AMD-based ThinkSystem server features and specifications

Memory, heat sink, and new adapter design

Lenovo

Memory rules for AMD processors

AMD-based ThinkSystem servers use Lenovo TruDDR4 memory operating at up to 3200 MHz. The processors have eight memory channels and support two DIMMs per channel for a total of 16 DIMMs.

DIMMs in the same channel must be of the same type.

DIMMs with different memory speeds can be used, but not in the same channel.

When mixing memory modules with different capacities, install the highest capacity memory modules first. No more than two memory module capacities can be installed.

Currently, there is only support for RDIMMs running at 1.2 V.

Memory mirroring and memory rank sparing are not supported.
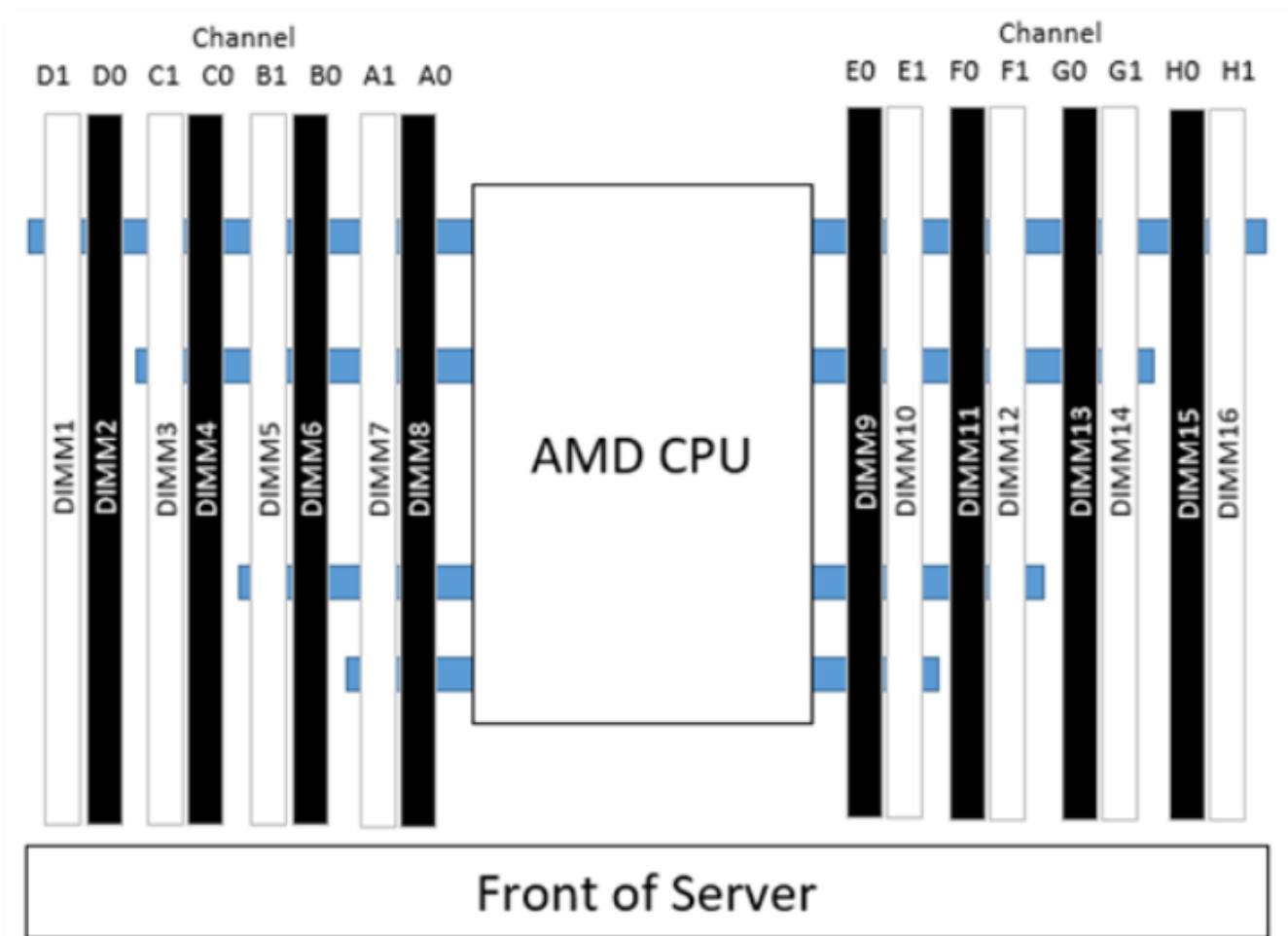
Note: For more information, please refer to each system's Setup Guide on Lenovo Support.

