

Storage Configurator

Lenovo ThinkStation P4



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Overview

The purpose of this document is to provide guidelines for users on how to optimally configure the system storage in the ThinkStation P4 to ensure proper functionality.

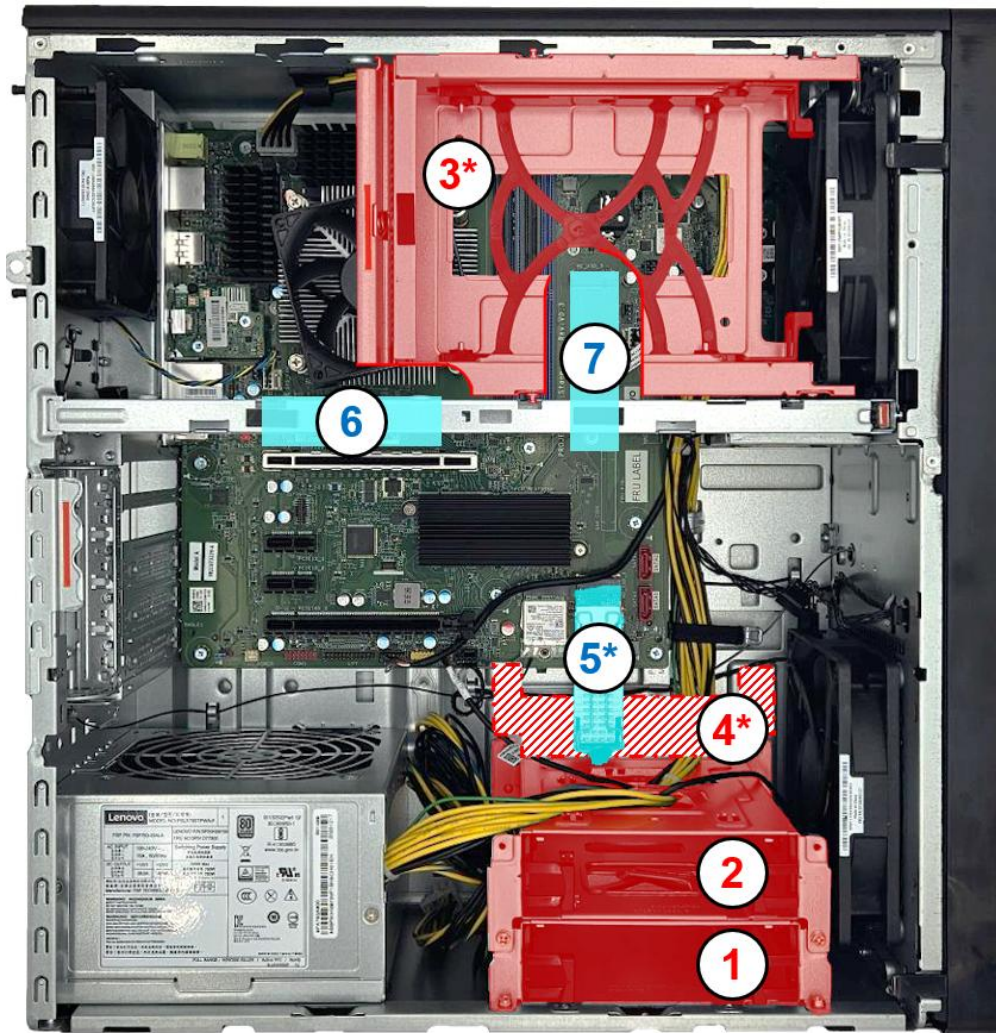
The following sections give detailed instructions on the installation of M.2 NVMe and SATA drives, as well as provide part numbers for required components needed for proper installation. ODD support in P4 is discussed in [Section 6](#).

P4 supports RAID levels 0 & 1 for onboard NVMe drives, and 0, 1, 5, & 10 for SATA drives, depending on system configuration. RAID configurations and setup instructions are discussed in the ThinkStation P4 RAID Configurator document.

P4 Internal Storage Drives Overview

Below is an overview of the storage locations in the P4:

Figure 1 – P4 Chassis with Numbered Callouts



Area	Name	Considerations
1	SATA Bay 1 – 3.5" HDD (Primary)	Always included
2	SATA Bay 2 – 3.5" HDD	
3*	SATA Bay 3 – 3.5" HDD / FASE / ODD	See Section 3 & 4
4*	SATA Bay 4 – 3.5" HDD	See Section 3
5*	M.2 NVMe Gen 5 Slot (Primary)	See Section 3
6	M.2 NVMe Gen 5 Slot (Secondary)	
7	M.2 NVMe Gen 4 Slot (Tertiary)	

