HP Z8 FURY G6i WORKSTATION ARCHITECTURE

Table of Contents

Introduction

The HP Z8 Fury G6i is the successor to the HP Z8 Fury G5 workstation. Its architecture introduces several improved functionalities and technologies including the latest Intel® Xeon 6xx processors, DDR5 memory architecture, PCIe Gen 5 technology, front removable hot-swappable NVMe storage, improved thermal management and increased performance.

System Highlights

Extreme Workstation Performance

Z by HP innovations start with the customer to deliver the performance benefits needed, whether it's importing and working with large models and assemblies, running complex simulations, or training complex deep learning and machine learning models faster. The Z8 Fury G6i delivers powerful performance while staying cool and quiet under high-performance workflows. With up to 86 cores in a single CPU, this workstation unleashes the power of four high-end double-wide GPUs with 2TB of DDR5 memory due to the transformative single socket technology. Now you can breeze through even the most complex virtual production, VFX, and deep learning.

HP Z8 Fury G6i product benefits include:

1. **Relentless Power. Extraordinary Expandability.**

Tackle the most complex workflows with up to a 86 core Intel® Xeon® 6 CPU1, up to 4 high-end GPUs, 2TB DDR5 RAM, 104 TB storage and 2,250W of power.2 Easily expand as work evolves with 8 PCIe slots (up to Gen 5), and one PCH PCIe slot (upto Gen4) and 4 front accessible NVMe bays.

2. **Engineered to Stay Cool and Quiet.**

Push your desktop workstation without disruptive noise. Smart fan control keeps the system whisper-quiet by tuning fan speeds in real-time using over 20 temperature sensors. Precisely placed vents and ducts streamline airflow and heat removal.

3. **Redundant Power. Reassuring Reliability.**

Never worry that your PC will fail mid-project. Get a redundant power supply3 for built-in backup. This PC also undergoes 360K hours of rigorous testing4, military-standard testing4 and ISV certifications.

4. **Solutions for Smarter Workflows.**

Remotely access the power of your Z with HP Anyware5. Get fast responsiveness and image quality even in high-end workflows. Save time with WSL26, enabling Linux to run in

Windows. Get easy access to tools from the Z by HP Data Science Stack Manager7

HP and Sustainability

HP continues to be a dedicated player in the world of technology and sustainability[10] in order to help protect our shared future. Sustainably built, this product contains 65% recycled plastics[11] and is EPEAT Gold and TCOv10 Certified. Regarding packaging, plastic cushions are made from >90% recycled plastic. The production of this workstation prevented materials from ending up in the ocean or a landfill, as its fans contain ocean-bound plastic[12] and all G6 products contain 20% post-industrial recycled metal. This product features 100% recycled rare earth elements in its speaker magnet and is equipped with 80Plus Platinum rated power supplies. This product features a QR code-enabled experience that provides access to a product portal with highlights of product features, sustainability information, getting started guides, and direct setup and support options. HP has also taken steps to minimize the amount of polyvinyl chloride in our products, as it is now only present in external power cables and keyboard/mouse cables.

Latest Technologies

The Latest Intel® Processor

The HP Z8 Fury G6i Workstation uses the Intel® W890 Arrow Lake-S chipset to support the latest Intel® Xeon® W processors, including processors of up to 86 cores and up to 350W. Intel® Xeon® 6 family processors utilize four integrated memory controllers each supporting two DDR5 channels that increase memory bandwidth by 50%. The architecture supports 128 PCIe lanes and includes PCIe Gen5 technology. The Intel® Xeon® 6 processors utilize four integrated memory controllers, each supporting two DDR5 channels that increase the memory capacity and bandwidth.

Next Generation Intel® Active Management Technology

New features for Intel® AMT 19.10 include:

- Support for PSR (Platform Service Record) and UPID.
- Upgrade to Boot Guard Gen 1.1.
- PCHC Firmware Component.
- Intel® Total Memory Encryption (Intel® TME).

DDR5 Memory Technology

The HP Z8 Fury G6i Workstation supports DDR5 Registered DIMMs up to 6400MHz at 1 DIMM per channel and up to 5200MHz at 2DIMMs per channel. The speed that the memory runs is determined by the processors and is limited to 6400MHz for the Intel® Xeon® 6 processor generation. The HP Z8 Fury G6i supports up to 2TB of memory.

Flex-IO Interface

The HP Z8Fury G6i adds a rear Flex-IO interface which grants customers the ability to customize their rear I/O ports without using additional PCIe slots or USB ports with external adapters. See the external I/O section for more details.

Wi-Fi 7[8]

The HP Z8 Fury G6i offers flexible Wi-Fi® connectivity with Wi-Fi 7 & Bluetooth 5.4 via PCIe slot module and an external antenna.

I/O Ports

Internal I/O

The HP Z8 Fury G6i provides a total of nine high-performance Graphics, and I/O slots including four PCIe5 x16, one PCIe5 x4, three PCIe5 x8, and one PCIe4 x4 dedicated electrical slots. It also provides four PCIe5 x4 electrical internal M.2 PCIe-attached storage devices. The HP Z8 Fury G6i provides an internal 1-port USB3.0 header, and an internal 1-port USB2.0 header.

