

AMD-based ThinkSystem server features and specifications

Memory and heat sink design

The Lenovo logo is positioned in the top right corner of the slide. It consists of the word "Lenovo" in white, oriented vertically, set against a rectangular background with a green-to-blue gradient.

Lenovo

Genoa product architecture for ThinkSystem V3 servers

The ThinkSystem V3 rack server naming convention for the AMD platform is SRXX5 V3 – for example, SR665 V3

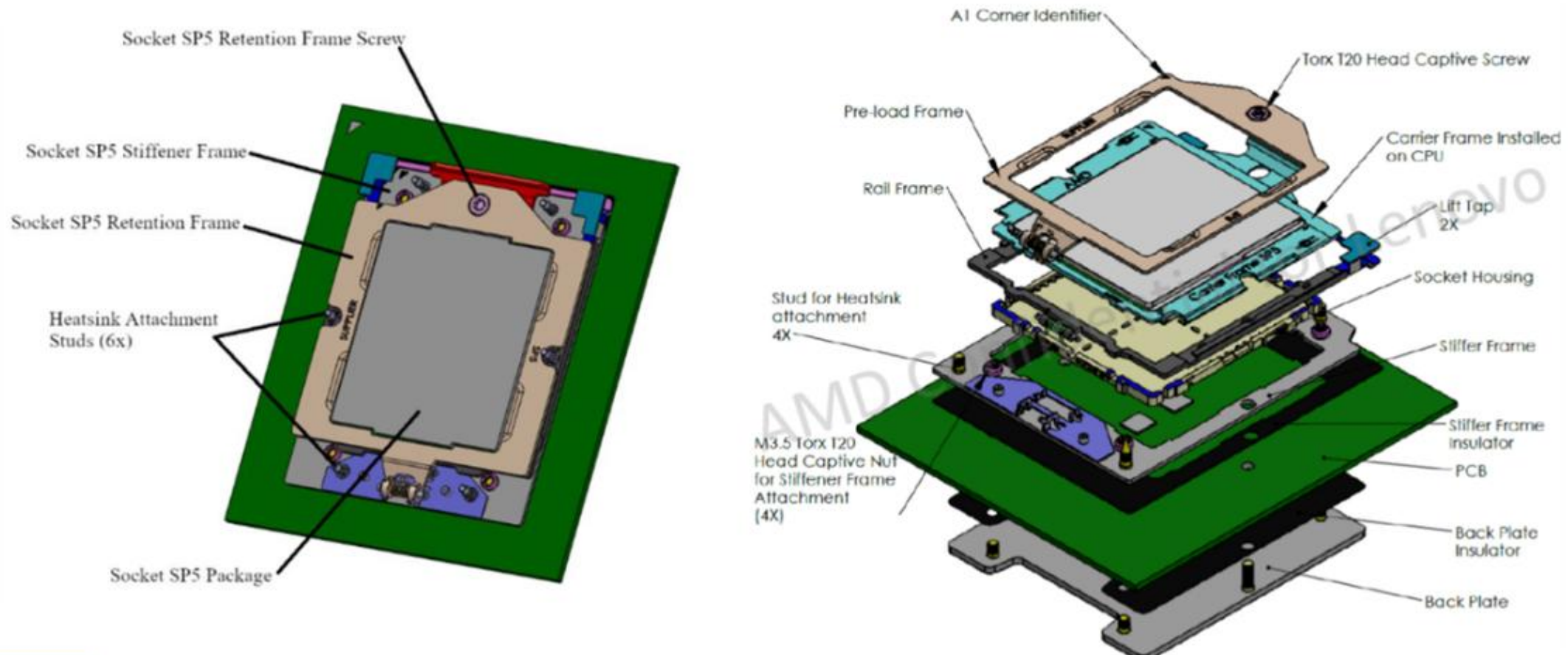
ThinkSystem	SR665 V3	SR645 V3	SR655 V3	SR635 V3	SD665 V3	SR675 V3
Package	2U, air cooled	1U, air cooled	2U, air cooled	1U, air cooled	6U12N, DWC	3U, air cooled
AMD Platform	SP5, Two sockets	SP5, Two sockets	SP5, One socket	SP5, One socket	SP5, Two sockets	SP5, Two sockets
Inter-Socket xGMI Links	x3~x4 (cabled)	x4	NA	NA	x4	x3
Memory Topology	1DPC	1DPC	1DPC	1DPC	1DPC	1DPC



