AMD Threadripper Pro

CPU Installation and Removal

Lenovo ThinkStation P8

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Overview

This document contains details intended to guide users with the correct steps to install and uninstall AMD Threadripper Pro CPUs in the ThinkStation P8 platform. This platform utilizes AMD's Socket-SP6 (SM-LGA) CPU socket, which is new to the ThinkStation lineup.

At the time of writing, the following CPUs are supported for the P8 platform. For more information about the processors and power configurations, please see the P8 Power Whitepaper.

CPU Name	Core Count	CPU Frequency
AMD Threadripper Pro 7995WX	96 Cores	2.5GHz
AMD Threadripper Pro 7985WX	64 Cores	3.2GHz
AMD Threadripper Pro 7975WX	32 Cores	4.0GHz
AMD Threadripper Pro 7965WX	24 Cores	4.2GHz
AMD Threadripper Pro 7955WX	16 Cores	4.5GHz
AMD Threadripper Pro 7945WX	12 Cores	4.7GHz

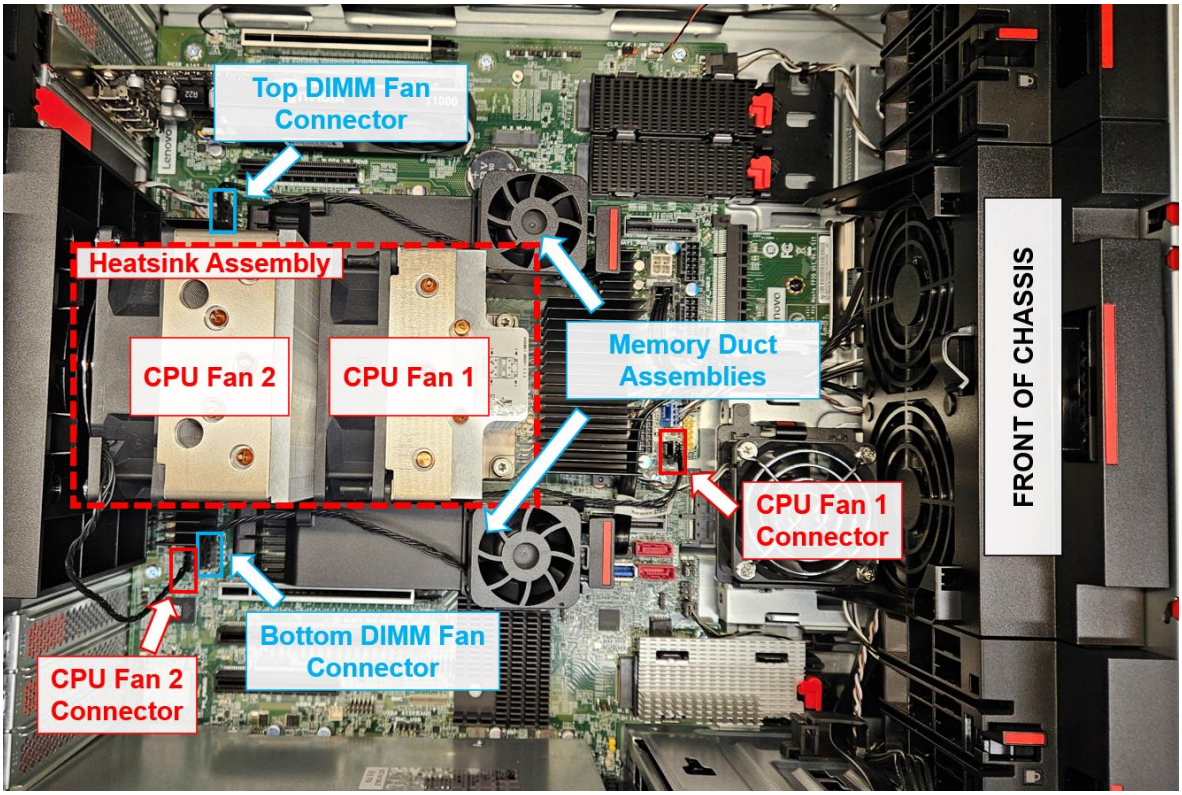
On ThinkStation P8, Platform Secure Boot (PSB) is supported for AMD Storm Peak processors, though unlike its predecessor P620, this feature will **not** be required and is disabled by default. Users can enable this feature in BIOS under "Security→PSB Option→Enabled/Disabled".

