



HP Z620 Memory Configurations and Optimization

The purpose of this document is to provide an overview of the memory configuration for the HP Z620 Workstation and to provide recommendations to optimize performance.



Supported Memory Modules¹

The types of memory supported on a HP Z620 are:

- 2 GB and 4 GB PC3-12800E 1600MHz DDR3 Unbuffered ECC DIMMs
- 4 GB and 8 GB PC3-12800R 1600MHz DDR3 Registered DIMMs
- 1.35V and 1.5V DIMMs are supported, but the system will operate the DIMMs at 1.5V only.
- 2 Gb and 4 Gb based DIMMs are supported.

See the Memory Technology White Paper for additional technical information.

Platform Capabilities

Maximum capacity

- Single processor: 64 GB
- Dual processors: 96 GB

Total of 12 memory sockets

- 8 sockets on the motherboard: 4 channels per processor and 2 sockets per channel
- 4 sockets on the 2nd CPU and memory module: 4 channels per processor and 1 socket per channel

Speed

- 1600MHz, 1333MHz and 1066MHz DIMMs are supported in this platform
- Memory will operate at the speed of the slowest rated installed processor or DIMM.

Unbuffered and Registered DIMMs cannot be mixed in a system.

Dynamic power saving is enabled.

NUMA and Non-NUMA modes are supported and user configurable.

Memory Features

ECC is supported on all of our supported DIMMs.

- 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.

Non-ECC memory does not detect or correct single-bit or multi-bit errors which can cause instability, or corruption of data, in the platform. See the Memory Technology White Paper for additional technical information.

Command and Address parity is supported with Registered DIMMs.

Optimize Performance

Generally, maximum memory performance is achieved by evenly distributing total desired memory capacity across all operational channels. Proper individual DIMM capacity selection is essential to maximizing performance. On the second CPU, installing the same amount of memory as the first CPU will optimize performance. Refer to the Optimal Memory Configuration tables on the next page for more information.

FIGURE 1

Optimal Memory Configurations for Single Processors

(Note: The following tables do not include all available factory installed configurations)

Total Capacity	DIMM1	DIMM2	DIMM3	CPU0 DIMM4	DIMM5	DIMM6	DIMM7	DIMM8	Rating
2 GB*	2 GB								Fair
4 GB*	2 GB							2 GB	Good
6 GB	2 GB		2 GB					2 GB	Better
8 GB	2 GB 4 GB		2 GB			2 GB		2 GB 4 GB	Best Good
12 GB~	2 GB 4 GB	2 GB	2 GB 2 GB			2 GB 2 GB	2 GB	2 GB 4 GB	Best
16 GB	2 GB 4 GB	2 GB	2 GB 4 GB	2 GB	2 GB	2 GB 4 GB	2 GB	2 GB 4 GB	Best
24 GB	4 GB	2 GB	4 GB	2 GB	2 GB	4 GB	2 GB	4 GB	Best
32 GB	4 GB 8 GB	4 GB	4 GB 8 GB	4 GB	4 GB	4 GB 8 GB	4 GB	4 GB 8 GB	Best
48 GB	8 GB	4 GB	8 GB	4 GB	4 GB	8 GB	4 GB	8 GB	Best
64 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	Best

* For 32-bit operating systems, there is a memory limit of 4 GB.

~ Although supported, these configurations are not factory configurable at this time.

Optimal Memory Configurations for Dual Processors

Total Capacity	DIMM1	DIMM2	DIMM3	CPU0 DIMM4	DIMM5	DIMM6	DIMM7	DIMM8	DIMM1	CPU1 DIMM3	DIMM6	DIMM8	Rating
4 GB*	2 GB								2 GB				Fair
8 GB	2 GB							2 GB	2 GB			2 GB	Good
12 GB~	2 GB		2 GB			2 GB		2 GB	2 GB	2 GB		2 GB	Better
16 GB~	2 GB 4 GB		2 GB			2 GB		2 GB 4 GB	2 GB 4 GB	2 GB	2 GB	2 GB 4 GB	Best Good
20 GB	2 GB	2 GB	2 GB			2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	Better
24 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	Better
32 GB~	4 GB 8 GB		4 GB			4 GB		4 GB 8 GB	4 GB 8 GB	4 GB	4 GB	4 GB 8 GB	Best Good
48 GB	4 GB 8 GB	4 GB	4 GB 8 GB	4 GB	4 GB	4 GB 8 GB	4 GB	4 GB 8 GB	8 GB 8 GB	8 GB 8 GB	8 GB 8 GB	8 GB 8 GB	Best
64 GB~	4 GB 8 GB	4 GB	4 GB 8 GB	4 GB	4 GB	4 GB 8 GB	4 GB	4 GB 8 GB	8 GB 8 GB	8 GB 8 GB	8 GB 8 GB	8 GB 8 GB	Best
80 GB	8 GB	4 GB	8 GB	4 GB	4 GB	8 GB	4 GB	8 GB	8 GB	8 GB	8 GB	8 GB	Better
96 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	Best