Memory channel diagram

Memory channels are organized as follows:

Channel	Channel D		Channel C		Channel B		Channel A		Channel E		Channel F		Channel G		Channel H	
	D1	D0	C1	C0	B1	B0	A1	A0	E0	E1	F0	F1	G0	G1	H0	H1
Slot No.	DIMM 1	DIMM 2	DIMM 3	DIMM 4	DIMM 5	DIMM 6	DIMM 7	DIMM 8	DIMM 9	DIMM 10	DIMM 11	DIMM 12	DIMM 13	DIMM 14	DIMM 15	DIMM 16
1 DIMM			X													
2 DIMMs	X		X													
3 DIMMs	X		X											X		
4 DIMMs	X		X											X		X
5 DIMMs	X		X				X							X		X
6 DIMMs	X		X		X		X							X		X
7 DIMMs	X		X		X		X			X				X		X
8 DIMMs	X		X		X		X			X		X		X		X
9 DIMMs	X		X	X	X		X			X		X		X		X
10 DIMMs	X	X	X	X	X		X			X		X		X		X
11 DIMMs	X	X	X	X	X		X			X		X	X	X		X
12 DIMMs	X	X	X	X	X		X			X		X	X	X	X	X
13 DIMMs	X	X	X	X	X		X	X		X		X	X	X	X	X
14 DIMMs	X	X	X	X	X	X	X	X		X		X	X	X	X	X
15 DIMMs	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
16 DIMMs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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Processor heat sink modules

Two different types of heat sink are supported in AMD-based systems.
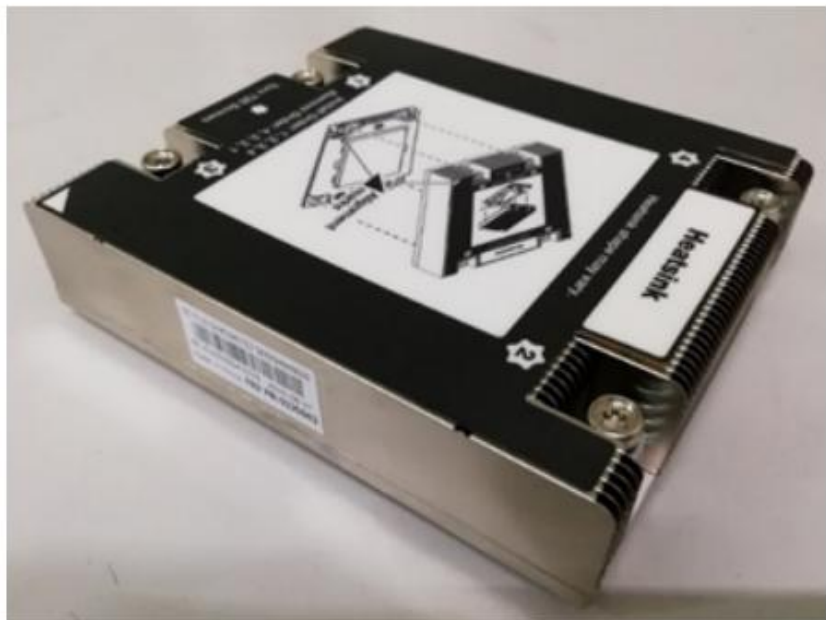
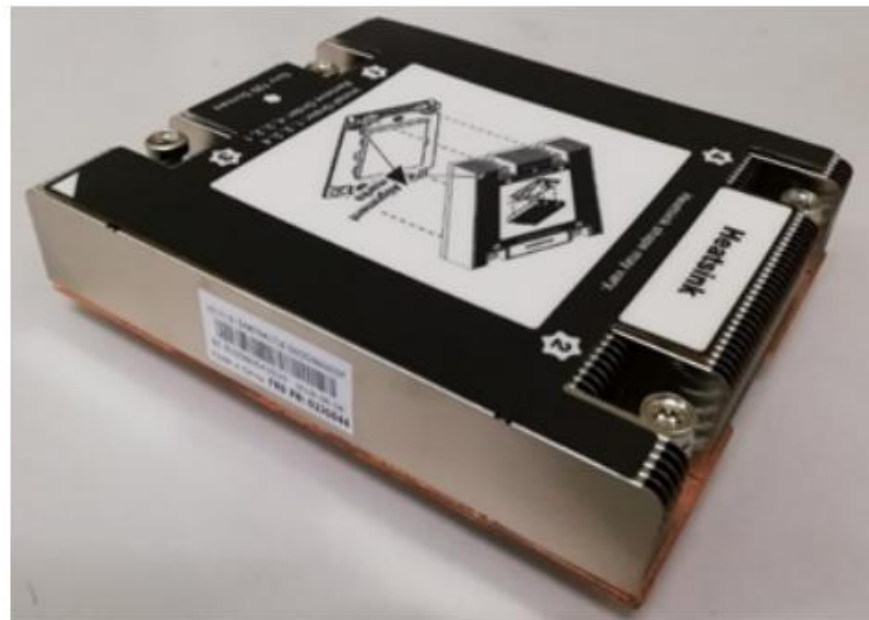**Standard heat sink (Al)**
Height: 1U
Usage scenario: CPU default
TDP ≤180W