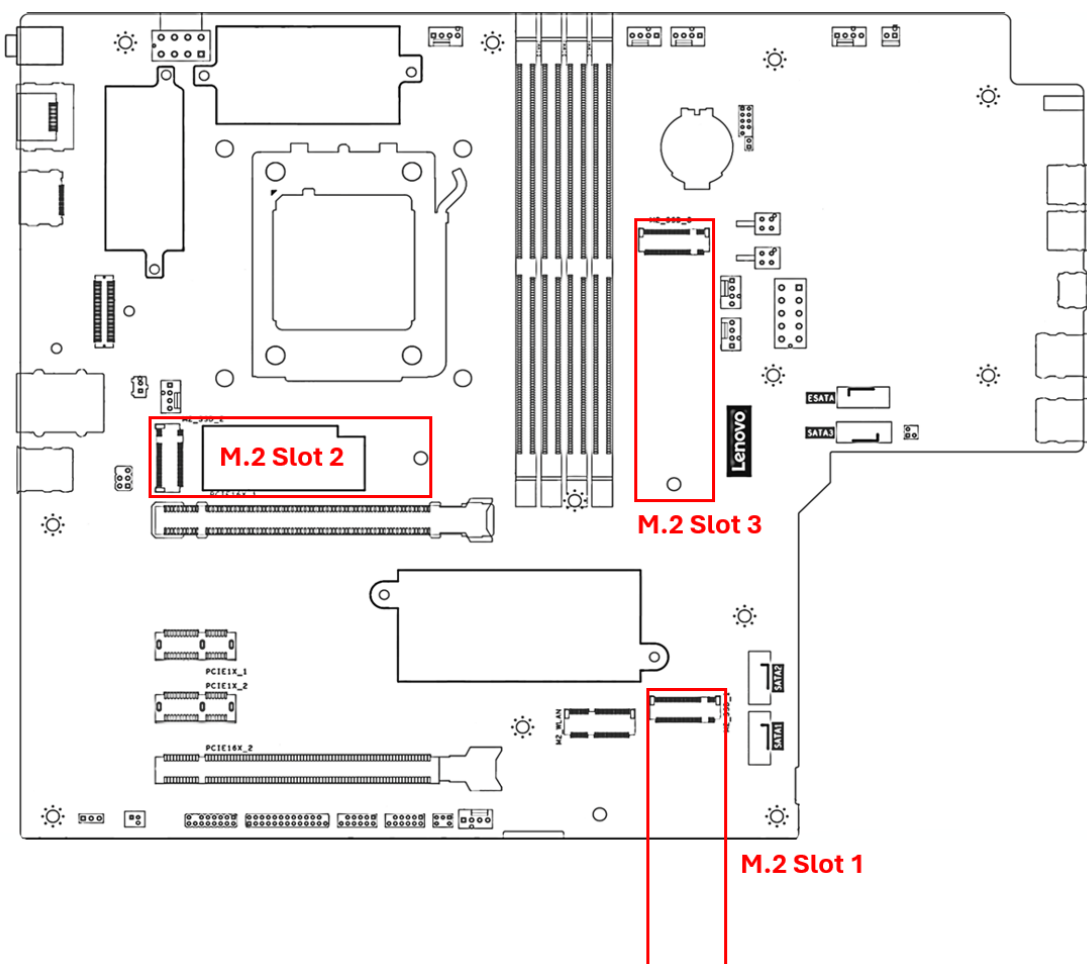
*Compatibility dependent on other configuration factors. See later sections for more details.

Section 1 – Installing NVMe Devices in P4

M.2 NVMe devices can be installed into the following locations on the ThinkStation P4 motherboard below (*see Figure 2*).

Slot 1 and 2 supports Gen 5 drives, while Slot 3 supports Gen 4.

Figure 2 – P4 Motherboard Diagram with NVMe Callouts



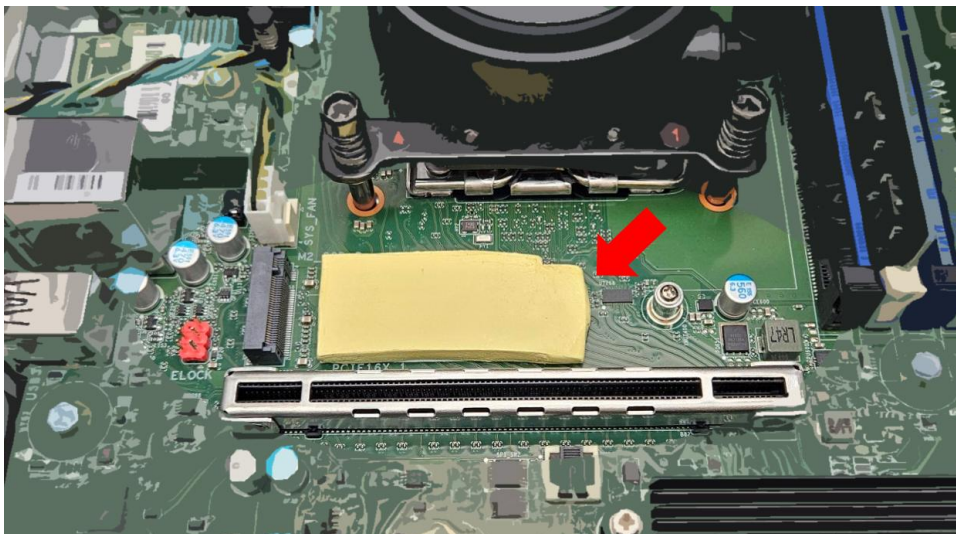
Notes:

- Gen 5 drives installed in Slot 3 will operate at Gen 4 speeds.
- Whenever an M.2 drive is installed in Slot 2, an additional thermal pad is required ([See Figure 3](#)).
- Supported “Phoenix” AMD CPUs, which at the time of writing include Ryzen 7 PRO 8700G and Ryzen 5 PRO 8600G, only support Gen 4 speeds for M.2 drives.
- P4 systems come equipped with only the necessary onboard M.2 parts required for the configuration when it was originally ordered from Lenovo.

Below is an outline for which heatsink will be included in the system based on its original config:

- Gen 4 (G4) drives come equipped with G4 heatsinks by default.
- When a Gen 5 (G5) M.2 is installed in the Slot 1, or in Slot 3, it will come equipped with a G4 heatsink.
 - o With the proximity to the front fan, the G4 heatsink will provide sufficient cooling for a G5 drive.
- When a G5 M.2 drive is installed in the Slot 2, **all** drives will come equipped with G5 heatsinks.

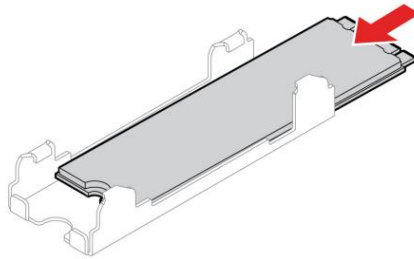
Figure 3 – P4 M.2 Slot 2 Thermal Pad



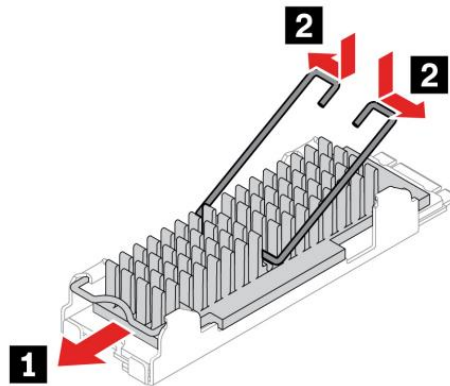
See the [Appendix](#) for more info about parts needed for M.2 storage upgrades.