External I/O

On the front I/O area, the HP Z8 Fury G6i can be configured two ways.

- The Entry Front I/O option provides four 5Gbps Type-A ports (the left-most supports battery charging), combo headset/microphone jack, and the option for an SD card reader.
- The Premium Front I/O option provides two 20Gbps Type-C® ports, two 5Gbps Type-A ports (the left-most supports battery charging), combo headset/ microphone jack, and the option for an SD card reader.

In the rear I/O area, the HP Z8 Fury G6i provides five 5Gbps USB-A ports and a 10Gbps Type-C port, 2 gigabit Ethernet LAN ports, and a retaskable Universal Audio Jack. The HP Z8 G6i rear I/O area also provides a Flex-IO module connector which can support up to one of the following (optional) Flex-IO Modules: Serial Port v3, Dual 5Gbps USB-A, Dual 10 Gbps USB-C® ports, 10GbE RJ45 single port, 2.5GbE RJ45 LAN single port, 1GbE LC Fiber single port, 1GbE RJ45 single port.

The HP Z8 Fury G6i rear I/O area also provides a dedicated slot for a single HP custom networking module that does not occupy a PCIe slot. There are two modules available. One module is a dual port 10GbE Base-T. The other is a dual port fiber optic module that supports either 10G or 25G in each port (SFP28 transceiver cages).

20Gbps Type-C®

The HP Z8 Fury G6i configured with the Premium Front I/O module provides two 20Gbps Type-C® ports in addition to two 5Gbps Type-A ports. The Type-C® ports each deliver up to 15W of power (3A @ 5V) when the system is running. More information on USB Technology and Performance measurements can be found in the “Resources, contacts, or additional links” section below.

Additional rear I/O ports can be added via PCIe add-in cards.

Thunderbolt™ 5

The HP Z8 & Z4 G6i offers an add-on ThunderboltTM 5 Dual Port PCIe Gen4 x4 Add-in Card, delivering a peak bandwidth of 80 Gb/s bidirectional or 120Gb/s outbound 40Gbps inbound bandwidth in asymmetric mode for high-volume video traffic. ThunderboltTM 5 is backwards compatible with ThunderboltTM 3 and 4. ThunderboltTM 5 supports up to DP2.1 (UHBR10/UHBR20) display standards.

Display Capabilities: The ThunderboltTM 5 card must be connected to a discrete graphics card in the same system using the two provided DP-to-mini-DP cables to get display functionality. Display bandwidth will be limited by the capabilities of the connected discrete graphics card. For full DP2.1 display capabilities, the ThunderboltTM 5 card must be connected to a DP2.1 capable discrete graphics card.

Windows Driver & Software: ThunderboltTM 5 now utilizes a Microsoft in-box USB4 Host Router Driver and will show up in Device Manager under Universal Serial Bus Controllers. The previous Thunderbolt Control Center has also been retired and replaced by the Windows USB4 Hubs and Devices window in Settings.

Storage

Z by HP desktop workstations are designed to offer a diverse range of high-capacity storage options, including several installation positions that provide flexibility for customers based on their configuration needs.

Z8 G6i provides several storage options and benefits to our customers:

SATA HDDs

The HP Z8 Fury G6i supports three 6Gb/s SATA ports on the Intel® W890 Arrow Lake-S chipset's SATA controller. The SATA controller operates in AHCI mode or RAID mode and supports RAID modes 0, 1, 5 and 10.

A header is provided for installation of an Intel® VROC Upgrade Module to enable NVMe RAID.

Front-Accessible Storage

The HP Front NVME Gen5 solution, fits in the 5.25" bay to offer the user high performance front removable NVME storage. The Z8 G6i supports the 4-bay solution allowing the user to add up to 4 additional M.2 drives without taking up a PCIe slot.

Onboard SSDs

In addition to the four front-accessible SSDs, Z8 G6i supports four M.2 SSDs on the system board. All of the four slots support up to PCIe Gen5 speeds.

Gen5 Quadpro

For customers with high capacity needs, Z8 G6i support the Gen5 Quadpro. The Quadpro carries an additional four M.2 Storage slots up to Pcie Gen5. The Quadpro takes up PCIe x16 slot on the system board. These carries can be configured out of the factory or as after-market options.

External Storage

The Z8 Fury G6i also supports an optional Front Removable NVME storage and has two PCIe5 x8 buses to support four front removable M.2.

Chassis

The HP Z8 Fury G6i Workstation has been redesigned to deliver exceptional performance, expandability, and serviceability. Its advanced architecture supports the latest processor, memory, graphics, and storage technologies, enabling a wide range of high-end professional workflows.

For demanding configurations, the platform offers two power supply options, providing the flexibility needed for extreme workloads. Innovative cooling technologies—combined with optimized airflow ducting—deliver industry-leading acoustics while maintaining robust thermal performance under heavy load.

The chassis features a full-grip rear aluminum carrying handle and a front ledge, enabling users to easily reposition the system for improved access or relocation. The workstation supports both desktop/deskside use and rack-mount installation using HP's enterprise-class, fully extendable rail kit.