Advanced heat sink (VC)
Height: 1U
Usage scenario: CPU default
TDP ≥200W, ≤240W

Processor FRUs

AMD EPYC processors come with a carrier and three captive screws on the force plate. Use a Torx T-20 screwdriver when replacing a processor or heat sink.



Processor carrier   **Processor clip**   **Torx T-20 bit**

Note: For more details, please refer to the YouTube or YouKu video links.

Installing a heat sink on a system board

- It may take some time for the heat sink to cool down after the system is turned off.
- Pay attention to the air flow mark on the heat sink label when installing a new heat sink.
- As shown on the label, the heat sink nut installation order is $1 \rightarrow 2 \rightarrow 3 \rightarrow 4$.
- The removal order is $4 \rightarrow 3 \rightarrow 2 \rightarrow 1$.
- A Torx T20 screwdriver is required.
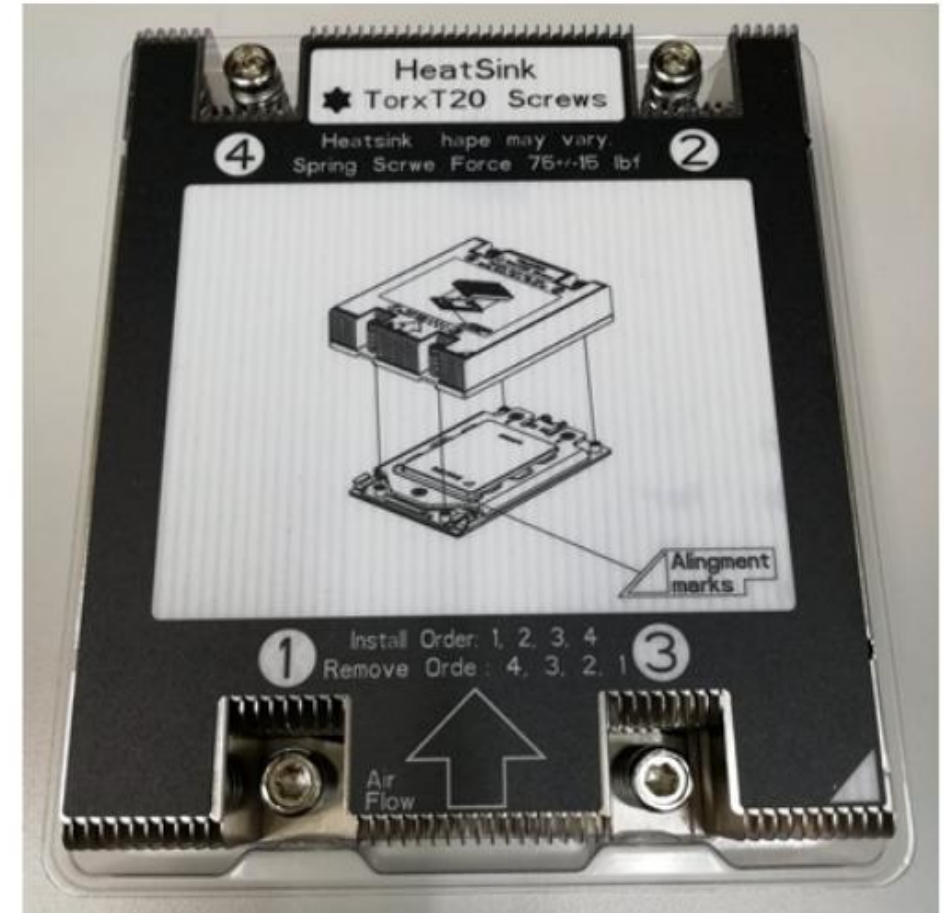
Replacing a processor module