For M.2 NVMe drives in the onboard M.2 slots:

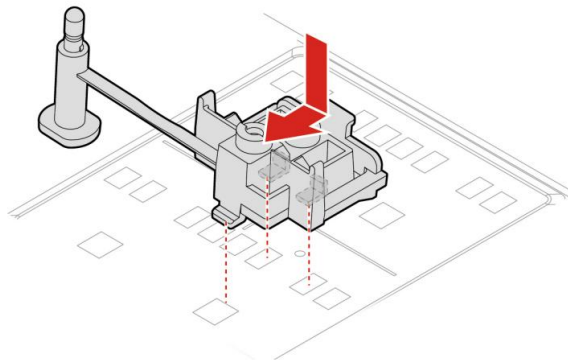
1. Remove the film that covers the thermal pad on the carrier, if any. Then, install the M.2 solid-state drive by sliding the drive in the carrier.



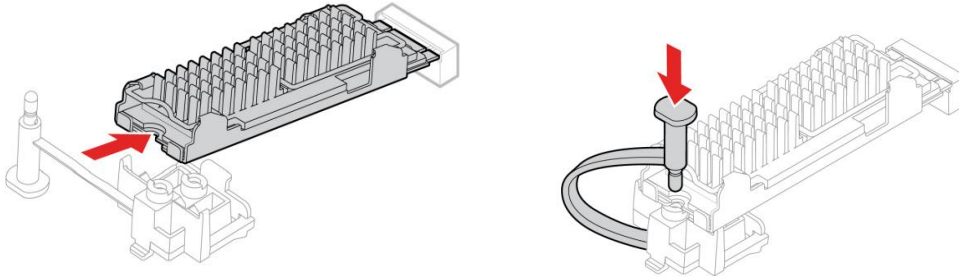
2. Remove the film that covers the thermal pad at the bottom of the heat sink, if any. Then, install the heat sink onto the M.2 drive in the carrier.



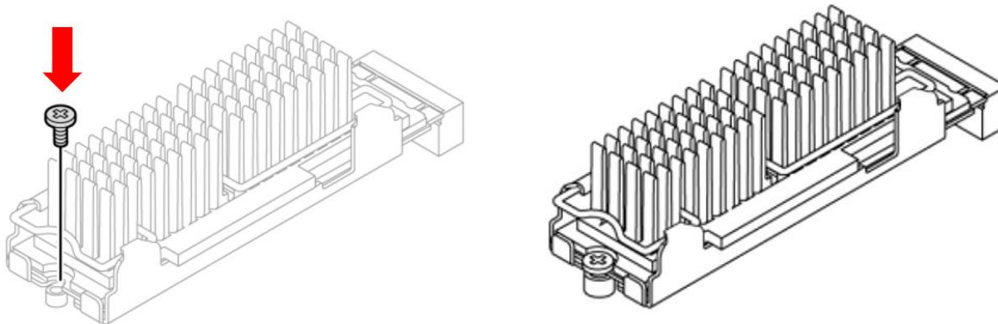
3. For Slot 1: If one is not already present, install the M.2 drive bracket into the system.



4. For Slot 1: Install the drive into the M.2 slot and insert the stopper into the M.2 bracket to secure the drive.



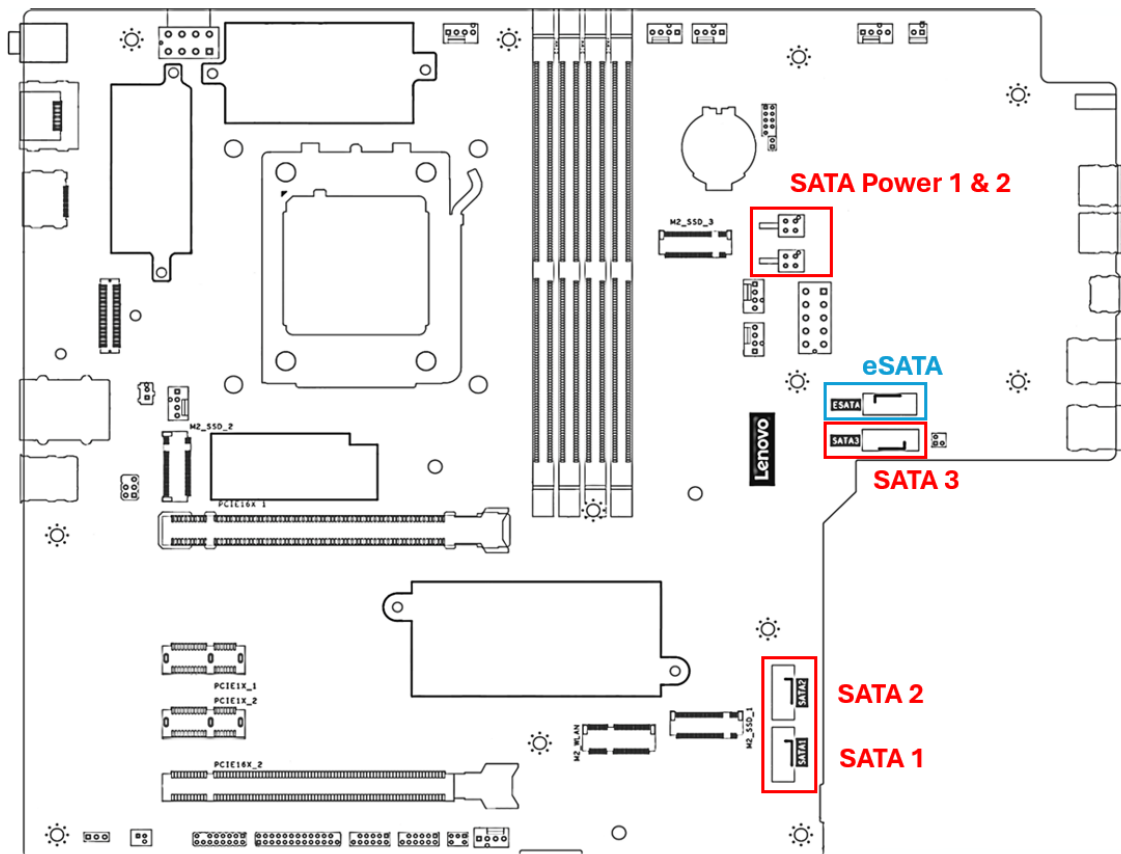
5. For Slot 2 or 3: Insert the drive into the M.2 slot and secure the drive using the onboard screw.