In this generation, the HP Z8 Fury G6i significantly expands system capability with only a minimal increase in chassis size. The split-chassis architecture provides rear access to direct-connect power supplies and supports:

- Nine electrical high-performance PCIe slots, and
- Ten mechanical, full-height, full-length PCIe expansion slots

This architecture delivers exceptional flexibility for add-in cards, accelerators, and high-bandwidth I/O devices.

For storage, the system includes two internal storage bays and one industry-standard 5.25-inch external device bay. This external bay expands storage capacity and supports additional I/O modules, up to four front-accessible M.2/U.2 devices, or other customer-specific options—offering outstanding configuration versatility. In addition, the system provides four onboard Gen5 2280 NVMe slots, enabling high-speed solid-state storage directly on the main board.

Graphics

The HP Z8 G6i supports NVIDIA RTX™ Professional graphics cards. Depending on the system configuration and installed power supply, the workstation can accommodate up to four 300 W GPUs or a single 600 W GPU. For peak single-GPU performance, configurations with a single 600 W card deliver the highest graphics capability. For maximum scalability and multi-GPU workloads, the system supports configurations of up to four 300 W cards. Actual GPU configurations may be limited by total system power, cooling capacity, and other installed components.

Thermal and Airflow Considerations

A base system may be ordered without the HP Z8 Fury G6i Graphics (Gfx) Mid Fan. However, graphics cards that use a flow-through cooling solution (where the GPU exhausts heat directly into the system interior) require the HP Z8 Fury G6i Gfx Mid Fan to maintain proper system thermals.

- The Gfx Mid Fan will be automatically included with factory-configured systems that use flow-through graphics cards.
- For aftermarket or user-installed flow-through GPUs, the Gfx Mid Fan is available as an optional add-on to ensure adequate cooling performance.

Power Supply Options

The chassis can be ordered with a single power supply or dual power supplies, each capable of supplying 1350W (1700W @ 230V) and is 92% efficient. The power supply is rated as platinum according to 80Plus.

If ordering two power supplies, there are two possible modes of operation. Redundant and aggregate.

- If the configuration's power requirement is limited to less than 1350W (1700W @ 230V) and both PSUS are powered, the system provides redundancy. If one PSU loses power for some reason, the remaining PSU picks up all of the load in almost all cases.
- If the configuration's power requirement is more than 1350W (1700W @ 230V) the two power supplies can be used to supply up to 2700W (3400W @ 230V). There is no redundancy in this case.

Additional Features

- Rear panel power on/off switch and LED for easier rack maintenance
- ENERGY STAR® qualified configurations, China's Energy Conservation Program (CECP) configurations, European Union's ErP LOT6/26 2023/826 power limit of 0.3W in Max Power Savings off mode with WOL disabled.
- Intel® vPro™ manageability with support both for DASH and Intel® AMT (Advanced Manageability Technology) on all the Xeon® processors. IT managers have increased flexibility in optimizing their Enterprise manageability strategy across HP's Commercial Laptops, Desktops and Workstations.
- Cover Removal Sensor & Safety Interlock
    - Cover Removal Sensor is a firmware feature that notifies a user via a post screen F1 prompt and F10 BIOS Event log/count if and when the system chassis cover has been removed. This feature is not included in a system by default and must be configured when ordering a system by selecting additional security configuration options.
    - To disable this feature if the system has it configured, go to the F10 > Security > Smart Cover > Cover Removal Sensor > "Disable".

- Safety Interlock is a hardware feature that shuts down (removes main power from) the system if the system chassis cover has been removed. Auxiliary power to the unit will remain. A user will see a 3.7 beep/blink code if main power is currently being blocked from the system due to cover removal. This feature will be automatically enabled for systems ordered for geographical regions that require interlock functionality for regulatory compliance. Outside of those geographies, this feature is not included in the system by default and must be configured when ordering a system by selecting additional security configuration options.
    - To disable this feature if the system has it configured, go to the F10 > Security > Smart Cover > Uncheck “Safety Interlock”.

HP Z8 Fury G6i vs HP Z8 Fury G5 Feature Comparison

Figure 1: Z8 Fury G6i vs Z8 Fury G5 Feature Comparison

	HP Z8 Fury G6i	**HP Z8 Fury G5**
Processors	Intel® Xeon® 6 Processor up to 350W	Intel® Xeon® Scalable Processor
Instruction Sets	AMX AVX-512 AVX2 AVX AES-NI	AMX AVX-512 AVX2 AVX AES-NI
Memory Technology	DDR5: Registered DIMMs Up to 6400MHz	DDR5: Registered DIMMs Up to4800MHz
PCIe Support	PCIe Gen 4/5	PCIe Gen 4/5
USB Enhancement	Two 20 Gbps Type-C ports (Premium Front I/O option) One 10 Gbps Type-C port on Rear I/O	Two 20Gbps Type-C ports (Premium Front I/O option)
USB SuperSpeed Ports	5 Rear, 4 Front (Entry Front I/O) or 2 Front (Premium Front I/O), 1 Internal	6 Rear, 4 Front (Entry Front I/O) or 2 Front (Premium Front I/O), 1 Internal
Manageability	Intel® ME19.10 Intel® vPro™	Intel® ME16.10, Intel® vPro™
Operating System	Windows 11 Pro for Workstations 64-bit	Windows 10 Professional 64-bit, Windows 11 Professional 64-bit