Follow these procedures to replace an AMD EPYC processor.
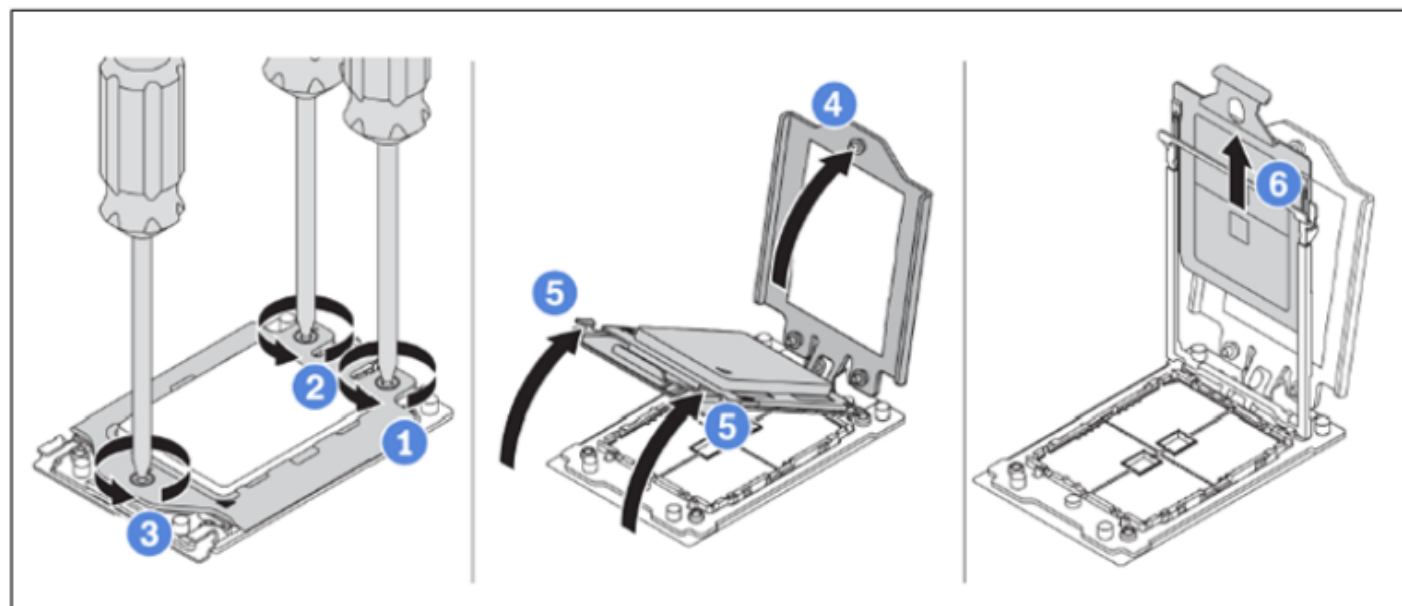
Removing a processor   Installing a processor

Step 1. Use a Torx #T20 screwdriver to loosen the captive screws. Follow the removal sequence shown on the force plate.
Step 2. Lift up the force frame and the rail frame.
Step 3. Holding the blue tab on the processor carrier, slide the processor carrier out of the rail frame.

