HP Z600 Workstation

Memory configuration and optimization (June 2010)

The purpose of this document is to provide an overview of the memory configuration for the HP Z600 Workstation and to provide recommendations to optimize performance.

Windows®. Life without Walls™. HP recommends Windows 7.

Supported DIMMs

The HP Z600 Workstation supports:

- Unbuffered 1-GB, 2-GB, and 4-GB single- and dual-rank PC3-10600E 1333 MHZ ECC DIMMs
- Registered 4-GB and 8-GB dual-rank PC3-10600R 1333 MHz DIMMs
- Support for Registered DIMMs requires a system board with the C2 revision of the Intel® 5520 chipset. To determine if a specific HP Z600 system has the C2 revision of the chipset:
  1. Use the BIOS setup menu to access the "Boot Block Date" from the "System Information Menu." All B3-based systems will have a "1/30/09" date and C2-based systems will have a "01/07/10" date.
  2. HP Performance Advisor software can be used to determine the PCA ID, which is reported by Performance Advisor under "System configuration" and "Baseboard ID." All B3-based systems will have the ID "0AE8h" and all C2-based systems will have the ID "0B54h."
- Unbuffered and Registered DIMMs cannot be mixed in a system
- In dual-processor configurations, each processor must have memory connected to it.
- The CPUs determine the speed at which the memory is clocked, i.e. if a 1067 MHz-capable CPU is included in the system, the maximum speed at which the memory will run is 1067 MHz regardless of the specified speed of the memory.

Best performance optimization tips

Since the memory controller is based on three-channel design, the following rules should be used for best performance:

- For single processor configurations, configure memory in sets of three.
- For dual processor configurations, configure memory in sets of six.
- Configuring the memory using the smallest DIMM size will sometimes optimize memory performance, if it prevents single-channel configurations. Example, for a 2 GB single processor configuration, buy two 1 GB DIMMS, not one 2 GB DIMM.

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Figure 1. Optimal configuration for the HP Z600 Workstation (Note: The following tables do not include all available CTO configurations)

Single-processor configuration

	CPU0			
	DIMM1	DIMM2	DIMM3	Configuration rating
1 GB	1 GB			Good
2 GB	1 GB	1 GB		Better
3 GB*	1 GB	1 GB	1 GB	Best
4 GB*	2 GB	2 GB		Better
6 GB	2 GB	2 GB	2 GB	Best
8 GB	4 GB	4 GB		Better
12 GB	4 GB	4 GB	4 GB	Best
24 GB	8 GB	8 GB	8 GB	Best

* For 32-bit operating systems, it is recommended to only load 3 GB of memory in a three-channel design, which optimizes the performance and cost per usable memory since the fourth GB isn't fully accessible by the operating system.

Dual-processor configurations

	CPU0			CPU1			
	DIMM1	DIMM2	DIMM3	DIMM1	DIMM2	DIMM3	Configuration rating
2 GB	1 GB			1 GB			Good
4 GB	2 GB			2 GB			Good
	1 GB	1 GB		1 GB	1 GB		Better
6 GB	1 GB	1 GB	1 GB	1 GB	1 GB	1 GB	Best
8 GB	2 GB	1 GB	1 GB	2 GB	1 GB	1 GB	Good
10 GB	2 GB	2 GB	1 GB	2 GB	2 GB	1 GB	Better
12 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	Best
16 GB	4 GB	2 GB	2 GB	4 GB	2 GB	2 GB	Better
24 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	Best
48 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	Best

Loading order

When loading the system memory, for single-processor configuration, start in the slot furthest from the CPU, DIMM1, and move towards the CPU. For dual-processor configuration, load the memory as above, alternating between the two processors. See illustration below.

Figure 2. Memory load order—single processor

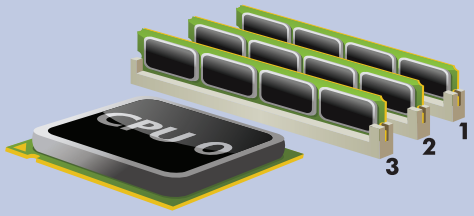
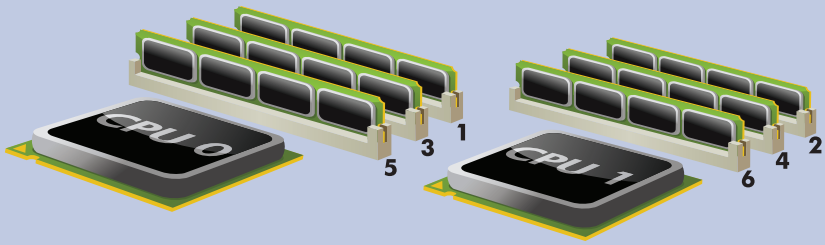


Figure 3. Memory load order—dual processor



There is a BIOS setting to change between two different types of NUMA and Non-NUMA. See Memory Architecture and Efficiency White Paper for more information.

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