon® processor E-2104G

9th generation Intel® Core™ processor family

Intel® Core™ i9-9900K 3.6 2666 8C CPU
Intel® Core™ i9-9900 3.1 2666 8C CPU
Intel® Core™ i7-9700K 3.6 2666 8C CPU
Intel® Core™ i7-9700 3.0 2666 8C CPU
Intel® Core™ i5-9600 3.1 2666 6C CPU
Intel® Core™ i5-9500 3.0 2666 6C CPU
Intel® Core™ i3-9100 3.6 2666 4C CPU

8th generation Intel® Core™ processor family

Intel® Core™ i7-8700 3.2 26666 6C CPU
Intel® Core™ i5-8600 3.1 2666 6C CPU
Intel® Core™ i5-8500 3.0 2666 6C CPU

8th generation Intel® Core™ i3/Pentium processor family

Intel® Core™ i3-8100 3.6 2400 4C CPU
Intel® Pentium® G5400 3.7 2400 2C CPU

Technical Specifications - Hard Drives

SATA Hard Drives for HP Workstations	**500GB SATA 7200 rpm 6Gb/s 3.5" HDD**	**Capacity**	500GB
		Protocol	SATA
		Form Factor	SFF (2.5")
		Controller	AHCI
		Rated for 24/7/365 operation	NO
		Physical Size (Height)	0.28 in; .7 cm
		Physical Size (Width)	2.75 in; 6.99 cm
		Media Diameter	2.5 in; 6.36 cm
		Interface	Serial ATA (6Gb/s), NCQ enabled
		Synchronous Transfer Rate (Maximum)	Up to 600MB/s*
		Operating Temperature	32° to 140° F (0° to 60° C)
		*Actual performance may vary.	
	1TB SATA 7200 rpm 6Gb/s SFF HDD	**Capacity**	1TB
		Protocol	SATA
		Form Factor	SFF (2.5")
		Controller	AHCI
		Rated for 24/7/365 operation	NO
		Physical Size (Height)	0.28 in; .7 cm
		Physical Size (Width)	2.75 in; 6.99 cm
		Media Diameter	2.5 in; 6.36 cm
		Interface	Serial ATA (6Gb/s), NCQ enabled
		Synchronous Transfer Rate (Maximum)	Up to 600MB/s*
		Operating Temperature	32° to 140° F (0° to 60° C)
		*Actual performance may vary.	
PCIe SSDs for HP Workstations			
	HP Z Turbo Drv G2 256GB TLC PCIe SSD (Z2 MB)	**Capacity**	256GB
		Protocol	PCIe
		Form Factor	M.2 in native slot on motherboard
		Controller	NVMe
		NAND Type	3D TLC
		Endurance	75TBW (TB Written)
		Reliability (MTBF)	1.5M hours
		Interface	PCI Express 3.0 x4
		Operating Temperature	32° to 158° F (0° to 70° C)
		Performance	**Sequential Read** 2800 MB/s*
			Sequential Write 320 MB/s (1100 MB/s max/Turbo)*
			Random Read 250K IOPS*
			Random Write 180K IOPS*

*Actual performance may vary.

HP Z Turbo Drv G2 512GB TLC PCIe SSD (Z2 MB)	**Capacity**	512GB	
	Protocol	PCIe	
	Form Factor	M.2 in native slot on motherboard	
	Controller	NVMe	
	NAND Type	3D TLC	
	Endurance	150TBW (TB Written)	
	Reliability (MTBF)	1.5M hours	
	Interface	PCI Express 3.0 x4 electrical x4 physical	
	Operating Temperature	32° to 158° F (0° to 70° C)	
	Performance	**Sequential Read**	2800 MB/s*
		Sequential Write	660 MB/s (1600 MB/s max/Turbo)*
		Random Read	260K IOPS*
		Random Write	260K IOPS*

*Actual performance may vary.

HP Z Turbo Drv G2 1TB TLC PCIe SSD (Z2 MB)	**Capacity**	1TB	
	Protocol	PCIe	
	Form Factor	M.2 in native slot on motherboard	
	Controller	NVMe	
	NAND Type	3D TLC	
	Endurance	300TBW (TB Written)	
	Reliability (MTBF)	1.5M hours	
	Interface	PCI Express 3.0 x4	
	Operating Temperature	32° to 158° F (0° to 70° C)	
	Performance	**Sequential Read**	3000 MB/s*
		Sequential Write	1150 MB/s (1700 MB/s max/Turbo)*
		Random Read	360K IOPS*
		Random Write	330K IOPS*

*Actual performance may vary.