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Replacing a processor module

Follow these procedures to replace an AMD EPYC processor.

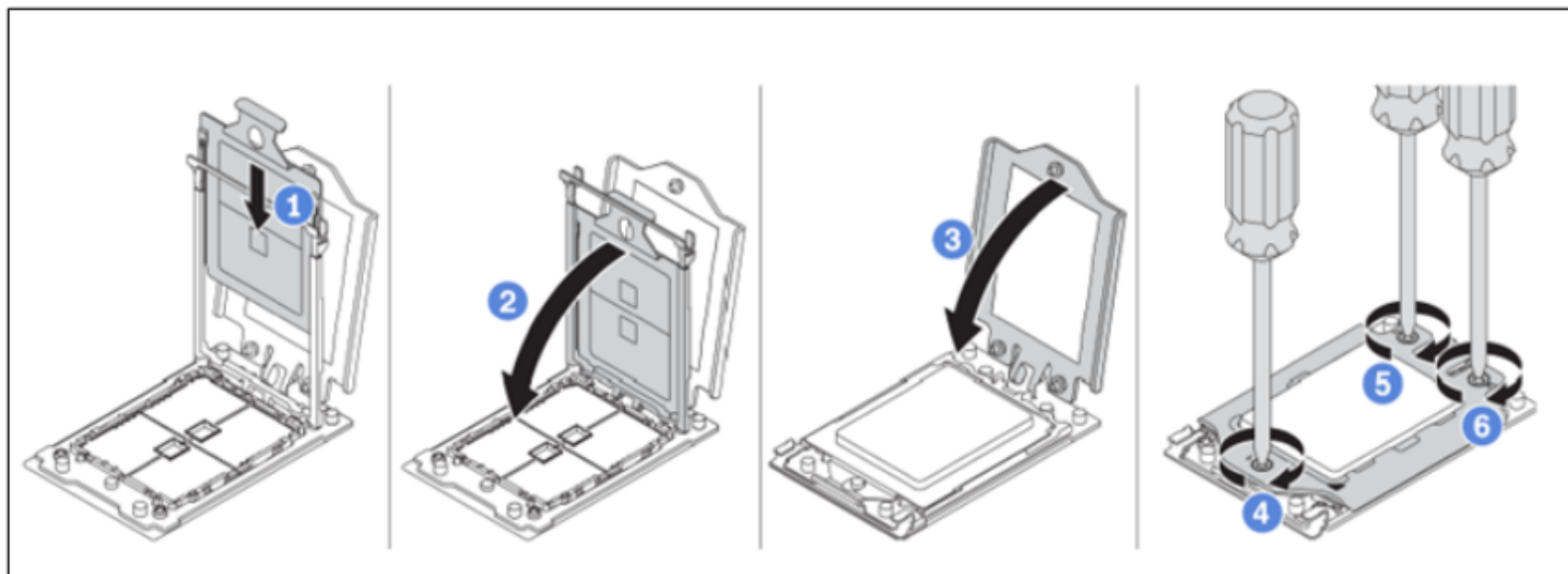| Removing a processor	Installing a processor

Step 1. Slide the processor carrier into the rail frame.
Step 2. Push the rail frame down until the blue latches lock into place. Then, close the force frame.
Step 3. Fasten the screws. Follow the installation sequence shown on the force plate.

M.2 adapters on AMD-based ThinkSystem servers

- There is a new approach for AMD-based ThinkSystem servers
  - o   Cabled M.2 design with side-by-side drives (up to 22 mm x 110 mm length M.2 adapter)
  - o   Improved thermal design by moving the M.2 off of the planar
- Supports single/dual SATA/NVMe
  - o   SATA offering includes both RAID & Non-RAID
  - o   x1 connection to each drive

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OCP adapters on AMD-based ThinkSystem servers

There is a new adapter for AMD-based ThinkSystem servers.