Tip: Access the link below for a helpful video walkthrough of the CPU installation process. https://youtu.be/4toaNGDAljw

Section 1 – Key Components and Locations

The diagram below shows an overhead view of an open P8 chassis. Key components for the CPU installation process are noted, color-coded by their relation to either the CPU or Memory cooling systems. Note that CPU Fans 1 and 2 are both attached to a single heatsink assembly.

Figure 1 – System board layout



Section 2 – Memory Duct Assembly Removal and Installation Process

All P8 systems come configured with fan assemblies that sit over the memory DIMMs to provide sufficient airflow to those components. Follow the steps below to remove or install the memory duct assemblies. Note that removing these assemblies will make it easier when installing or uninstalling the CPU.

To remove the memory duct assembly:

- Unplug the 4-pin fan connector noting the specific location of the header on the motherboard (see Figure 1 & 2).
- Push on the spring-loaded tab on the side of the assembly, lift and tilt the assembly off the DIMM slots in a swinging motion, then lift the loose assembly straight up.
- Do this for each memory cooler assembly installed on the system.

Figure 2 – Memory duct assembly removal step 1

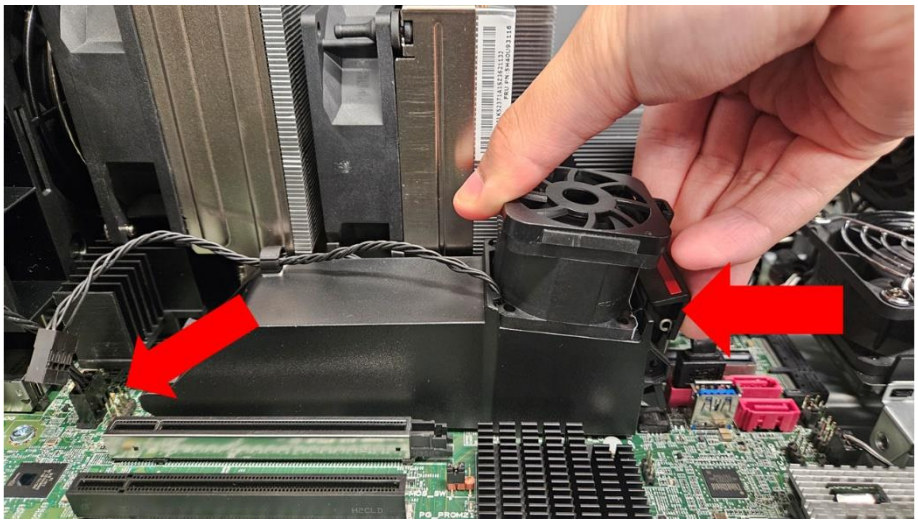


Figure 3 – Memory duct assembly removal step 2

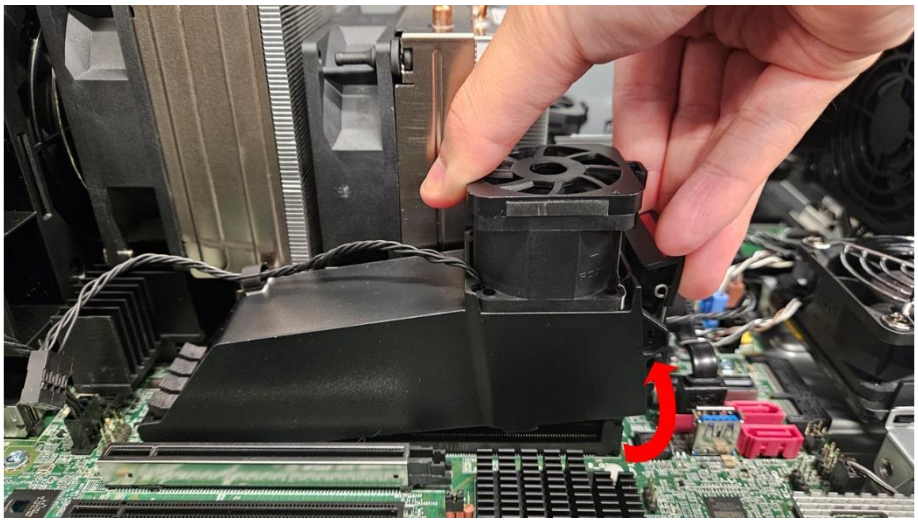
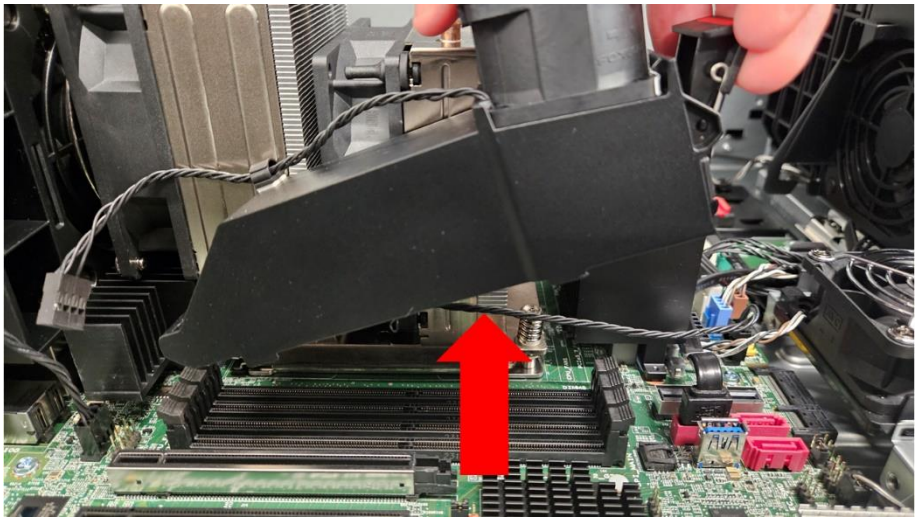


Figure 4 – Memory duct assembly removal step 3



To install the memory duct assembly:

- Before starting the installation process, ensure all latches for any unused memory DIMM slots are in the upright/closed position.
- Orient the memory duct assembly such that the fan is closest to the front of the system.
- Hook the rear facing edge of the assembly over the memory DIMM slot latches (see Figure 5).
- Rotate the assembly in the direction down to the motherboard (see Figure 6).
- Engage the spring-loaded latch on the assembly such that it hooks onto the memory DIMM slot latches (closest to the fan). A slight pull upward on the assembly will confirm that it has engaged properly.
- Reconnect the 4-pin fan header to the appropriate location on the motherboard (see Figure 7).

Note: Take care to avoid pinching the CPU Fan 1 cable between the CPU heatsink and the fan duct when installing the bottom fan duct.

