

# Memory Configurator

Lenovo ThinkStation P4



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## Overview

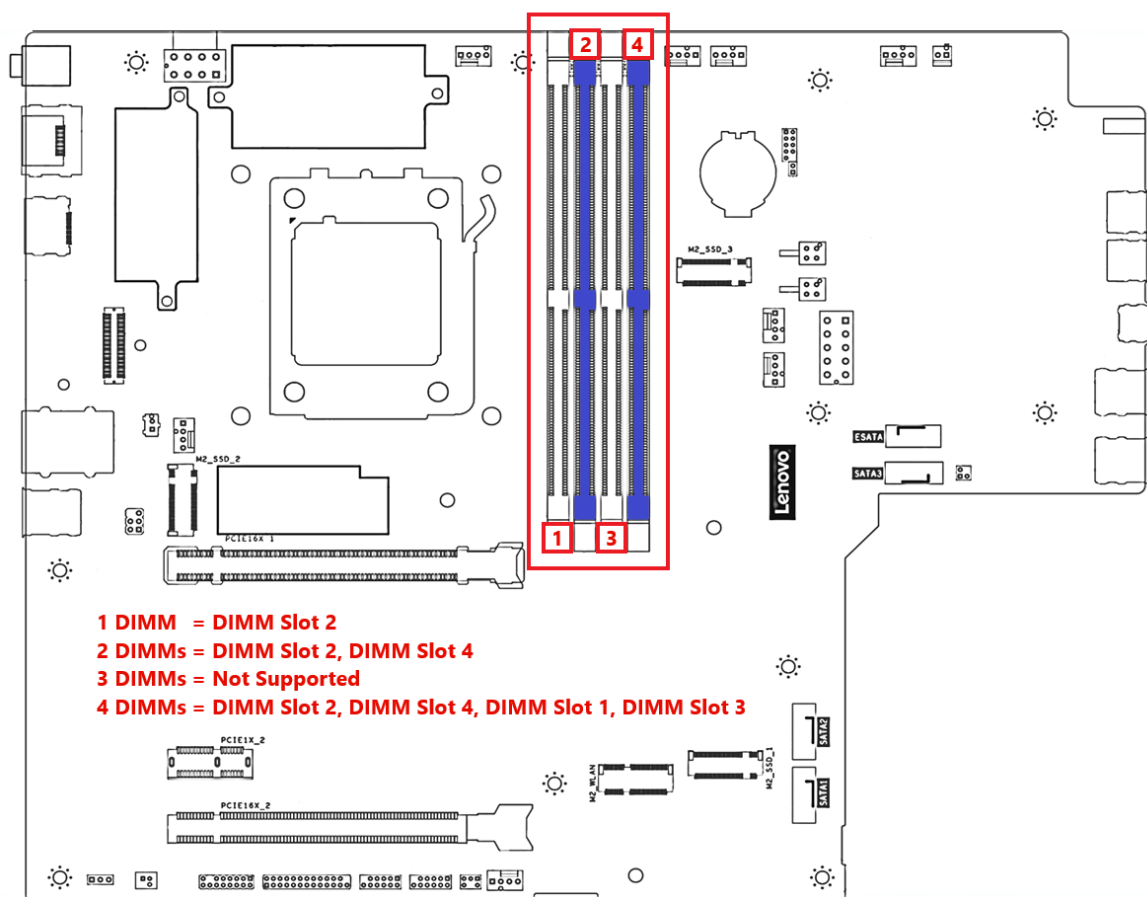
The purpose of this document is to provide a technical overview of the memory architecture and supported memory population guidelines for the P4 platform, enabling users to identify system memory components and configure memory for optimal performance, capacity, and reliability.

# Section 1 – Memory Architectural Design

The ThinkStation P4 platform utilizes DDR5 memory with bus speeds up to 5600 MT/s, depending on the system processor and number of DIMMs per channel. P4 offers a dual memory channel design based on Granite Ridge and Phoenix processors.

There is a total of four memory DIMM slots, allowing the P4 to take full advantage of a two DIMM per channel design for increased capacity in Workstations.

Figure 1 – P4 Motherboard



## Section 2 – P4 Memory Configuration

In P4 you should install one DIMM per memory channel even if the system supports two DIMMs per channel (2DPC). This will yield the best performance. When you want capacity over performance this is when you might choose to populate the 3<sup>rd</sup> and 4<sup>th</sup> slots.

- P4 utilizes a two DIMMs per channel (2DPC) configuration.  
Install DIMM slots in multiples of two to take full advantage of both memory channels.
- P4 natively supports Unregistered Dual In-Line Memory Modules (UDIMMs) as well as Clocked Unregistered Dual In-Line Memory Modules (CUDIMMs) when paired with Granite Ridge.
- ECC and non ECC is supported in P4 although mixing ECC & non ECC is not.
- DIMM slots should be filled in the order listed in Table 1.
- Maximum frequency is partially dependent on the ranks of DIMMs installed in the system. Due to the 2DPC design, maximum speed is limited to 5600 MT/s
- Lenovo recommends using the same capacity, rank, and brand within the same channel.
- Granite Ridge CPUs can support up to a maximum of 256GB; Phoenix CPUs up to a maximum of 192GB.
- Lenovo does not support installing three (3) DIMMs resulting in an unbalanced memory channel configuration.

Table 1 – P4 Slot Fill Order Recommendations

| DIMM Quantity | DIMM Slots in use                                  |
|---------------|----------------------------------------------------|
| 1 DIMM        | DIMM Slot 2                                        |
| 2 DIMMs       | DIMM Slot 2, DIMM Slot 4                           |
| 3 DIMMs       | Not Recommended <sup>1</sup>                       |
| 4 DIMMs       | DIMM Slot 2, DIMM Slot 4, DIMM Slot 1, DIMM Slot 3 |

1. Lenovo does not support or recommend this number of DIMMs as it results in an unbalanced memory configuration across dual channel CPUs.

Table 2 – Maximum Memory Transfer Rates

| Channel 1 |           | Channel 2 |           | Maximum Transfer Rate <sup>1</sup> |                       |
|-----------|-----------|-----------|-----------|------------------------------------|-----------------------|
| Slot 2    | Slot 1    | Slot 4    | Slot 3    | Granite Ridge                      | Phoenix               |
| Populated |           |           |           | 5600MT/s <sup>2</sup>              | 5200MT/s              |
| Populated |           | Populated |           | 5600MT/s <sup>2</sup>              | 5200MT/s              |
| Populated | Populated | Populated | Populated | 3600MT/s <sup>3</sup>              | 3600MT/s <sup>3</sup> |

1. This is the maximum speed of the configuration; some DIMM types may operate slower.  
Adding faster DIMMs will not alter these maximums.
2. The actual transfer rate of dual-rank ECC memory modules is 5200 MT/s.
3. The actual transfer rate of the 4 x 64G memory modules is 3200 MT/s.

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## Revision History

| Version | Date       | Author    | Changes/Updates |
|---------|------------|-----------|-----------------|
| 1.0     | 23/06/2026 | Matthew R | Initial Release |
|         |            |           |                 |