LENOVO THINKSTATION

P520 AND P520C MEMORY CONFIGURATOR

Contents

Overview

The purpose of this document is to provide guidance for users on how to optimally configure the system memory in the ThinkStation P520 and P520c platforms in order to provide the best performance.

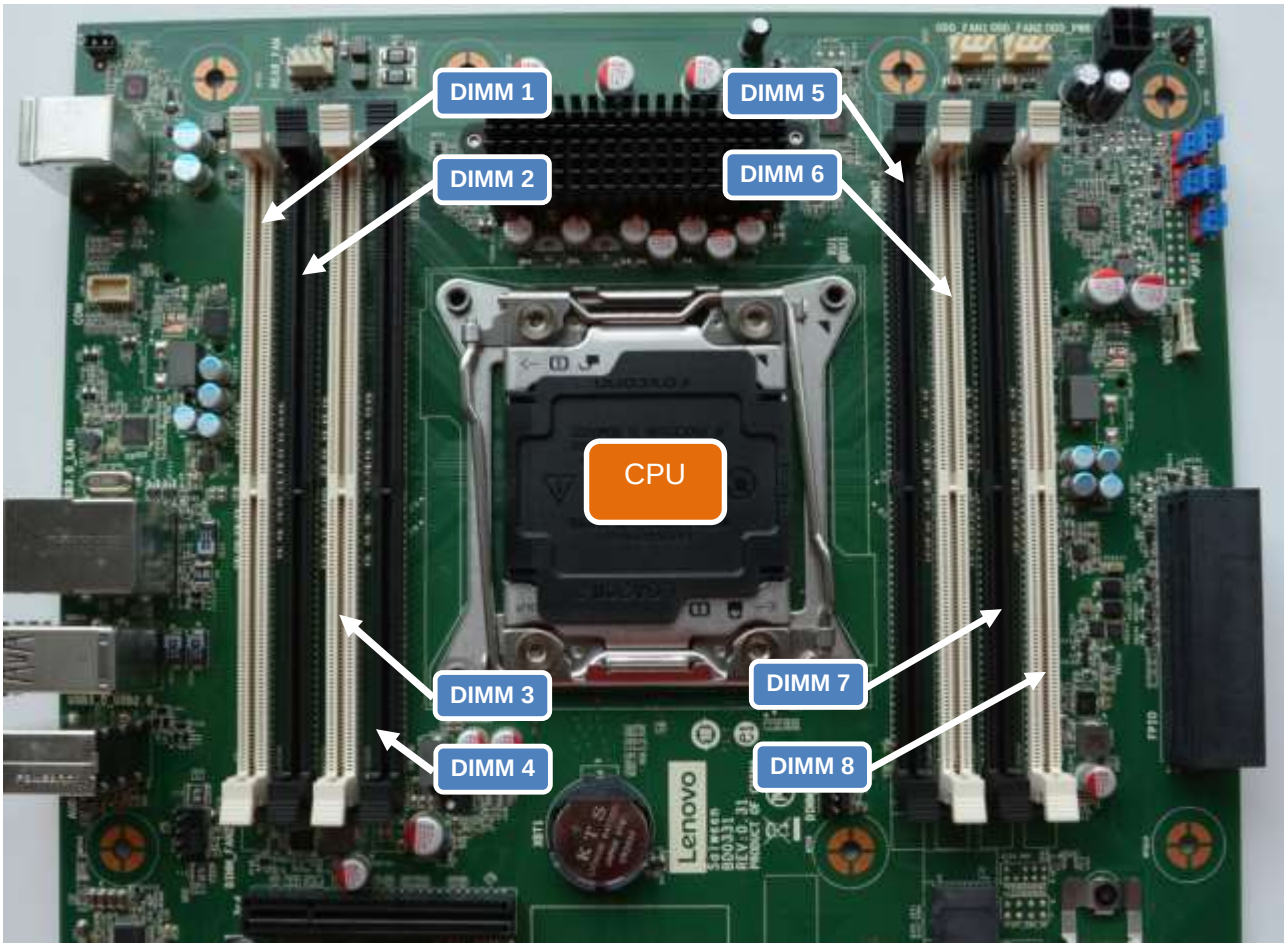
Section 1 – Platform Memory Architecture

The launch of the Intel Basin Falls platform brings with it some important updates to the memory system architecture. The main new feature is a higher top supported memory bus speed, which provides increased memory performance and bandwidth. Both the ThinkStation P520 and P520c can take advantage of this improvement, but each platform does so in a slightly different manner.

Section 2 – P520 Memory Configurations

The ThinkStation P520 is Lenovo's newest mainstream single CPU workstation. The platform has a total of 8 DIMM slots with a top supported memory bus speed of 2666MHz. The P520 takes full advantage of the 4 memory channels offered by the Intel Xeon Skylake-W CPU, and supports a 2-DIMM-per-channel design. This allows the P520 to offer incredible memory capacity at a top supported memory bus speed of 2666MHz[1]. Figure 1 below shows a visual reference of the DIMM slot layout for the P520 platform.

Figure 1 - P520 Motherboard DIMM Layout



[1] Actual memory bus speed is determined by the CPU selected.

The following guidelines are recommended by Lenovo for obtaining the best memory bandwidth from your P520 when filling DIMM slots:

- For optimal memory bandwidth, Lenovo recommends filing DIMM slots in multiples of 4 DIMMs or 8 DIMMs to fully take advantage of all 4 memory channels. Utilizing all 8 DIMM slots should yield maximum memory bandwidth performance.
- DIMM slots should be filled in the order listed in Figure 2.
- If using mixed capacity memory, fill DIMM slots in numerical order starting with the largest DIMMs first.
- White DIMM slots represent the first DIMM in each channel. Black DIMM slots represent the second DIMM in each channel.