Section 2 – Installing SATA Drives in P4

The ThinkStation P4 can hold a maximum of four SATA drives, depending on the rest of the system config. The P4 motherboard has four SATA port connections, labelled SATA1, SATA2, SATA3, and SATA4 (eSATA) in the order they show up in the system BIOS.

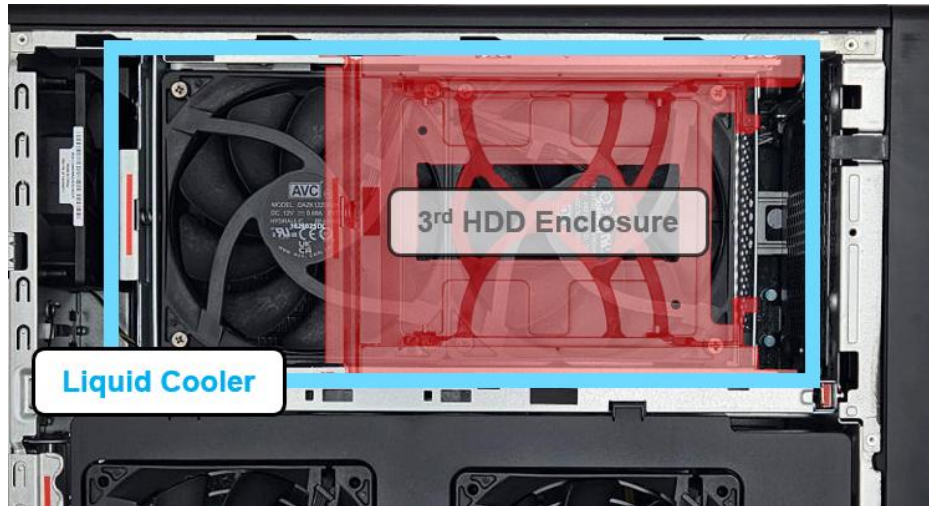
Figure 4 – P4 Motherboard with SATA Callouts



Important Notes:

- The use of four SATA drives will utilize all the available SATA ports on the motherboard.
- The 3rd HDD Enclosure or Front-Access Storage Enclosure (FASE) can only be used if the system's CPU cooler is the 65W or 120W air-cooled versions and cannot be installed when the liquid cooler is installed.

Figure 5 – P4 Liquid Cooler & 3rd HDD Enclosure

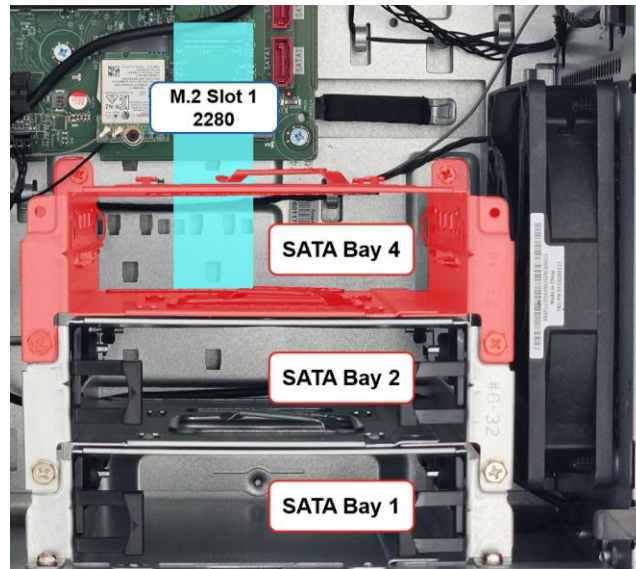


- When the RTX PRO 6000 Blackwell Workstation Edition (600W) GPU is installed in the system, the 3rd HDD enclosure, FASE, or ODD bracket cannot be installed.
- Windows 11 boot is not supported for rotational spinning HDDs.

SATA Bay 4 Interference:

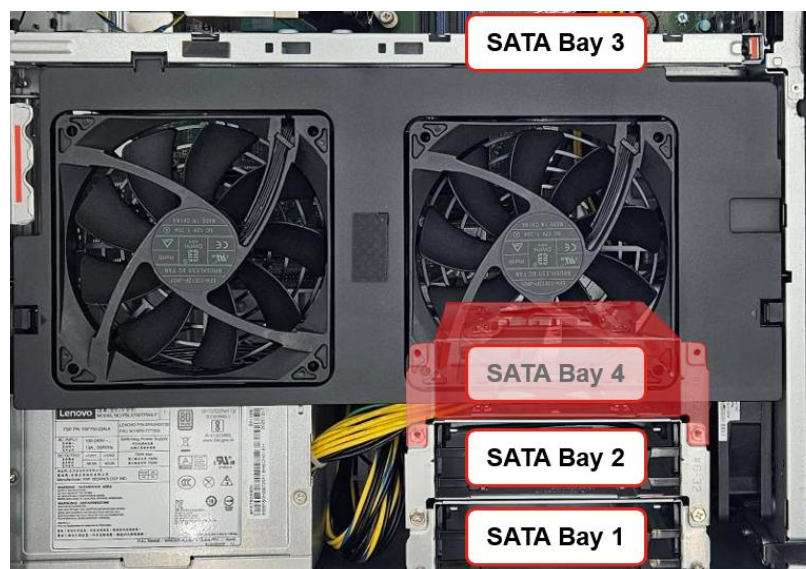
- SATA Bay #4 will physically interfere with M.2 2280 drives installed in M.2 slot 1 and cannot be installed at the same time.

Figure 6 – P4 SATA Bay overlaying M.2 NVMe 2280



- In systems with a side fan assembly, the maximum number of SATA drives is three (See Figure 7) due to physical interference between the side fan assembly and SATA Bay 4.
- At the time of this writing, a side fan assembly is factory-fit on all ThinkStation P4 models configured with a 750W or 1100W PSU. It is not included in 500W PSU models.