HP Z Turbo Drv G2 2TB TLC PCIe SSD (Z2 MB)	**Capacity**	2TB	
	Protocol	PCIe	
	Form Factor	M.2	
	Controller	NVMe	
	NAND Type	3D TLC	
	Endurance	600TBW (TB Written)	
	Reliability (MTBF)	1.5M hours	
	Interface	PCI Express 3.0 x4 electrical x4 physical	
	Operating Temperature	32° to 158° F (0° to 70° C)	
	Performance	**Sequential Read**	3000 MB/s*

Sequential Write	1000 MB/s (2100 MB/s max/Turbo)*
Random Read	320K IOPS*
Random Write	265K IOPS*

*Actual performance may vary.

Technical Specifications - Graphics

Integrated Intel® UHD Graphics (Z2G4)	**Form Factor**	Integrated in select Intel® Xeon® E, Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3 processors. Check specific platform specifications for selections.
	Graphics Controller	Intel® UHD Graphics
	Memory	Unified Memory Architecture (UMA) frame buffer. Graphics memory is shared with system memory. Size selectable between 32 MB to 1024 MB via BIOS setting. Default size is 128 MB. Additional memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (Intel® DVMT), to provide an optimal balance between graphics and system memory use.
	Connectors	Check system platform specifications where Intel® HD Graphics are available.
	Maximum Resolution	DisplayPort™ 1.2: - up to 4096x2160 x 24 bpp @ 60Hz - supports High Bit Rate 2 (HBR2) and Multi-Stream Transport (MST) HDMI 2.0 output: - up to 4096x2160 x 24 bpp @ 60Hz Dual Link DVI(I) output: - up to 2560 x 1600 x 32 bpp @ 60Hz Single Link-DVI(I) output: - up to 1920 x 1200 x 32 bpp @ 60Hz VGA output: - 2048 × 1536 × 32 bpp @ 85 Hz **Note:** For HDMI, DVI, and VGA outputs, separate adapters required.
	Shading Architecture	Shader Model 5.0
	Supported Graphics APIs	OpenGL 4.4 DirectX 12
	Available Graphics Drivers	Windows 10

*Integrated graphics will depend on processor. HD content required to view HD images

Technical Specifications - Graphics

NVIDIA® Quadro® P1000 4GB Graphics	**Maximum Resolution**	DisplayPort™ 1.2: - up to 4096x2160 x 30 bpp @ 60Hz - supports High Bit Rate 2 (HBR2) and Multi-Stream Transport (MST) HDMI 2.0 output*: - up to 4096x2160 x 30 bpp @ 60Hz
	Image Quality Features	Stereoscopic 3D display support including NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and passive stereo
	Display Output	Maximum number of displays: - 4 direct attached monitors Maximum number of DisplayPort™ displays possible per DisplayPort™ output (Multiple displays daisy-chained from one DisplayPort™ 1.2 port requires DisplayPort™ 1.2 MST capable displays or DisplayPort™ 1.2 MST capable hub): - 4 1920x1200 @ 60 Hz - 2 2560x1600 @ 60 Hz - 1 4096x2160 @ 60 Hz Maximum number of monitors across all available NVIDIA® Quadro® outputs is 4.
	Supported Graphics APIs	OpenGL 4.5 DirectX 12 API support includes: CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran
	Available Graphics Drivers	Microsoft Windows 10 Linux ® HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html

*HDMI Flex IO Module does not support discrete graphics and will automatically switch over to Intel® UHD graphics on the Flex IO Module port when inserted into the system. Discrete graphics can be used over HDMI from one of the DP ports with an external DP-to-HDMI dongle.

NVIDIA® Quadro® P600 4GB Graphics	**Maximum Resolution**	DisplayPort™ 1.2: - up to 4096x2160 x 30 bpp @ 60Hz - supports High Bit Rate 2 (HBR2) and Multi-Stream Transport (MST) HDMI 2.0 output*: - up to 4096x2160 x 30 bpp @ 60Hz
	Image Quality Features	Stereoscopic 3D display support including NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and passive stereo

