Technical white paper

HP Z230 Tower and HP Z230 SFF memory configurations and optimization

Table of contents

Overview

The purpose of this document is to provide an overview of the memory configurations for the HP Z230 Tower and HP Z230 SFF Workstation and to provide recommendations to optimize performance.

Supported memory modules

The types of memory supported on the HP Z230 Tower and HP Z230 SFF Workstations are:

- 4 GB and 8 GB PC3-12800U 1600MHz DDR3 Unbuffered non-ECC DIMMs[1, 2]
- 2 GB, 4 GB and 8 GB PC3-12800E 1600MHz DDR3 Unbuffered ECC DIMMs[1, 2]
- Single and dual rank 2 Gb and 4 Gb based DIMMs[1, 2]

See the Memory Technology White Paper for additional technical information.

[1] Each processor supports up to 2 channels of DDR3 memory. To realize full performance at least 1 DIMM must be inserted into each channel.
[2] Intel® Xeon E3, Intel Core i3 and Intel Pentium processors can support either ECC or non-ECC memory. Intel Core i5 and i7 processors only support non-ECC memory.

Processor and memory support

Table 1. Processor vs memory DIMM support

Processor[3]	Supports Non-ECC Memory	Supports ECC Memory	Notes
Intel® Core™ i3-41xx	•	•	
Intel® Core™ i3-43xx	•	•	
Intel® Core™ i5-45xx	•		*
Intel® Core™ i5-46xx	•		*
Intel® Core™ i7-47xx	•		*
Xeon® E3-12xx v3	•	•	
Pentium® G32xx	•	•	

* If ECC memory is added to the system, the ECC function is disabled and the DIMMs will appear to the system as Non-ECC memory.

[3] Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel® 64 architecture enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel's numbering is not a measurement of higher performance. See intel.com/info/em64t for more information.

Platform capabilities

Maximum capacity: 32 GB

HP Z230 has a total of 4 memory sockets

2 channels with 2 sockets per channel

Speed

1600 MHz and 1333 MHz DIMMs[1, 2] are supported

Memory will operate at the speed of the slowest rated installed processor or DIMM.

Memory features

ECC is supported on Unbuffered ECC 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.

Although HP does support non-ECC memory on this platform as a lower cost option, it should be noted that 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 Memory Technology White Paper for more information.

Optimizing 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. Refer to the Optimal Memory Configuration tables below for more information.

Optimal memory configurations

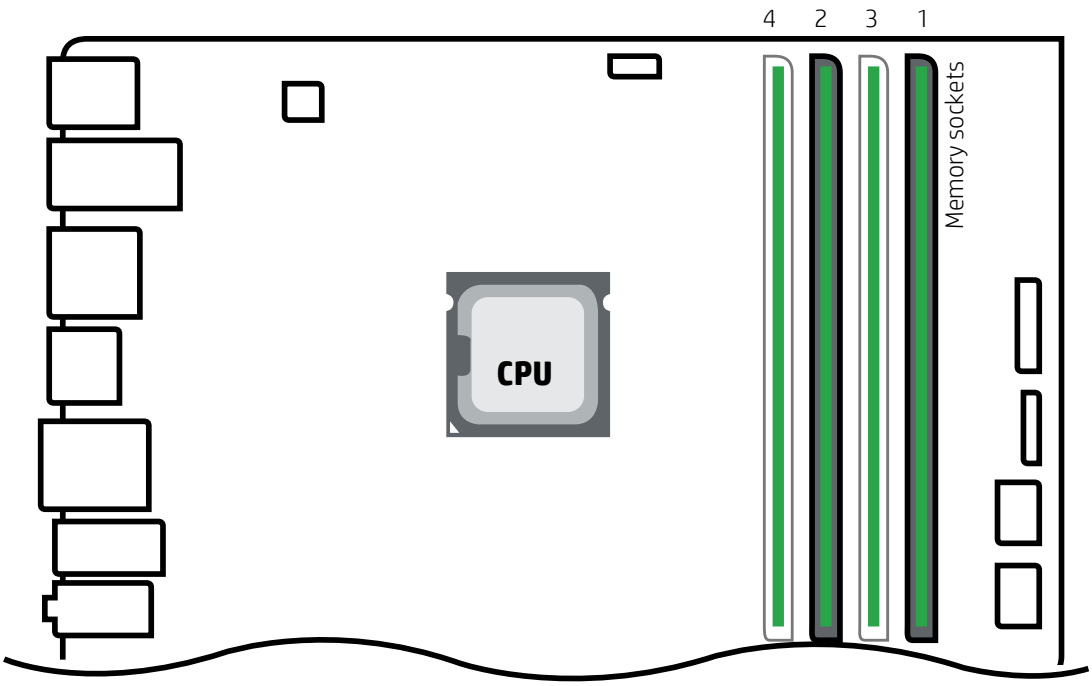
(Note: The following tables do not include all available factory installed configurations).

Table 2. Processor and memory support

Total Capacity	DIMM1	DIMM2	DIMM3	DIMM4	Performance Rating
4 GB*	2 GB		2 GB		Best
4 GB	4 GB				Good
6 GB~	2 GB	2 GB	2 GB		Better
8 GB	2 GB	2 GB	2 GB	2 GB	Best
	4 GB		4 GB		
12 GB~	4 GB	2 GB	4 GB	2 GB	Best
16 GB	4 GB	4 GB	4 GB	4 GB	Best
16 GB	8 GB		8 GB		
24 GB~	8 GB	4 GB	8 GB	4 GB	Best
32 GB	8 GB	8 GB	8 GB	8 GB	Best

* Maximum memory capacities assume Windows 64-bit operating systems or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.
~ Although supported, these configurations are not factory configurable at this time.

Loading order



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