* For 32-bit operating systems, there is a memory limit of 4 GB.

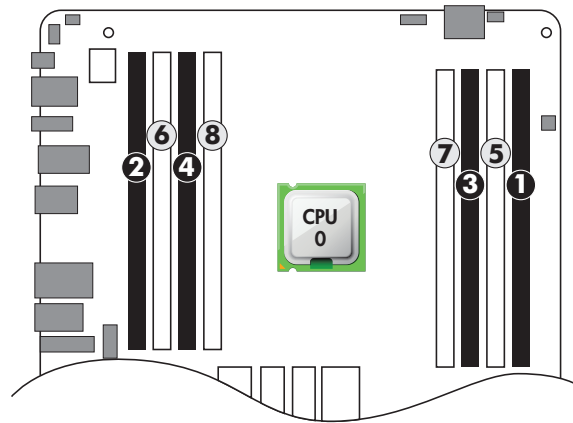
~ Although supported, these configurations are not factory configurable at this time.

Loading Rules:

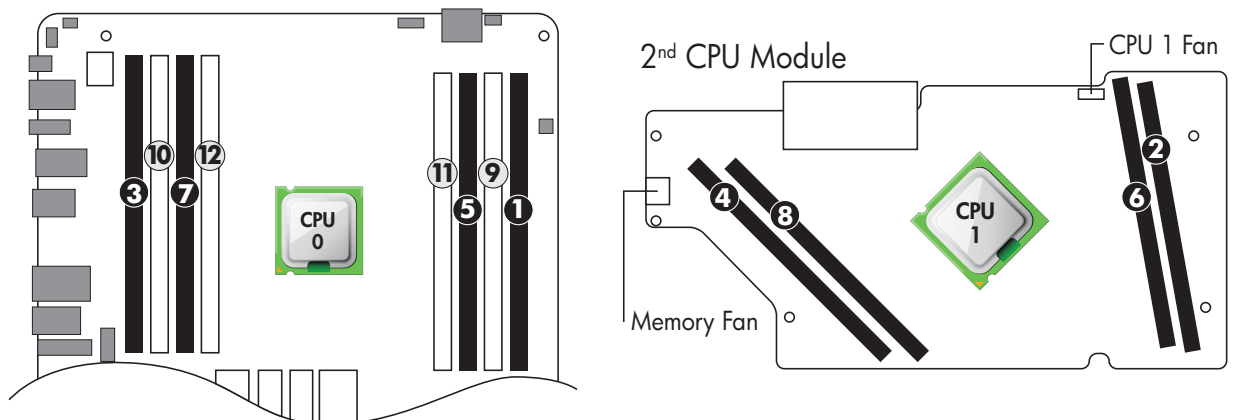
- On the motherboard each channel includes two DIMM sockets; black and white connector pairs represent a channel. On the 2nd CPU & memory module, each channel only has one DIMM socket. Load all black slots first and then load the white slots.
- Load the memory modules in order of size, starting with the largest module and finishing with the smallest module.
- For a Single processor configuration, the DIMMs should be loaded first in the black sockets and then in the white sockets. The DIMMs should be loaded starting with the socket furthest from the CPU, with the first DIMM loaded in the socket on the right side of the system and alternating sides of the CPU.
- For a dual processor configuration, follow the loading order above, but alternate between the 2 processors.
- See diagram below for loading order

FIGURE 2

Load order for single CPU configurations



Load order for dual CPU configurations



1 Each processor supports up to 4 channels of DDR3 memory. To realize full performance at least 1 DIMM must be inserted into each channel.

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