Technical Specifications - Graphics

	Display Output	Maximum number of displays: - 4 direct attached monitors Maximum number of DisplayPort™ displays possible per DisplayPort™ output (Multiple displays daisy-chained from one DisplayPort™ 1.2 port requires DisplayPort™ 1.2 MST capable displays or DisplayPort™ 1.2 MST capable hub): - 4 1920x1200 @ 60 Hz - 2 2560x1600 @ 60 Hz - 1 4096x2160 @ 60 Hz Maximum number of monitors across all available NVIDIA® Quadro® outputs is 4.
	Supported Graphics APIs	OpenGL 4.5 DirectX 12 API support includes: CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran
	Available Graphics Drivers	Microsoft Windows 10 Linux® HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html

*HDMI Flex IO Module does not support discrete graphics and will automatically switch over to Intel® UHD graphics on the Flex IO Module port when inserted into the system. Discrete graphics can be used over HDMI from one of the DP ports with an external DP-to-HDMI dongle.

AMD Radeon™ Pro WX 4150 4GB Graphics	**Maximum Resolution**	DisplayPort™ 1.2: - up to 4096x2160 x 30 bpp @ 60Hz - supports High Bit Rate 2 (HBR2) and Multi-Stream Transport (MST) HDMI 2.0 output*: - up to 4096x2160 x 30 bpp @ 60Hz
	Image Quality Features	Stereoscopic 3D display support including NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and passive stereo
	Display Output	Maximum number of displays: - 5 direct attached monitors Maximum number of DisplayPort™ displays possible per DisplayPort™ output (Multiple displays daisy-chained from one DisplayPort™ 1.2 port requires DisplayPort™ 1.2 MST capable displays or DisplayPort™ 1.2 MST capable hub): - 4 1920x1200 @ 60 Hz - 2 2560x1600 @ 60 Hz - 1 4096x2160 @ 60 Hz

Technical Specifications - Graphics

	Maximum number of monitors across all available AMD Radeon® Pro outputs is 5.
Supported Graphics APIs	OpenGL 4.5 DirectX 12 API support includes: CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran
Available Graphics Drivers	Microsoft Windows 10 Linux® HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html

*HDMI Flex IO Module does not support discrete graphics and will automatically switch over to Intel® UHD graphics on the Flex IO Module port when inserted into the system. Discrete graphics can be used over HDMI from one of the DP ports with an external DP-to-HDMI dongle.

Technical Specifications - Optical and Removable Storage

HP External Ultra-Slim DVD-RW Drive	**Description**	External 9.5mm high, tray-load	
	Mounting Orientation	Either horizontal or vertical	
	Interface Type	USB 2.0	
	Dimensions (WxHxD)	144 x 14 x 137.5mm	
	Supported Media Types	DVD-RAM DVD+R DVD+RW DVD+R DL DVD-R DL DVD-R DVD-RW CD-R CD-RW	
	Disc Capacity	**DVD-ROM**	8.5 GB DL or 4.7 GB standard
	Access Times	**Full Stroke DVD**	160ms (typical for Random Stroke)
		Full Stroke CD	140ms (typical for Random Stroke)
	Maximum Data Transfer Rates	**CD ROM Read**	CD-ROM, CD-R Up to 24X CD-RW Up to 24X
		DVD ROM Read	DVD-RAM Up to 8X DVD+RW Up to 8X DVD-RW Up to 8X DVD+R DL Up to 8X DVD-R DL Up to 8X DVD-ROM Up to 8X DVD-ROM DL Up to 8X DVD+R Up to 8X DVD-R Up to 8X
	Power	**Source**	USB 2.0 DC power
		DC Power Requirements	5 VDC ± 5%-100 mV ripple p-p
		DC Current	5 VDC -< 800 mA typical, <1600 mA maximum
	Operating Environmental (all conditions non-condensing)	**Temperature**	41° to 104° F (5° to 40° C)
		Relative Humidity	15% to 80%
		Maximum Wet Bulb Temperature	84° F (29° C)
	Operating Systems Supported	Windows 10 32-bit and 64-bit, Windows 8 32-bit and 64-bit, Windows 7 Professional 32-bit and 64-bit, Windows Vista Business 64*, Windows Vista Business 32*, Windows Vista Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP Home 32* Linux® No driver is required for this device. Native support is provided by the operating system.	
	Kit Contents	HP External Ultra-Slim DVD-RW Drive DVD Writer drive, USB 2.0 type A to mini-B cable.	

HP shall not be liable for technical or editorial errors or omissions contained herein. The information contained herein is subject to change without notice.