Figure 5 – Memory duct assembly installation step 1

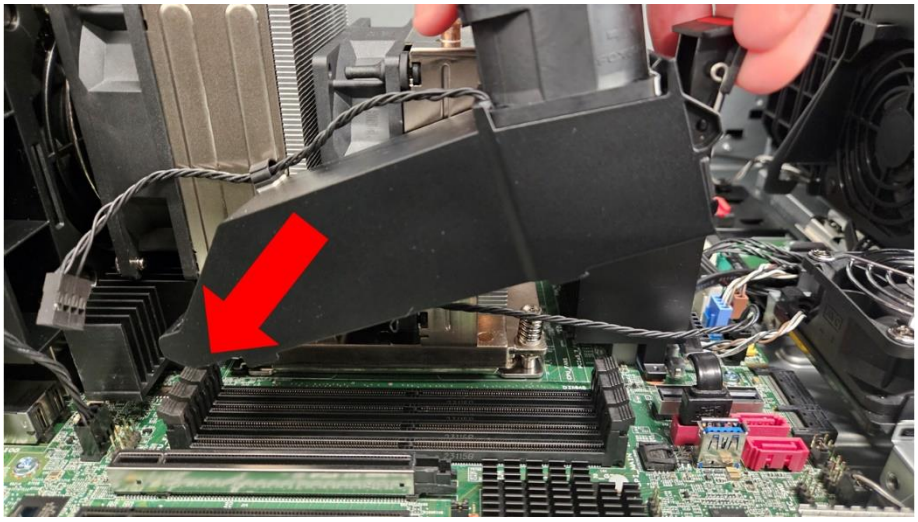


Figure 6 – Memory duct assembly installation step 2

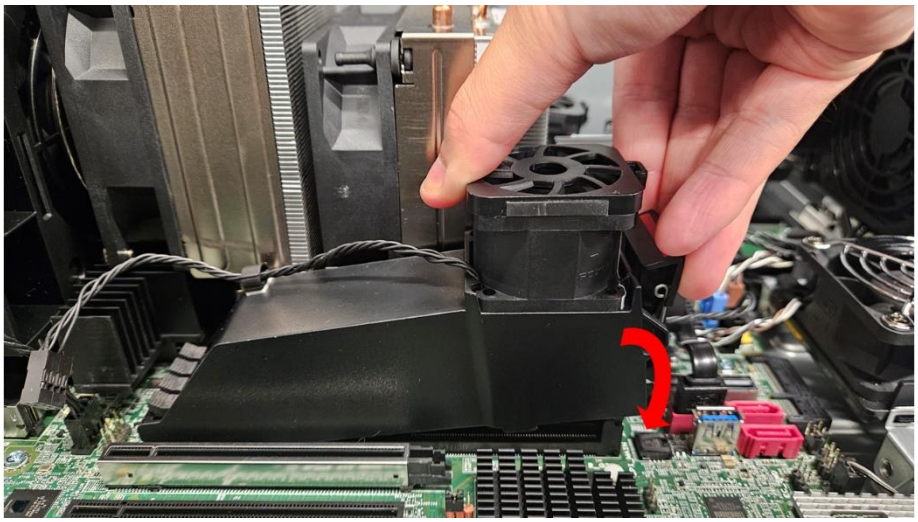
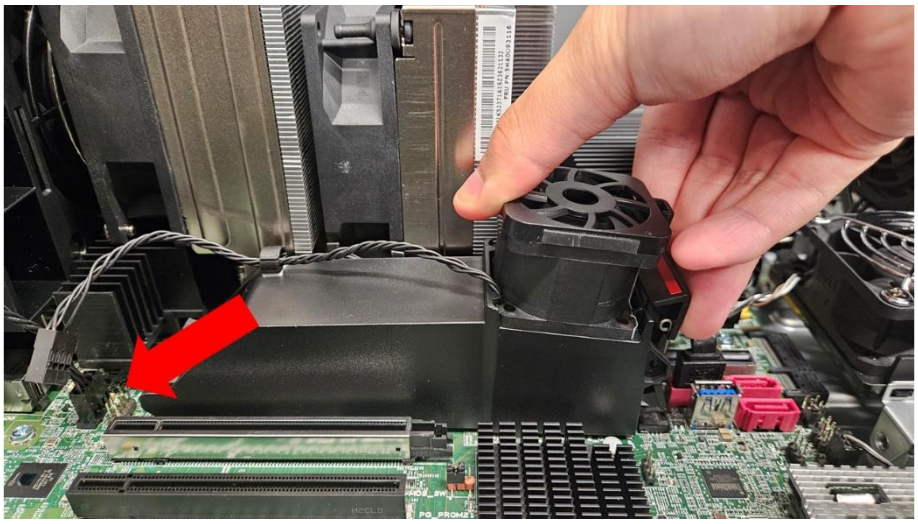


Figure 7 – Memory duct assembly installation step 3



Section 3 – CPU Removal and Installation Process

***Important Note**: As CPUs are very sensitive electronic devices, it is recommended that users properly ground themselves using the necessary equipment before attempting any of the procedures outlined below.*

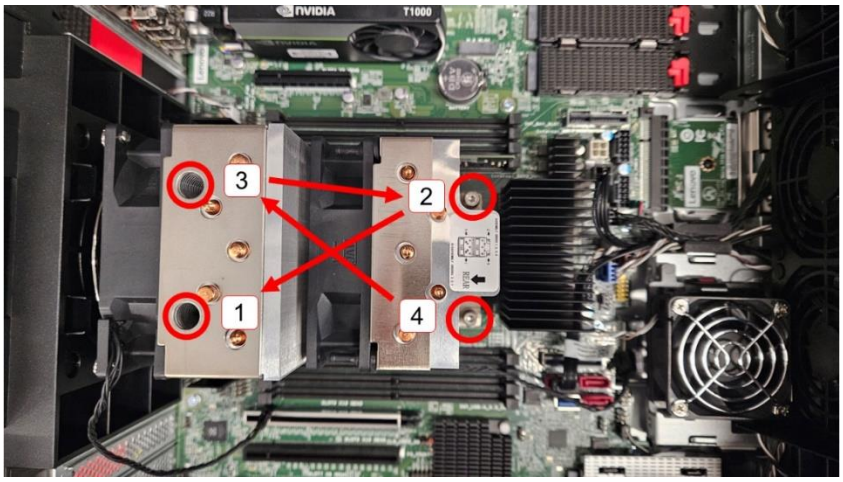
It is recommended that users attempting to remove or install a CPU in the P8 platform first remove the memory duct assemblies to make more working room for CPU installation. Please refer to Section 2 in this document.