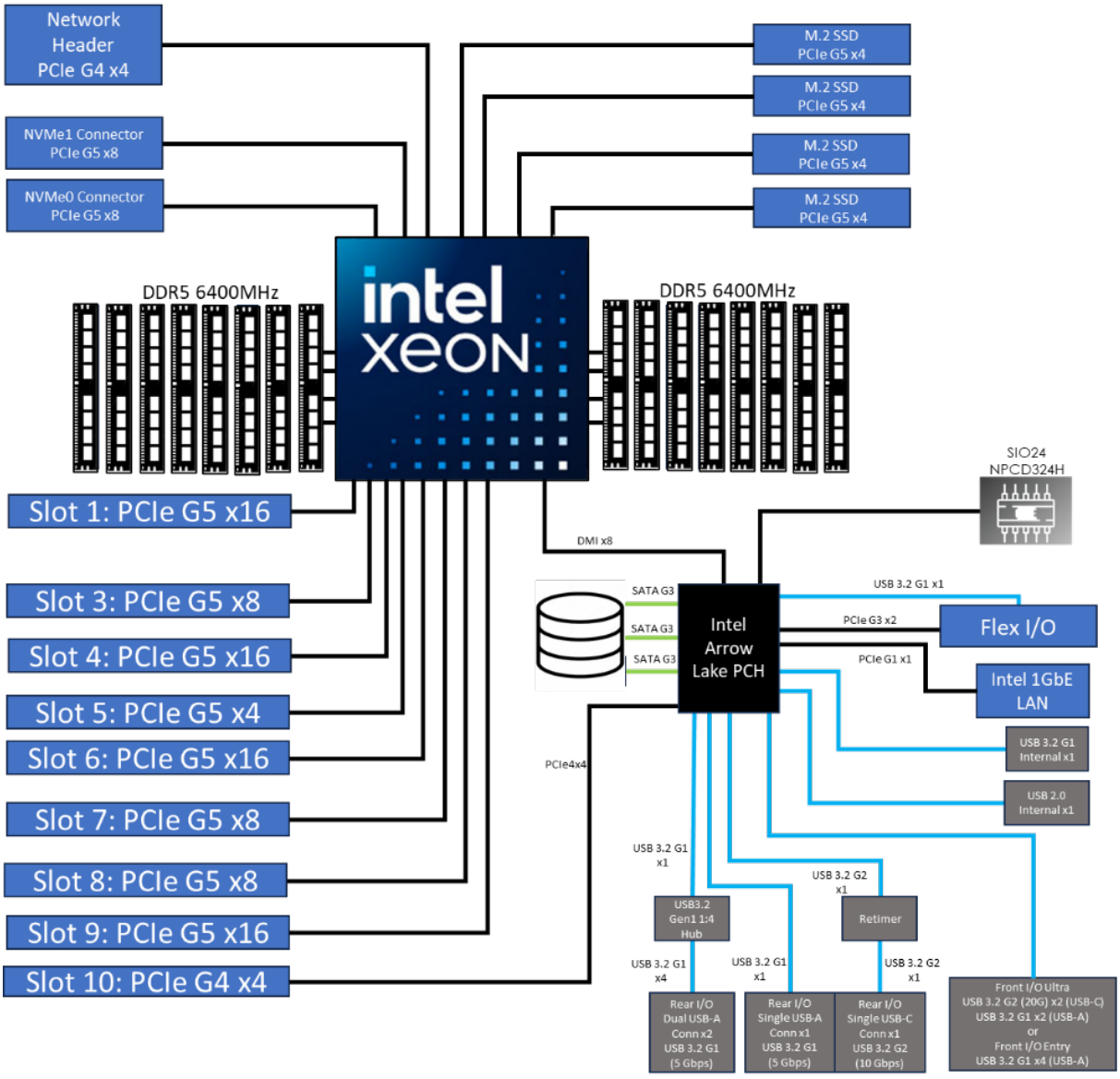
HP Z8 Fury G6i - CPUs Supported

Figure 2: Intel® Xeon® 6xx Processors supported at introduction

Name	**Clock Speed (GHz)**	**Cores**	**Cache (MB)**	**Memory Speed (MHz)**	**TDP (W)**
Xeon® 698X processor	2.0	86	336	6400*	350W
Xeon® 696X processor	2.4	64	336	6400*	350W
Xeon® 678X processor	2.4	48	192	6400*	300W
Xeon® 676X processor	2.8	32	144	6400*	275W
Xeon® 674X processor	3.0	28	144	6400*	270W
Xeon® 658X processor	3.0	24	144	6400*	250W
Xeon® 656 processor	2.9	20	72	6400*	210W
Xeon® 654 processor	3.1	18	72	6400*	200W

All processors feature Intel® vPro™ Technology, feature Intel® Turbo Boost Technology, and support hyperthreading[6].