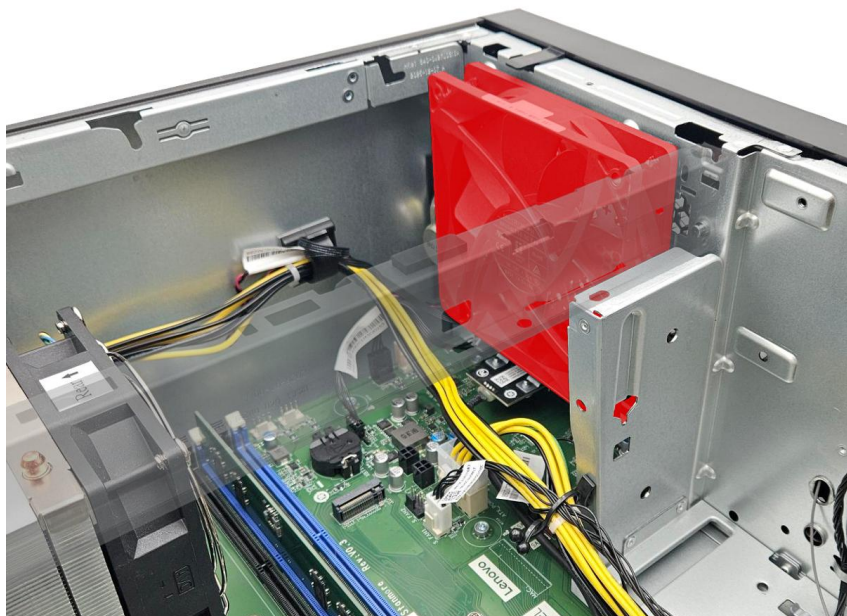
Figure 7 – P4 with Side Fan Assembly



Front Access Storage Enclosure (FASE) & Optical Disk Drive (ODD) **Information:**

- SATA port 4 is an eSATA port. This port is capable of hot-swapping SATA drives after the feature is enabled in BIOS, found under Devices→Storage Setup→"SATA Drive 4 Hot-Plug Support"→Enable/Disable. The FASE drive must be plugged into this port with enabled BIOS setting to fully operate.
- Due to the external accessibility of the FASE, Lenovo recommends only using the hot-swap feature with the FASE bay. Lenovo strongly recommends against accessing internal drives/components while the system is operating.
- The ODD bracket occupies the same space as the 3rd HDD / FASE. Whenever the ODD is installed in the system, the maximum number of SATA drives supported is two.
- The FASE or ODD bracket cannot be installed at the same time as the optional front system fan.
 - At the time of writing, supported GPUs over 200W TDP require the optional front fan. Thus, configs which any of these GPUs installed cannot have either the FASE or ODD installed.
 - For more detail, please see the **P4 Power Whitepaper** on [Lenovo's Support Site](#).

Figure 8 – P4 Optional Front Chassis Fan (highlighted red, chassis beam hidden for visibility)



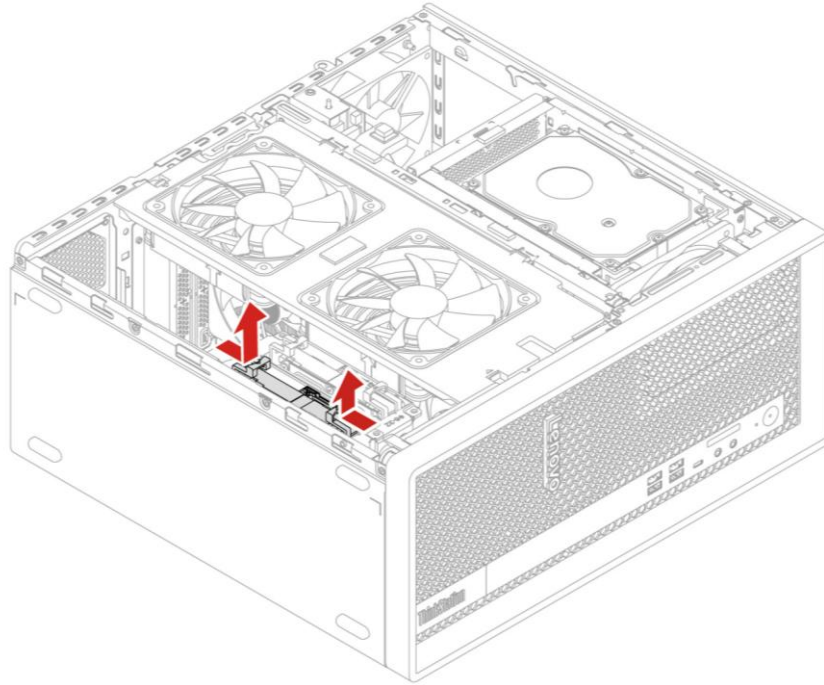
The table below lists option kits for upgrading the P4 SATA storage available at the time of this writing. Remember the previous notes in this Section in regard to adding a 4th SATA bay, ODD, or FASE kit, as some option kits will not be physically compatible with certain system configurations. More information can be found in the [Appendix](#).

Table 1 – P4 SATA Storage Options

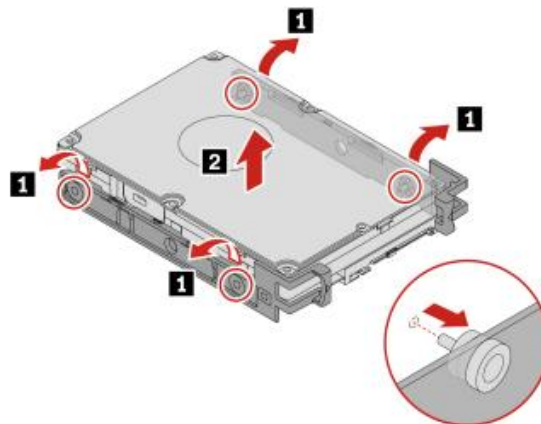
SATA Option Kit	Option P/N
ThinkStation 3.5" HDD Kit for P4	4XH1W65149
ThinkStation Front Access Storage Enclosure for P4	4XH1W65148

Removal and installation of the bottom SATA Drives:

1. Disconnect power and data cables from the drive. Pinch the handles of the drive tray and pull up.



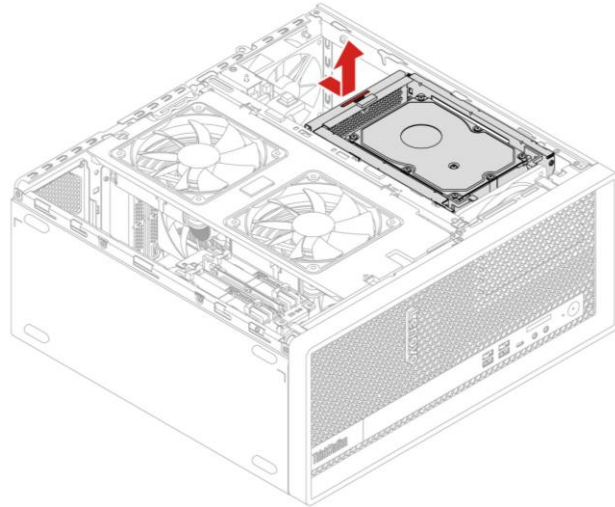
2. Remove the tray pins holding the SATA drive in each corner to separate the drive.



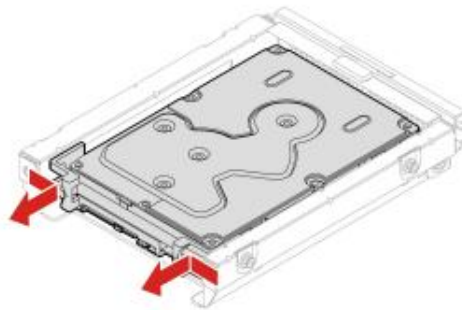
3. To install SATA drive, perform these steps in reverse.

Removal and installation of the top SATA Drives:

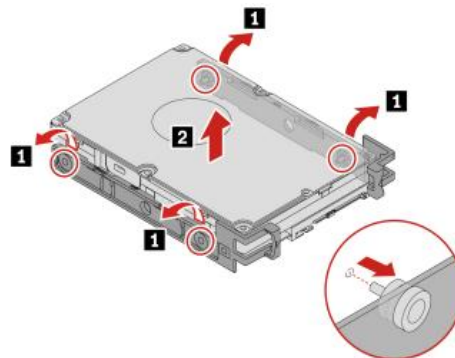
1. Disconnect power and data cables from the drive. Push on the marked lever on the rear of the drive cage and lift out of the chassis.



2. Pinch the handles of the drive tray and pull out of the drive cage.



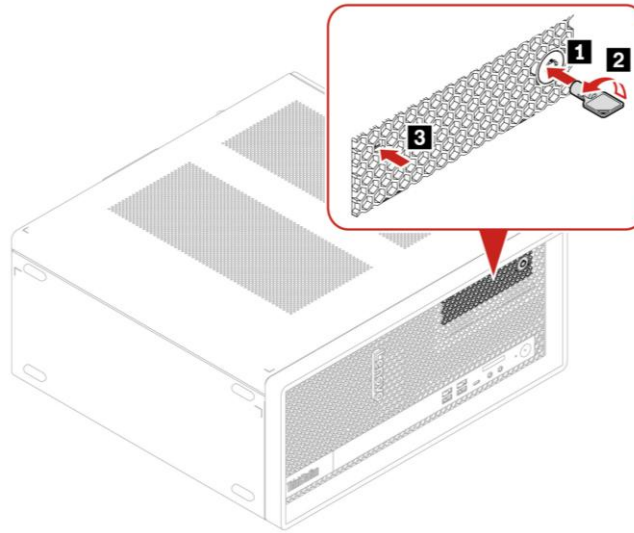
3. Remove the tray pins holding the SATA drive in each corner to separate the drive.



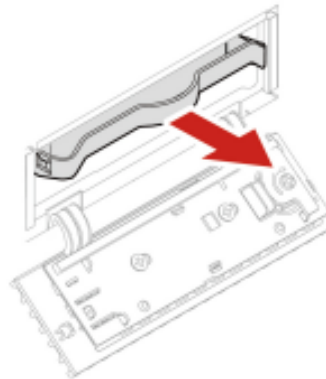
4. To install SATA drive, perform these steps in reverse.

Removal and installation of the FASE SATA Drives:

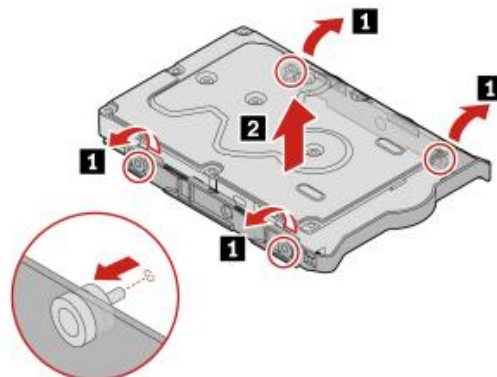
1. Unlock the front bezel door and press its left side to open.