It is also recommended to update the system to the latest BIOS before performing a CPU change or upgrade to ensure compatibility.

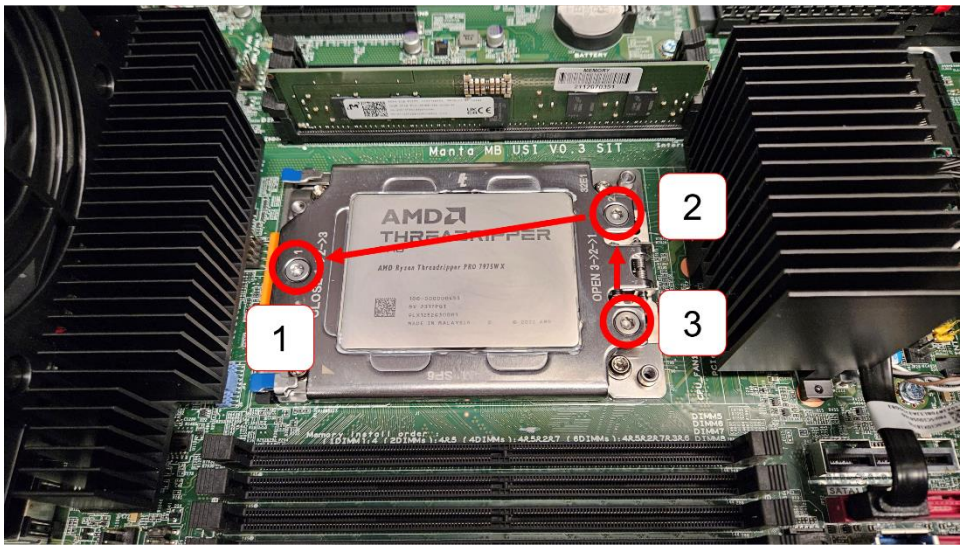
While performing a CPU removal/installation, take care not to cause damage to the heatsink fins as this will hinder cooling performance.

CPU Removal

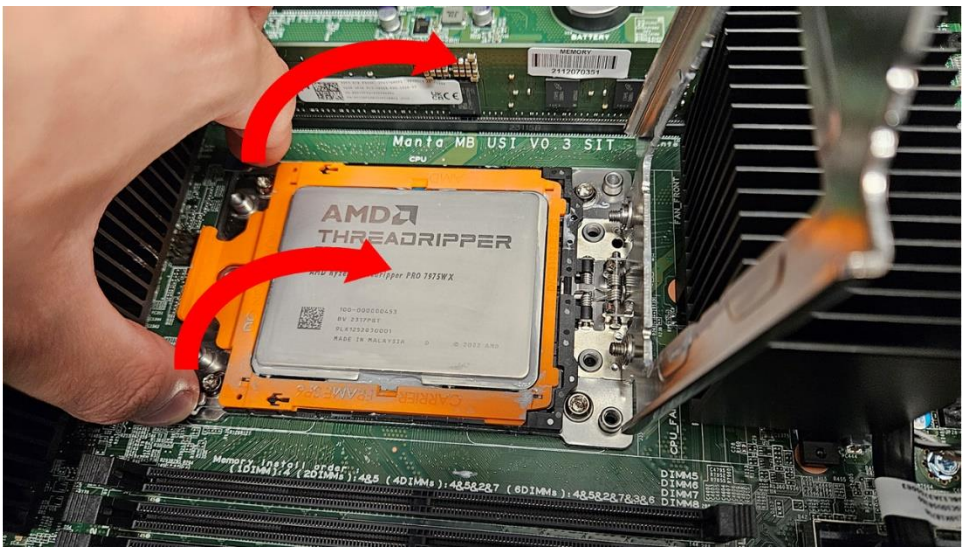
1. Remove the CPU heatsink from the motherboard.
    a. Unplug the 4-wire fan connectors for CPU FAN1 and CPU FAN2, noting the specific location for each connector (see Figure 1).
    b. Unscrew the four retaining screws in the order specified (4→3→2→1). Note that a Torx T-20 screwdriver/bit is required in order to be able to access the retaining screws located directly under the heatsink fins via the access holes in the heatsink.
    c. Carefully lift off the CPU heatsink assembly.