HP Z8 Fury G6i Block Diagram and PCI-Express Performance



Integrated PCI-Express 5.0

The HP Z8 Fury G6i uses the Intel® Xeon® W processor family, with integrated PCI-Express

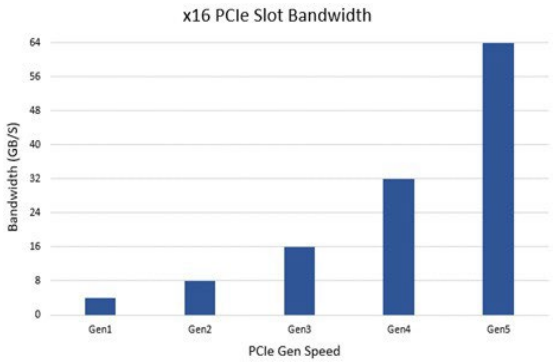
5.0 controllers delivering a peak bandwidth of 64 GB/s per direction (4 GB/s per lane). PCI- Express 5.0 is backward compatible with 1.0, 2.0, 3.0, and 4.0. All PCIe slots will train to the highest common speed. PCI-Express slots will initialize at 1.0 and then transition to the max common speed through a training sequence that involves multiple

adaptive training phases. It is recommended to carefully evaluate and validate PCI-Express devices that are not available or supported by HP.

PCI-Express Performance

The HP Z8 Fury G6i integrates several features within the processor: multiple PCIe 5.0 controllers, DMA caching, and four 2-channel memory controllers per processor (2 DIMMs per channel). This produces excellent performance in I/O bandwidth, remote bandwidth, and latency.

Figure 3: x16 Peak Bandwidth per Direction (GB/s)



Recipe for Optimizing PCI-Express I/O Performance

For high I/O bandwidth applications, the choice of slot loading, processor, and memory configuration can be optimized to ensure maximum bandwidth available. Applications and cards sensitive to I/O latency may benefit as well from some of the tips below.

Recommended Configuration Steps

1. Place GPU and graphics cards first, following the slot order listed in Figure 5.
2. Place I/O cards next, from highest bandwidth to lowest, following the slot order listed in Figure 3. This is the optimal load order for most applications.
3. Additional I/O bandwidth refinements may be possible. If necessary, refer to the tips below.

Figure 4: HP Z8 Fury G6i I/O Slot Recommended Load Order

Card Load Order	PCIe Card/Cable Description	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7	Slot 8	Slot 9	Slot 10
		PCIe5-x16	Mechanical	PCIe5-x8	PCIe5-x16	PCIe5-x4	PCIe5-x16	PCIe5-x8	PCIe5-x8	PCIe5-x16	PCIe4-x4
		CPU		CPU	CPU	CPU	CPU	CPU	CPU	CPU	PCH
1	1st Graphics						Only				
2	2nd Graphics /GPU Compute Card	1			2					3	
3	Thunderbolt-5 (2-port)								2		1
4	3rd Graphics /GPU Compute Card				1			3		2	
5	4th Graphics /GPU Compute Card			3				2		1	
6	Z Turbo Drive Quad Pro (4x M.2 card)	1			3					2	
7	Intel E810-CQDA2	1			2					3	
8	Network Interface (LAN, etc.)			4		1		2	3		
9	Network Interface (WLAN External antenna)							2	1		3
10	Remote System Controller			4		1			3		2
11	Serial Module		1	3		5		6	4		2

Additional Tips

- For applications doing direct bus Peer-to-Peer transfers between cards, load the corresponding cards in slots off the CPU.
- If possible, make sure all I/O cards are loaded in slots that have a PCI-Express Lane Width at least as wide as the card (see Figure 3).
- For cards that are latency sensitive, load these cards in processor slots.
- Use the latest system BIOS version available on hp.com.
- Check for updates in the latest performance optimization whitepapers

HP Z8 Fury G6i Memory Configurations and Optimization

The purpose of this section is to provide an overview of the memory configurations for the HP Z8 Fury G6i Workstation and to provide recommendations to optimize performance.

Supported Memory Modules

Types of memory supported on an HP Z8 Fury G6i Workstation include:

- 16 GB, 32 GB, 64GB and 128GB 6400MHz DDR5 Registered DIMMs
- Single and dual rank DIMMs based on 16Gb and 32Gb DRAMs are supported

Types of memory NOT supported on an HP Z8 Fury G6i Workstation are:

- Unbuffered DIMMs
- Non-ECC DIMMs
- DDR, DDR2, DDR3, DDR4 DIMMs

Platform Capabilities

Maximum Capacity: 2TB

- Total of 16 memory sockets
- 8 Memory controllers with 1 channels per memory controller for a total of 8 channels and 2 sockets per channel

Speed

- 6400MHz and 5200MHz memory speeds are supported in this platform
- For 1 DIMM per channel configurations, the max memory speed is 6400MHz
- For 2 DIMMs per channel configurations, the max memory speed is 5200MHz
- Memory will operate at the slower of the following two speeds: the platform's max speed or the installed DIMM's max speed. E.g., if using 5600 MHz DIMMs at 2 DIMMs per channel, the speed will be 5200 MHz.