2. Once the door is open, pull the SATA drive out of the FASE.



3. Remove the tray pins holding the SATA drive in each corner to separate the drive.



Section 3 – Optical Disk Drive in P4

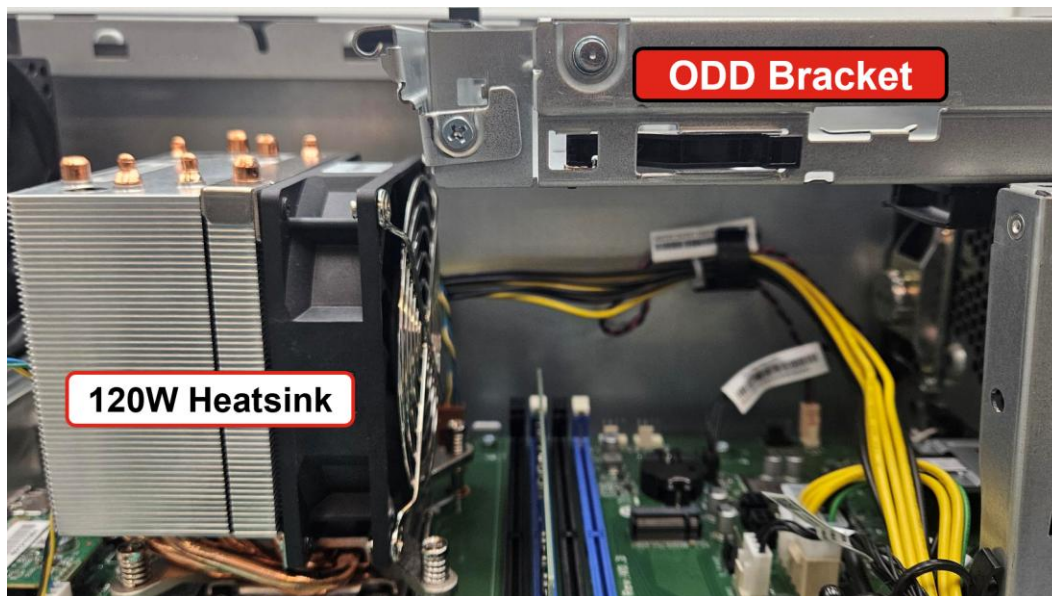
P4 offers an ODD expansion option that is installed in the same location as the internal 3rd HDD enclosure and FASE.

Systems with the ODD bracket installed will have some limitations to the maximum number of SATA drives. The bracket occupies the same space as the 3rd HDD and FASE, which would limit the maximum number of SATA drives to two.

Similar to the 3rd HDD enclosure and FASE, the ODD bracket is compatible with either the 120W or 65W CPU coolers, but not the 170W liquid cooler.

All components required to install the ODD bracket in the system are listed in this document's [Appendix](#).

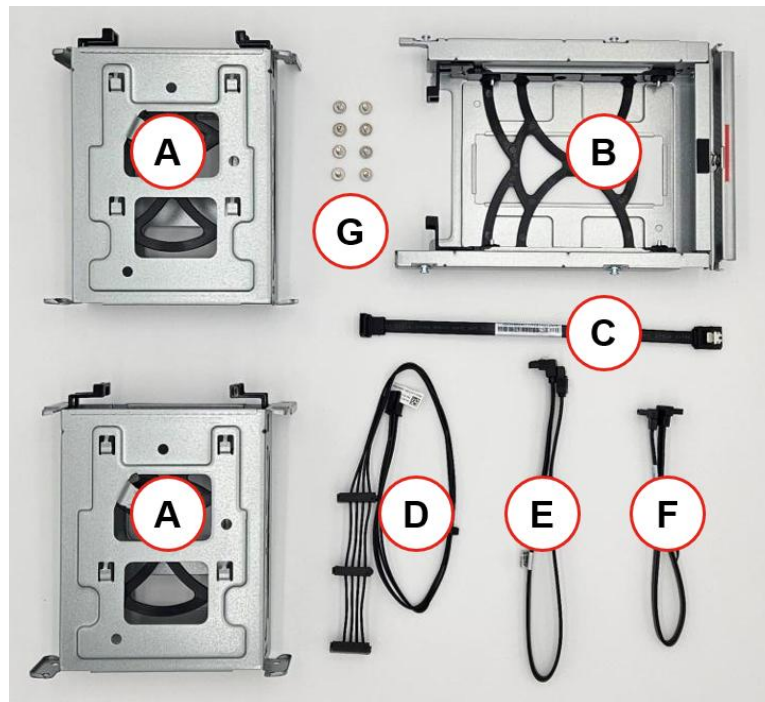
Figure 9 – P4 ODD Bracket with 120W CPU Cooler (chassis beam removed for visibility)



Section 4 – Appendix

This section contains breakdowns of the available option kits or parts required to upgrade an existing P4 system to accept additional storage.

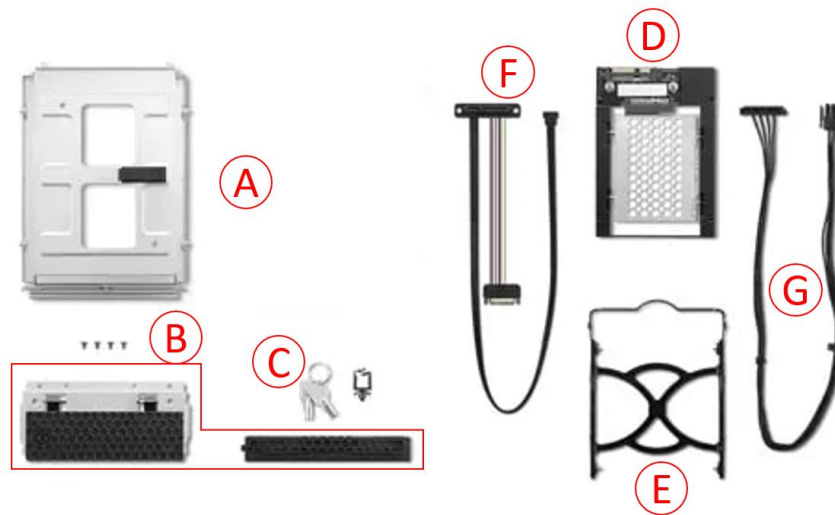
ThinkStation 3.5" HDD Kit for P4:



(4XH1W65149) ThinkStation 3.5" HDD Kit for P4 contains the following:

- A. (2x) Bottom 3.5" HDD Cage Kit (for 2nd or 4th HDD)
- B. Top 3.5" HDD Cage Kit (for 3rd HDD)
- C. Right-angle SATA Data Cable (185mm)
- D. Three-drop SATA Power Cable (320+40+40mm)
- E. Right-angle SATA Data Cable (260mm)
- F. Right-angle SATA Data Cable (450mm)
- G. 8x 6-32 Screws (for securing bottom HDD cages)

ThinkStation Front Access Storage Enclosure for P4:

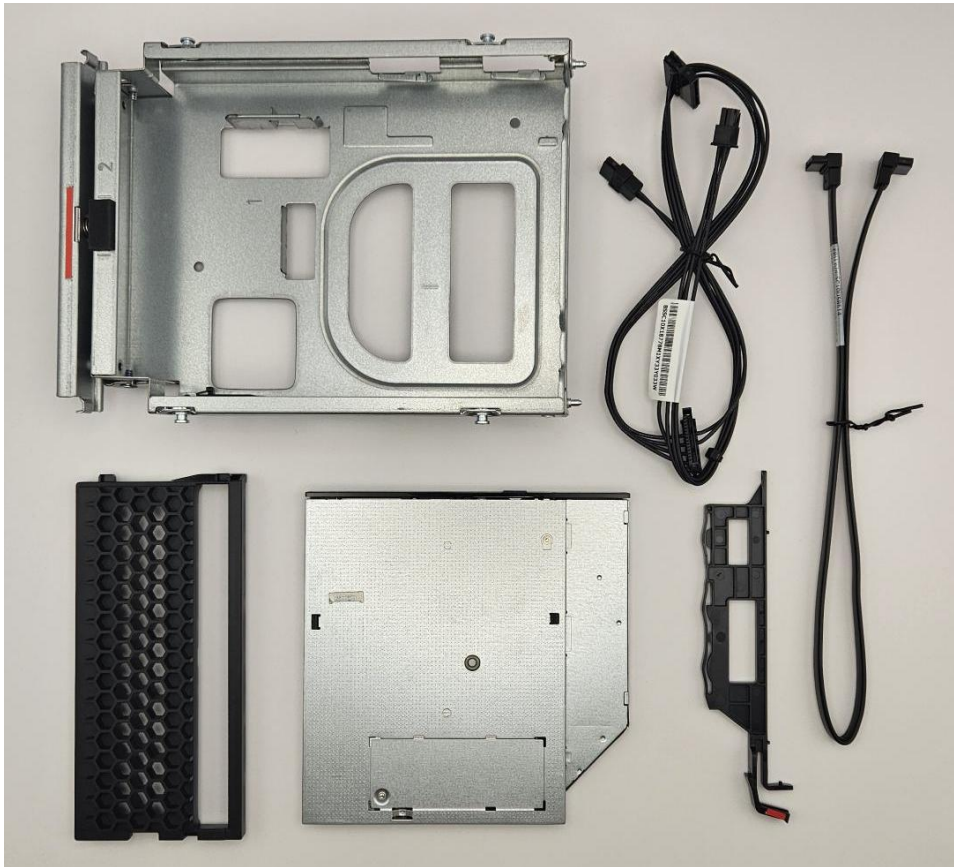


(4XH1W65148) ThinkStation Front Access Storage Enclosure for P4 contains the following:

- A. FASE HDD Cage Hot-Swap Assembly
- B. Front Access Door & Blank Bezel
- C. 2x Keys for locking HDD front access
- D. 3.5" to 2.5" HDD Bracket
- E. 3.5" HDD Tray
- F. Data+Power SATA Cable (520+150mm)
- G. Single-drop SATA Power Cable (380mm)

ThinkStation P4 ODD Bracket Kit + DVD Burner Kit:

Installation of ODD in P4 requires each of the following:



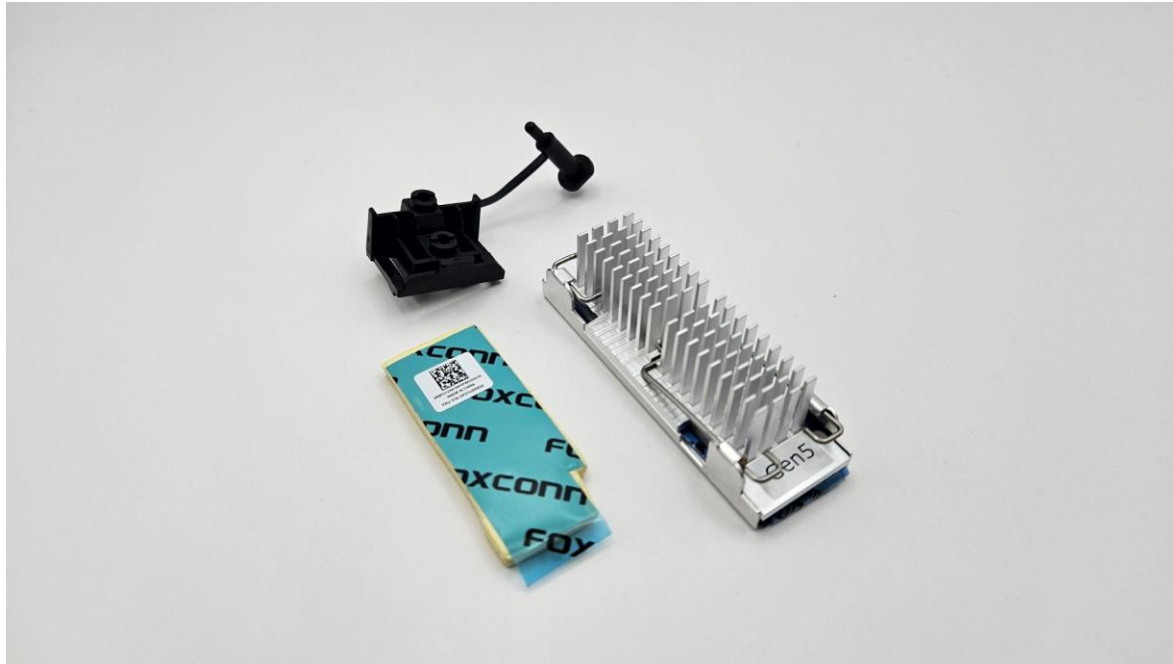
(4XH1W65147) ODD Bracket for P4

- A. Slim ODD Cage Kit
 - a. ODD Bezel
 - b. Slim ODD Latch
- B. 450mm SATA cable with dual right-angle connectors

(4XA1L13934) ThinkStation Slim 9mm DVD Burner

- A. Slim ODD
- B. SATA HDD + ODD Power cable (300mm + 210mm)
- C. *Contains other parts not needed for P4*

ThinkStation Heatsink Kit for PCIe Gen5 M.2 SSD



(4XH1U02647) ThinkStation Heatsink Kit for PCIe Gen5 M.2 SSD contains:

- A. M.2 2280 Gen 5 Heatsink
- B. M.2 2280 Thermal Pad
- C. M.2 Bracket with stopper

Section 8 – Document Revision History

Version	Date	Author	Updates
v1.0	6/30/26	Chris C	Initial Release