Figure 2 shows the recommended DIMM slot fill order for P520.

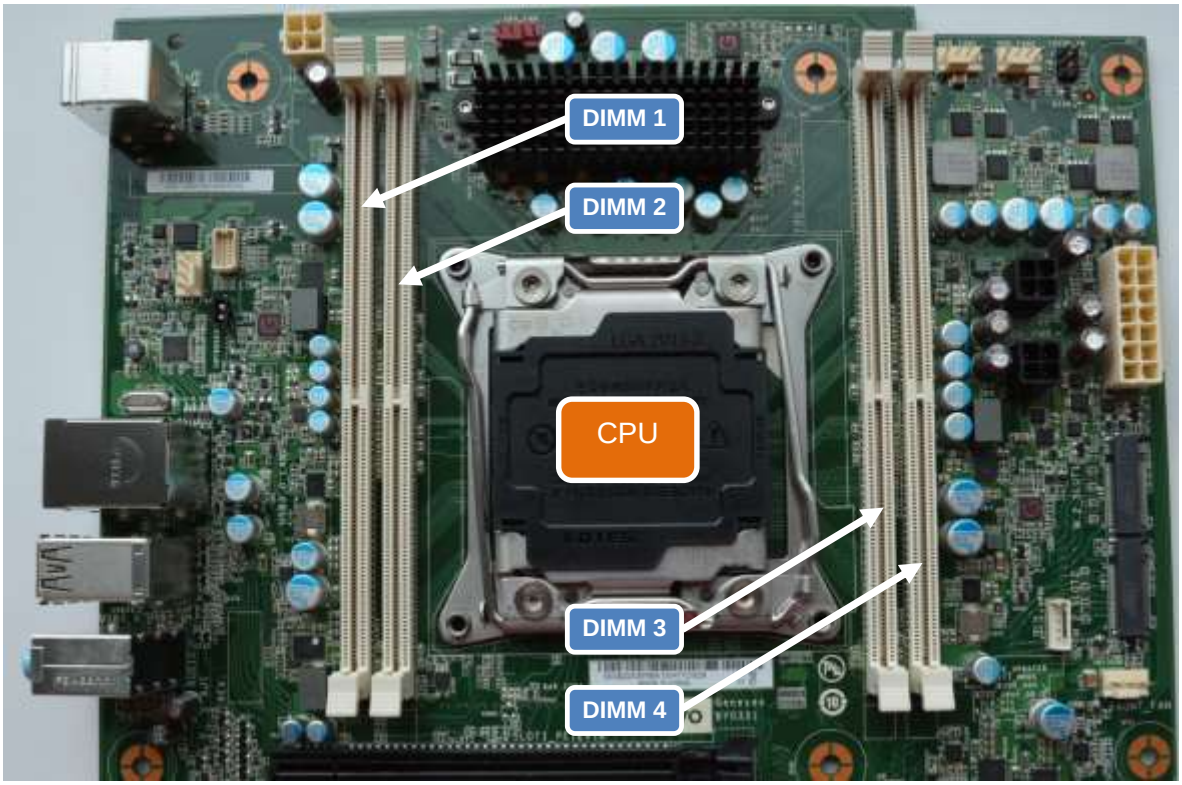
Figure 2 – P520 DIMM Slot Fill Order Recommendations

# of DIMMs	DIMM slots used
1 DIMM	DIMM 3
2 DIMMs	DIMM 1, DIMM 3
3 DIMMs	DIMM 1, DIMM 3, DIMM 6
4 DIMMs	DIMM 1, DIMM 3, DIMM 6, DIMM 8
5 DIMMs	DIMM 1, DIMM 3, DIMM 4, DIMM 6, DIMM 8
6 DIMMs	DIMM 1, DIMM 2, DIMM 3, DIMM 4, DIMM 6, DIMM 8
7 DIMMs	DIMM 1, DIMM 2, DIMM 3, DIMM 4, DIMM 5, DIMM 6, DIMM 8
8 DIMMs	DIMM 1, DIMM 2, DIMM 3, DIMM 4, DIMM 5, DIMM 6, DIMM 7, DIMM 8

Section 3 – P520c Memory Configurations

The ThinkStation P520c is another addition to the mainstream single CPU lineup. Like the P520, the P520c supports the maximum 4 memory channels offered by the Intel Xeon E5 Skylake-W CPU at 2666MHz[2]. However, the P520c only supports single DIMM per channel configurations. This allows users to attain high levels of memory performance at a lower cost. Figure 3 below shows a visual reference of the DIMM slot layout for the P520c platform.

Figure 3 - P520c Motherboard DIMM Layout



[2] Actual memory bus speed is determined by the CPU selected.

The following guidelines are recommended by Lenovo for obtaining the best memory bandwidth from your P520c when filling DIMM slots:

- For optimal memory bandwidth performance, Lenovo recommends filling all 4 DIMM slots with identical DIMMs to take full advantage of all 4 memory channels.
- DIMM slots should be filled according to the order listed in Figure 4.
- If using mixed capacity memory, fill DIMM slots in numerical order starting with the largest DIMMs first.

Figure 4 shows the recommended DIMM slot fill order for P520.

Figure 4 - P520c DIMM Slot Fill Order

s# of DIMMs	DIMM slots used
1 DIMM	DIMM 2
2 DIMMs	DIMM 1, DIMM 2
3 DIMMs	DIMM 1, DIMM 2, DIMM 3
4 DIMMs	DIMM 1, DIMM 2, DIMM 3, DIMM 4

Section 4 – Document Revision History

Version	Date	Author	Changes/Updates
1.0	11/21/2017	Cory Chapman	Initial launch release