Mixing of DIMMs in a System

- Registered and 3DSRDIMMs cannot be mixed in a system
- Mixing x4 DRAMs with x8 DRAMs is not supported.
    - 16GB and 32GB RDIMMs supported by HP are x8 and can be mixed in a system
    - 64GB and 128GB RDIMMs supported by HP are x4 and can be mixed in a system

Memory Features

This platform supports DDR5 technology:

- DDR5 supports higher bandwidths, capacities, and power efficiencies
- Improves reliability features
- DDR5 has increased technology efficiencies
- Adds support for on-die ECC
    - On-die ECC is where the data stored on the memory module is monitored by the DRAM for errors
    - Only single-bit errors are automatically corrected, multi-bit errors are not detected
- But system ECC is still supported on all RDIMMs
    - Single-bit errors are automatically corrected
    - Multi-bit errors are detected and will cause the system to immediately reboot and halt with an F1 prompt error message
    - By way of comparison, non-ECC memory (not supported on this platform) does not detect or correct single-bit or multi-bit errors which can cause instability, or corruption of data, in the platform. See Memory Technology White Paper for more information.

Command and Address parity is supported

- Command and Address errors are detected and will cause the system to immediately reboot and halt with an F1 prompt error message.

This platform supports 8 memory controllers with 1 channel per memory controller for a total of 8 channels that increases system performance

Optimal Memory Configuration

Generally, to obtain the best performance with regard to memory, it is advised that you follow the following guidelines:

- Load memory into all channels.
- Evenly distribute total desired memory across all operational channels and memory controllers. E.g. using 8x 32 GB DIMMs will generally provide better performance than 4x 64 GB DIMMs.
- Install multiple ranks in each channel. This can be accomplished by installing 2 single ranked DIMMs in the same channel.

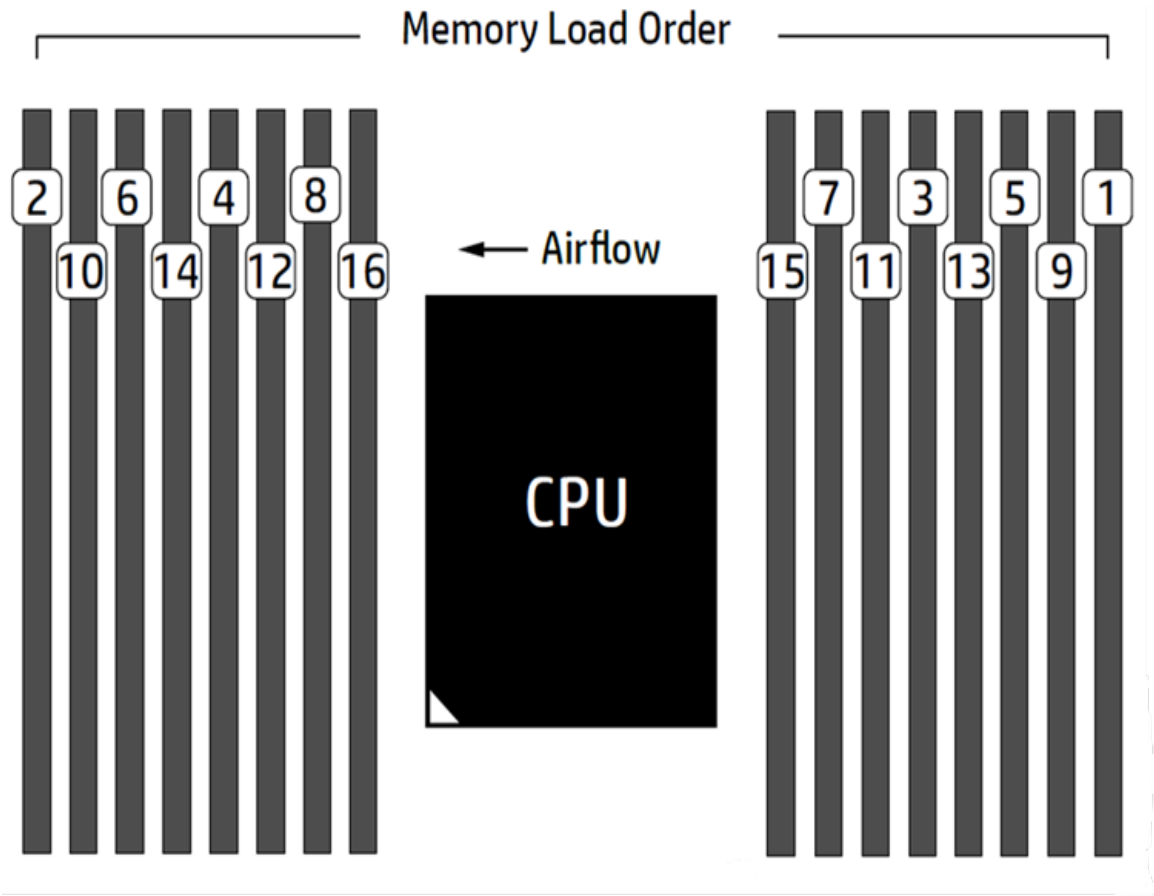
Figure 6: Optimal configurations for the HP Z8 Fury G6i (Note: the following tables do not include all available orderable configurations)