2. Open the CPU socket.
    a. Release the socket Force Frame by using a Torx T-20 screwdriver/bit to unscrew the three fasteners. Unscrew the fasteners in sequence 3→2→1 to release the Force Frame. Note that the Force Frame is spring loaded, so it may pop up when the final fastener is unscrewed.



3. Separate the CPU from the socket.
    a. Lift the Rail Frame assembly using the blue tabs to remove the CPU Carrier Frame from the socket on the motherboard.



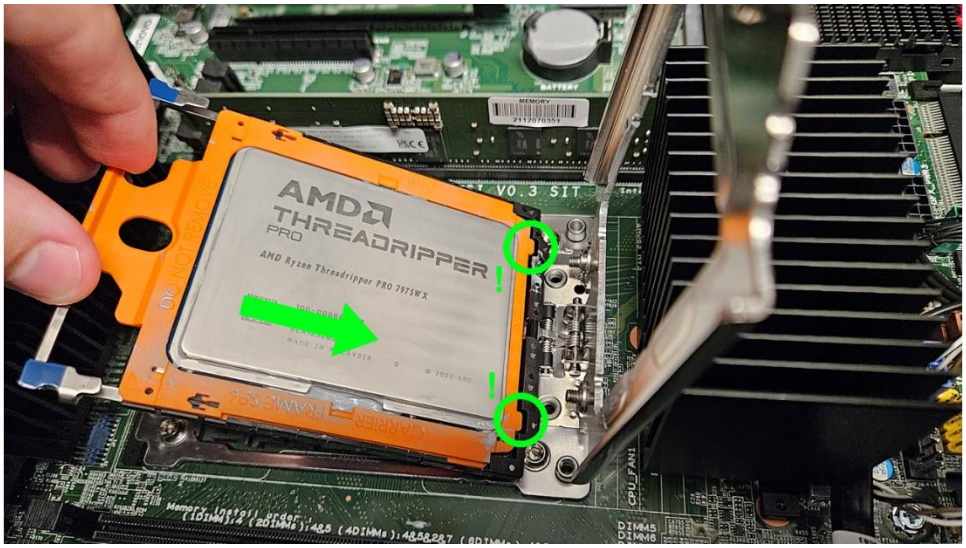
4. Remove the CPU Carrier Frame from the Rail Frame.
    a. With the CPU in an upright position, careful pull on the tab on the orange Carrier Frame and slide the CPU out of the Rail Frame.
    b. Use caution to avoid touching the electrical contact points on the bottom of the CPU or the exposed pins in the socket. While the socket is exposed, take caution nothing damages the pins, such as excess thermal grease, loose cables, etc.

CPU Installation

1. Install CPU into Rail Frame.
    a. With the CPU socket empty and the Rail Frame in an upright position, carefully grasp the orange CPU Carrier Frame and insert it into the Rail Frame.
    b. Ensure the edges of the carrier frame engage the small black rails in the CPU Carrier Frame (see Figure 8).
    c. Push the CPU assembly down into the Rail Frame until the tabs of the frame line up with the notches of the CPU Carrier Frame (see Figure 9).