Technical Specifications - Networking and Communications

Integrated Intel® I219LM PCIe GbE Controller (Intel® vPro™ with Intel® AMT 12.0)	**Connector**	RJ-45
	Controller	Intel® I219LM GbE platform LAN connect networking controller
	Memory	3 KB Tx and 3KB Rx FIFO packet buffer memory
	Data Rates Supported	10/100/1000 Mbps
	Compliance	802.1as/1588, 802.1p, 802.1Q, 802.3, 802.3ab, 802.3az, 802.3i, 802.3u, 802.3z
	Bus Architecture	PCI Express and SMBus
	Data Transfer Mode	PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx low power state)
	Power Requirement	Requires 3.3V (integrated regulators for core Vdc)
	Boot ROM Support	Yes
	Network Transfer Mode	Full-duplex; Half-duplex (not supported for the 1000BASE-T transceiver)
	Network Transfer Rate	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps
	Management Capabilities	vPro, WOL, auto MDI crossover, PXE, Muti-port teaming, RSS, ACPI, Advanced cable diagnostic, loopback modes, AMT 12.0 support, Circuit Breaker, VLAN, Multicast Listener Discovery (MLD)

Intel® 9560 Wireless LAN (802.11ac) and Bluetooth 5 Module	**Connector**	M.2 (Supports 2230 form factor; E Key) Motherboard Interface
	Controller	Intel® Dual Band Wireless-AC 9560
	Compliance	Wireless LAN: IEEE 802.11abgn, 802.11ac, 802.11d, 802.11e, 802.11i, 802.11h, 802.11w, CCX 4.x/CCX Lite, WMM, WPA, WPA2, APS, WPS 2.0, Protected Management Frames Bluetooth®: Dual Mode Bluetooth® 2.1, 2.1+EDR, 3.0, 4.0, BLE, 4.2, and 5
	Bus Architecture	PCI Express Gen3 x1 and USB 2.0
	Power Requirement	Requires 3.3V; 1.65W TDP
	Management Capabilities	Wake on WLAN (in all sleep states, excluding Max Power Savings mode), WFA Management Frame Protection (802.11w), vPro/WiAMT Not Currently Supported, F10 BIOS Menu option to disable/enable WLAN and Bluetooth® radios, supports seamless roaming between 802.11 wireless access points
	Throughput	Max PHY throughput 1.73 Gbps (802.11ac) for WLAN

Allied Telesis 1GbE LC Fiber 2pc Module	**Network Interface(s)**	1 LC Fiber Connection
	System Interface	PCI Express Gen1.1x1 (via WLAN M.2 interface)
	Network Cable	1GbE over Multimode LC Fiber. Distance is dependent upon network cable: OM1 50/125um 500 MHz:km 550m OM2 62.5/125um 200 MHz:km 275m OM2 62.5/125um 160MHz:km 220m
	Data Rates Supported	1 Gbps

Technical Specifications - Networking and Communications

LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity
Controller	Broadcom BCM57762
Compliance	IEE 802.3z Base1000SX 802.3x (Ethernet Flow Control) 802.1Q (VLANs) 802.1P (Quality of Service) FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	2W (Typical)
Operating Temperature	32° to 122° F (0° to 50° C)
Physical Dimensions (LxW)	LC Fiber Board: 37mm x 45mm x 13mm (WxLxH, including connector) Cable: 200mm M.2 Board: 22mm x 30mm x 1.75mm (WxLxH)
Kit Contents	LC fiber board, M.2 board, connecting cable, and 2 screws for attaching the LC fiber board to the motherboard Product Warranty statement and the Installation Guide.

Technical Specifications – Miscellaneous Features

HP Z2 Mini G4 VESA Sleeve	**Mechanical**	**Dimensions** (H x W x D)	Unpackaged	70 mm x 224 mm x 223 mm (2.75 x 8.81 x 8.77 in)
			Packaged	305 x 102 x 289 -mm (12 x 4 x 11.38 in)
		Weight	Unpackaged	1.7 kg (3.7 lb)
			Packaged	2.27 (5.0-lb)
	Other	**Option kit contents**	HP Z2 Mini G4 VESA Sleeve, mounting screws, installation guide, warranty card.	
	Limited Warranty	The HP Z2 Mini G4 VESA Sleeve carries a one-year limited warranty. Technical support is available seven days a week, 24 hours a day, online and support forums. Certain restrictions and exclusions apply.		