	DIMM1	DIMM2	DIMM3 (Black)	DIMM4	DIMM5	DIMM6	DIMM7 (Black)	DIMM8	CPU	DIMM9	DIMM10 (Black)	DIMM11	DIMM12	DIMM13	DIMM14 (Black)	DIMM15	DIMM16	Rating
16GB (1x16GB)	X																	GOOD
32GB (2x16GB)	X																X	GOOD
32GB (1x32GB)	X																	GOOD
64GB (4x16GB)	X				X								X				X	BETTER
64GB (2x32GB)	X																X	GOOD
64GB (1x64GB)	X																	GOOD
128GB (8x16GB)	X		X		X		X				X		X		X		X	BEST
128GB (4x32GB)	X				X								X				X	BETTER
128GB (2x64GB)	X																X	GOOD
256GB (16x16GB)	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	BEST
256GB (8x32GB)	X		X		X		X				X		X		X		X	BEST
256GB (4x64GB)	X				X								X				X	BETTER
256GB (2x128GB)	X																X	GOOD
512GB (16x32GB)	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	BEST
512GB (8x64GB)	X		X		X		X				X		X		X		X	BEST
512GB (4x128GB)	X				X								X				X	BETTER
1TB (16x64GB)	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	BEST
1TB (8x128GB)	X		X		X		X				X		X		X		X	BEST
2TB (16x128GB)	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	BEST

Loading Rules

- Load the memory modules in order of size, starting with the largest module and finishing with the smallest module.
- Each channel includes two DIMM sockets; black and white connector pairs represent a channel. The DIMMs should be loaded first in the black sockets and then in the white sockets. The DIMMs should be loaded starting with the DIMM furthest from the CPU, with the first DIMM loaded in the right most socket and alternating sides of the CPU.
- See the figure below for loading order.

Figure 7: Loading order for single



Summary

The memory configurations of the HP Z8 Fury G6i Workstation have been specifically crafted to meet strict long-term reliability standards with an optimized performance that provides users with seamless functionality. Design, cooling, and power solutions were validated to ensure DIMMs met max performance.

System Performance

In addition to the hardware configuration, there are several BIOS and OS settings that influence system performance. First, regarding the hardware configuration, ensure you follow the guidelines in this whitepaper describing the optimal PCIe and memory configuration to ensure best performance.

Regarding BIOS and OS settings: performance varies based on the application being used, and some settings will improve performance for certain applications while decreasing performance for others. Key performance-related settings are briefly described below.

- **BIOS Performance Mode.** This setting is available in the F10 BIOS menu, in *Advanced->Performance*. Most significantly, the performance mode controls CPU power limits and system cooling. Selecting *Ultimate Performance* will give the best performance, especially on higher powered CPUs and for multi-threaded workloads. Note: To provide adequate cooling, selecting this setting may result in higher fan noise from the system.
- **Windows Power Plan**. This setting is available within Windows' Control Panel. You can find it by typing "Choose a power plan" in the Windows search bar. *HP Ultimate Performance* is recommended for best performance. It keeps CPU cores more active, improving responsiveness and reducing latency. Alternatively, *HP Optimized* focuses on reducing idle energy consumption while optimizing performance.
- **C1 Auto Demotion.** This setting is available in the F10 BIOS menu, in *Advanced->Performance*. When enabled, it improves system responsiveness by reducing latency caused by waking cores up. However, disabling it can improve single-core or low-core turbo frequencies, since less cores may be active.
- **Sub-NUMA Clustering (SNC).** This setting only has an effect on the 64-core and 86-core CPUs. Leaving this disabled is generally best for multi-threaded workflows that scale to many cores. However, enabling this can improve performance of some applications that use a moderate number of cores or are NUMA-optimized.

The above settings have the largest impact on performance; however, several other performance-related settings exist in the F10 BIOS Setup menu that can influence performance. More details can be found in the dedicated Performance for Z Workstations whitepaper found on HP's website.

System Security

The HP Z8 Fury G6i Workstation integrates a comprehensive security architecture designed to protect platform integrity, safeguard sensitive data, and support enterprise-grade manageability. Building on HP's established security framework across commercial desktops and workstations, this generation introduces enhanced hardware, firmware, and software defenses aligned to modern threat landscapes.

Platform Firmware Security

HP Sure Start is HP's hardware-enforced, self-healing firmware protection that automatically detects, stops, and recovers from attacks or corruption across most of the boot-critical system firmware. Every boot, it validates

firmware integrity and uses an isolated “golden copy” to restore the system within minutes, delivering NIST SP 800-193–aligned resiliency with minimal user disruption.