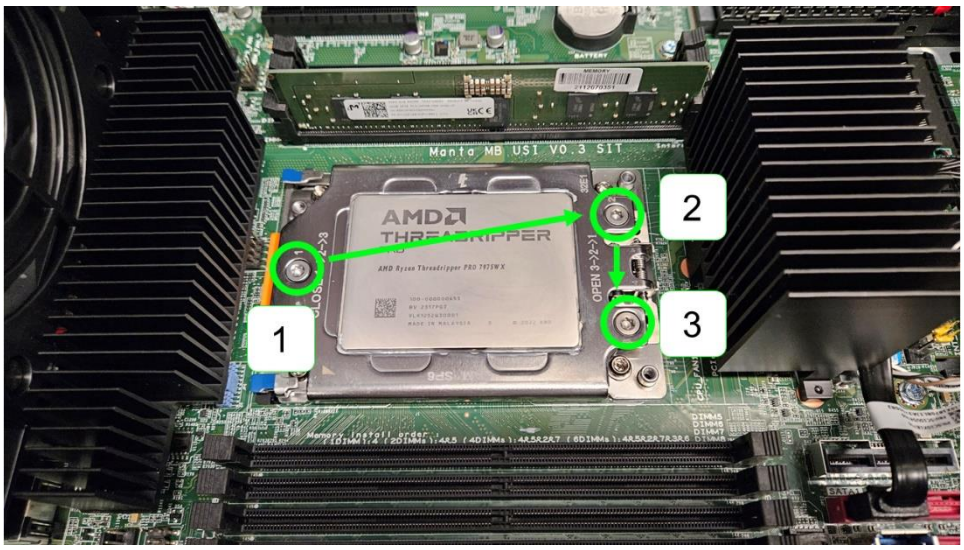
Figure 8 – CPU tray enters Rail Frame

Figure 9 – CPU tray fully inserted into Rail Frame, locks in place.



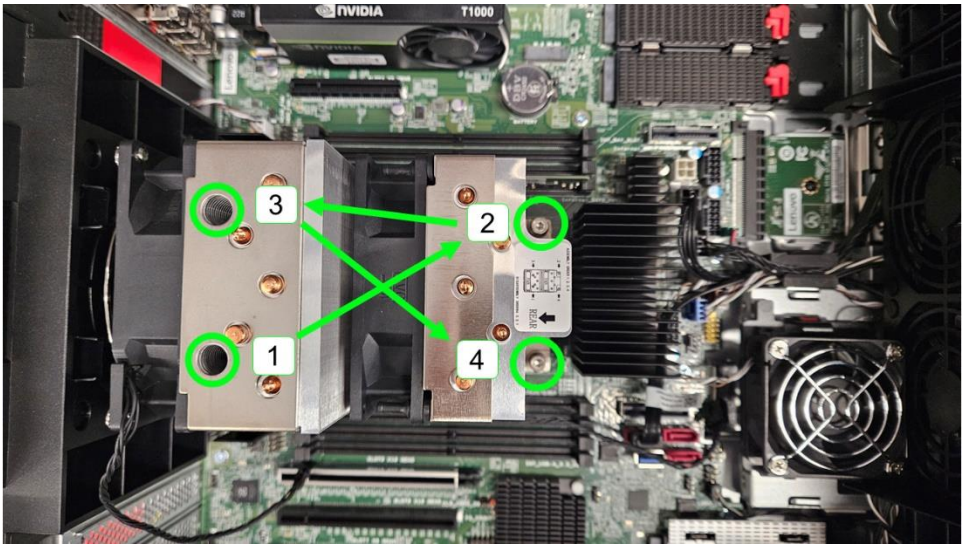
2. Install CPU to the socket.
    a. Push down on the Rail Frame using the blue tabs to securely seat the CPU Carrier Frame into the socket. A small click can be heard and felt when the assembly is properly seated.

3. Close and secure the CPU socket.
    a. Lower the spring-loaded Force Frame assembly to the closed position.
    b. Secure the three Force Frame fasteners using the Torx T-20 screwdriver/bit following the sequence 1→2→3.
    c. Tighten each fastener fully to 12 in-lbs. (inch pounds, ~1.35 Newton-meters) before moving on to the next fastener.



4. Reinstall CPU heatsink.
    a. If necessary, remove any existing thermal grease from the base of the heatsink. New thermal grease can be applied to the CPU heat spreader directly in the 9-Dot pattern shown below:

    b. Align the CPU heatsink with the CPU socket ensuring the fans are facing the rear of the system.
    c. Secure the heatsink using the four retention screws. Screws should be secured in the sequence shown (1→2→3→4) and tightened slightly to 2.5 in-lbs (~0.3Nm).
    d. Once each screw has been tightened to 2.5 in-lbs., perform a second pass using the same sequence (1→2→3→4) and tighten each fastener down to a final torque of 12 in-lbs. (~1.35 Nm).



5. Reinstall the memory cooler and reconnect CPU fan connectors.
    a. Reconnect the 4-wire connectors for FAN1 and FAN2 to the appropriate headers on the motherboard.
    b. If removed earlier, replace memory ducts, and reconnect DIMM fan connectors.
    c. Refer to Section 2 of this document for more detail.

Section 4 – Revision History

Version	Date	Author	Changes/Updates
v1.0	2/16/24	Chris C.	Initial Release