Slot characteristics
- Shared BMC network sideband
- Multiple ASIC support via PCIe bifurcation
- PCIe Gen4 x16
- Up to 1x100 Gb / 2x50 Gb / 4x25 Gb wire rate non-blocking
- Does not occupy a PCIe slot
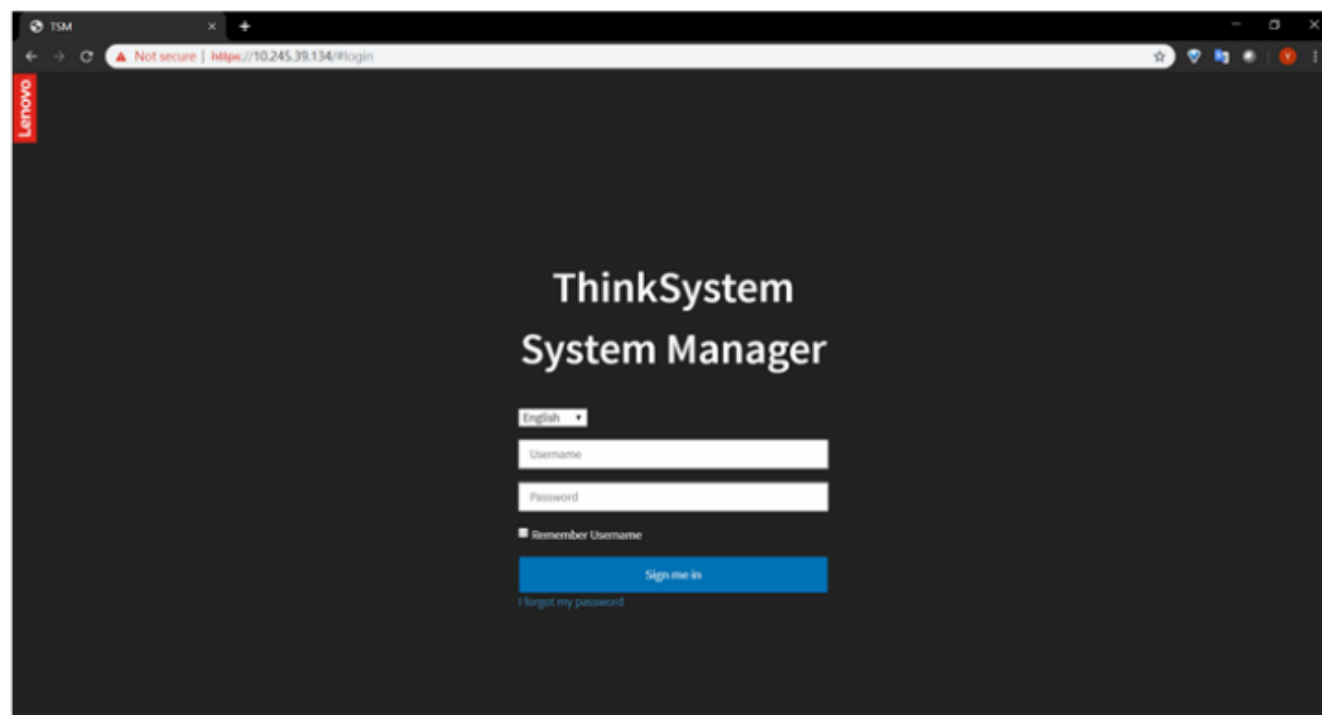- Simple-swap mechanism with a pull-tab and thumbscrew

4x10G BaseT

4x25G SFP

AMD-based ThinkSystem server features and specifications

System management

Users can manage AMD-based systems through ThinkSystem System Manager (TSM). For details, refer to: ES51998 – ThinkSystem server tools – AMD EPYC processor models

Note: Only the SR635 (machine types: 7Y98 and 7Y99) and SR655 (machine types: 7Y00 and 7Z01) use TSM for management; other AMD-based servers use XCC.

Summary

This course enabled you to:
- Describe the key components and technology of the AMD EPYC platforms
- Describe Lenovo ThinkSystem support for AMD processor levels and features
- Describe memory support and configuration rules
- Describe AMD processor heat sink and hardware features