HP Sure Start Key Features:

- BIOS Integrity Protection - HP Sure Start provides hardware-enforced BIOS protection to ensure that only trusted firmware executes. BIOS integrity verification occurs not only at boot, but also during shutdown and while the system is powered on—continuously protecting against rootkits, boot-level malware, and unauthorized modifications.
- Automated, Policy-Driven BIOS Recovery - If the BIOS becomes corrupted or compromised, HP Sure Start automatically restores a known-good, HP-authorized firmware image. Recovery behavior is policy-driven so IT can tailor protection levels and enforcement across enterprise fleets.
- Protection Beyond BIOS - HP Sure Start extends its integrity checking beyond the BIOS region to safeguard other critical platform data, including:
  - Network configuration parameters
  - Platform-specific identifiers (e.g., system IDs)
  - Secure Boot credentials
  - Other essential boot-related code and configuration structures
    This holistic protection helps maintain a trusted platform state across multiple firmware components.

- Audit & Event Logging – HP Sure Start includes integrated audit capabilities. Event logs capture security-relevant actions—such as integrity check failures, automatic repairs, and timestamps for each incident—supporting security investigations, compliance reporting, and operational forensics.

Virtualization Based BIOS Protection

Virtualization Based BIOS Protection is a firmware-level defense that uses hardware-assisted micro-virtualization to safely isolate untrusted UEFI code—such as PCIe Option ROMs or third-party bootloaders—so it cannot compromise system integrity even if it is properly signed and allowed by Secure Boot. Unlike traditional protections that rely solely on signature validation, this technology creates a virtualized execution environment beneath the operating system, preventing malicious or vulnerable firmware from accessing privileged system resources or undermining the boot chain. By containing initialization code from add-in devices and early-boot loaders within a controlled, isolated context, HP ensures that even if attacker-supplied firmware executes, it cannot alter critical BIOS structures or weaken platform security, providing a stronger safeguard against below-the-OS persistence attacks.

Memory & Data Protection

Intel® Total Memory Encryption (TME)

Intel® TME encrypts system memory to protect against physical attacks such as cold-boot extraction or DIMM probing. This ensures sensitive information is protected even if memory is physically removed.

Chassis Tamper Protections[9]

Cover Removal Sensor

A firmware feature that logs cover removal events and prompts the user before booting the OS that the system may have been tampered with.

Safety Interlock

A hardware interlock that shuts down main system power when the chassis is opened in specified geographies requiring this safeguard. This ensures compliance with electrical safety standards.

HP TamperLock

To protect the physical integrity of the PC, HP TamperLock can be configured to act when the system detects the cover has been removed. Configuration options include clearing the TPM (effectively removing the Bitlocker keys), alerting IT, and disabling boot to only allow admin credentials, which is useful for the security team to conduct forensics on the device.

OS-Level Security & Configuration

The workstation supports modern Windows 11 platform security standards, including:

- TPM 2.0
- Secure Boot
- Virtualization-based Security (VBS)
- Kernel DMA Protection

Combined with HP's BIOS and OS performance modes, the Z8 Fury G6i delivers a security-hardened platform optimized for engineering, AI/ML, virtualization, and mission-critical workloads.

Warranty

HP values product quality and end user productivity, which is why the products discussed in this document are backed by HP's warranty. For more information, visit **https://**www.hp.com/us-en/workstations/desktop-workstation-pc.html.

Resources, Contacts, or Additional Links

Visit HP's White Paper site to learn more about the innovation in HP Workstations and the latest technologies offered in the products.

Disclaimers

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. Optional, configurable features. Configurations for 2TB DDR5 RAM and 104 TB . Configuration for 104TB requires separate additional purchase. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35GB is reserved for system recovery software.
3. Optional, configurable feature. Redundant and aggregate power requires configuring two power supplies at hardware purchase.
4. MIL-STD testing is 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. Accidental damage requires an optional HP Accidental Damage Protection Care Service.
5. Network access required. HP Anyware software and licensing are available through a 1- or 3-year subscription. Renewal is required after the subscription term. For system requirements and to install HP Anyware and Anyware Manager, refer to the Admin Guides at: https://docs.teradici.com/find/product/hp-anyware.
6. Intel® vPro™ requires Windows 10 Pro 64 bit or higher, a vPro supported processor, vPro enabled chipset, vPro enabled wired LAN and/or Wi-Fi 6E WLAN and TPM 2.0. Some functionality requires additional third-party software in order to run. Features of vPro Essentials and Enterprise vary. See http://intel.com/vpro. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See www.intel. com/technology/turboboost for more information.
7. Z by HP Data Science Stack Manager requires Windows 11 or Ubuntu 24.04 and is available on select Z workstations.
8. Wi-Fi 7: Wi-Fi 7 requires a Wi-Fi 7 router, sold separately, and Windows 11 to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 7 is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 76E is supported.
9. These are AV configurable options. Not shipped as default in all countries
10. Based on US EPEAT® registration. EPEAT® status varies by country. Visit www.epeat.net for more information.
11. Recycled plastic content percentage is based on the definition set in the IEEE 1680.1-2018 EPEAT standard.
12. Fans contain up to 25% ocean-bound plastic by weight.

4AA8-5450ENW March 2026