MISCELLANEOUS FEATURES

Management Features

- Advanced Configuration and Power Management Interface (ACPI). Allows the system to wake from a low power mode. Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.
- Intel® Wired for Management support; industry wide initiative to make Intel® architecture based PCs, servers and mobile computers more inherently manageable out-of-the-box and over the network PCs, servers and mobile computers more inherently manageable out-of-the-box and over the network PCs, servers and mobile computers more inherently manageable out-of-the-box and over the network
- Dual State Power Button; acts as both an on/off button and a suspend-to-sleep button

Serviceability Features

- Dual colored power LED on front of computer to indicate either normal or fault condition
- Diagnostic LED Explanation Table:
  - Power LED will blink red 2 to 5 times, then blink white 2 or more times, then repeat (with beep tones for each blink initially):
    - 2 red + 2 white User must provide file for BIOS recovery (USB storage typically) + 2 white User must provide file for BIOS recovery (USB storage typically) + 2 white User must provide file for BIOS recovery (USB storage typically)
    - 2 red + 3 white User must enter a key sequence to proceed with recovery by policy + 3 white User must enter a key sequence to proceed with recovery by policy + 3 white User must enter a key sequence to proceed with recovery by policy
    - 2 red + 4 white BIOS recovery is in progress + 4 white BIOS recovery is in progress + 4 white BIOS recovery is in progress
    - 3 red + 2 white Memory could not be initialized + 2 white Memory could not be initialized + 2 white Memory could not be initialized
    - 3 red + 3 white Graphics adaptor could not be found + 3 white Graphics adaptor could not be found + 3 white Graphics adaptor could not be found
    - 3 red + 4 white Power supply failure / not connected + 4 white Power supply failure / not connected + 4 white Power supply failure / not connected
    - 3 red + 5 white Processor not installed + 5 white Processor not installed + 5 white Processor not installed
    - 3 red + 6 white Current processor does not support an enabled feature + 6 white Current processor does not support an enabled feature + 6 white Current processor does not support an enabled feature
    - 4 red + 2 white Processor has exceeded its temperature threshold / system thermal shutdown + 2 white Processor has exceeded its temperature threshold / system thermal shutdown + 2 white Processor has exceeded its temperature threshold / system thermal shutdown
    - 4 red + 3 white System internal temperature has exceeded its threshold + 3 white System internal temperature has exceeded its threshold + 3 white System internal temperature has exceeded its threshold
    - 5 red + 2 white System controller firmware is not valid
    - 5 red + 3 white System controller detected BIOS is not executing
    - 5 red + 4 white BIOS could not complete initialization / PCA failure
    - 5 red + 5 white System controller rebooted the system after a health or recovery timer triggered rebooted the system after a health or recovery timer triggered rebooted the system after a health or recovery timer triggered
- HP PC Hardware Diagnostics UEFI:
  - This utility enables hardware level testing outside the operating system on many components. The diagnostics can be invoked by pressing F2 at POST, and is available as a download from HP Support
- System/Emergency ROM
- Flash ROM
- CMOS Battery Holder for easy replacement
- Flash Recovery with Video Configuration Record Software5 Aux Power LED on System PCA
- Processor ZIF Socket for easy Upgrade
- Over-Temp Warning on Screen (Requires IM Agents)

Technical Specifications – Miscellaneous Features

- Clear Password Jumper
- DIMM Connectors for easy Upgrade
- Clear CMOS Button
- NIC LEDs (integrated) (Green & Amber)
- Color coordinated cables and connectors
- Tool-less Hood Removal
- Front power switch
- System memory can be upgraded without removing the system board or any internal components
- Tool-less Hard Drive, CD & Diskette Removal
- Green Pull Tabs, and Quick Release Latches for easy Identification

Summary of Changes

Date of change:	Version History:		Description of change:
September 19, 2018	From v1 to v2	Changed	Supported components, System Configurations and Technical Specifications – Graphics sections, format changes
May 7, 2019	From v2 to v3	Added	Footnote to the HP Z2 Mini G4 Performance, back view section
May 9, 2019	From v3 to v4	Changed	Callouts section
May 20, 2019	From v4 to v5	Removed	RAID support
May 28, 2019	From v5 to v6	Added	Processors Refresh
June 12, 2019	From v6 to v7	Changed	Storage section
July 23, 2019	From v7 to v8	Removed	Integrated hood sensor from Security Management section
July 30, 2019	From v8 to v9	Removed	Support for chassis padlocks and cable lock devices from Security Management section
September 1, 2019	From v9 to v10	Added	HP Z Turbo Drive G2 256, 512GB and 1TB SED TLC (Z2Mini G4) to Storage section