Lenovo

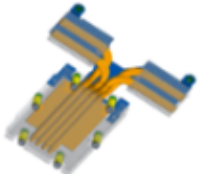




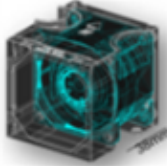
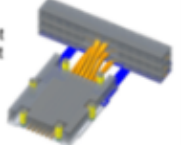
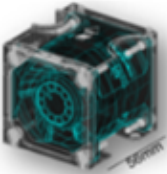
Socket SP5 exploded view

The SP5 platform features a brand-new socket with 6096 pins arranged in the LGA (Land Grid Array) format. The heat sink used will depend on platform and configuration.



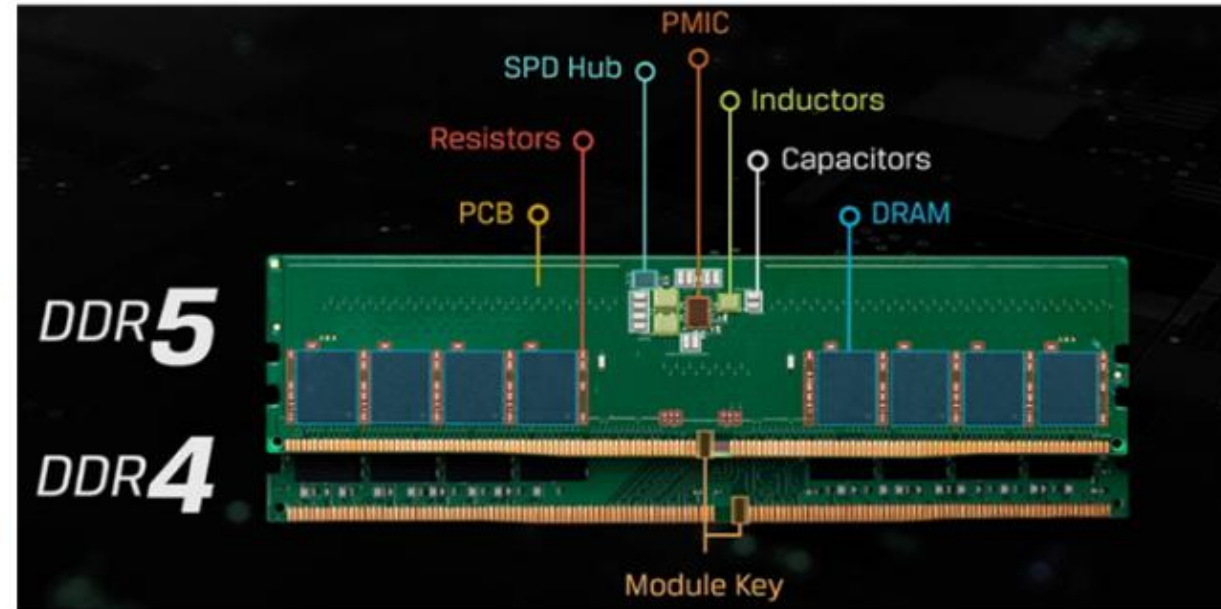
Socket SP5 thermal solution

High volume 1U and 2U rack servers support different types of heat sinks and fans.

Heat sink type	Heat sink illustration	CPU TDP, associated with or without GPU	Fan illustration	Fan description and size
1U performance		CPU 200-240 W, with GPU CPU 240-300 W, with GPU		40 x 56 mm Dual rotor Standard
1U close loop		Two CPUs 320-400 W, without GPU		40 x 56 mm Dual rotor 28,000 rpm
2U standard	2U Height 	CPU 200-300 W, without GPU		60 x 38 mm Single rotor 17,000 rpm
2U performance	CPU HS 1U Height Front Fin 2U Height 	CPU 300-400 W (In configurations with a mid bay, use a double-wide GPU)		60 x 56 mm Dual rotor 20,000 rpm

DDR5 memory

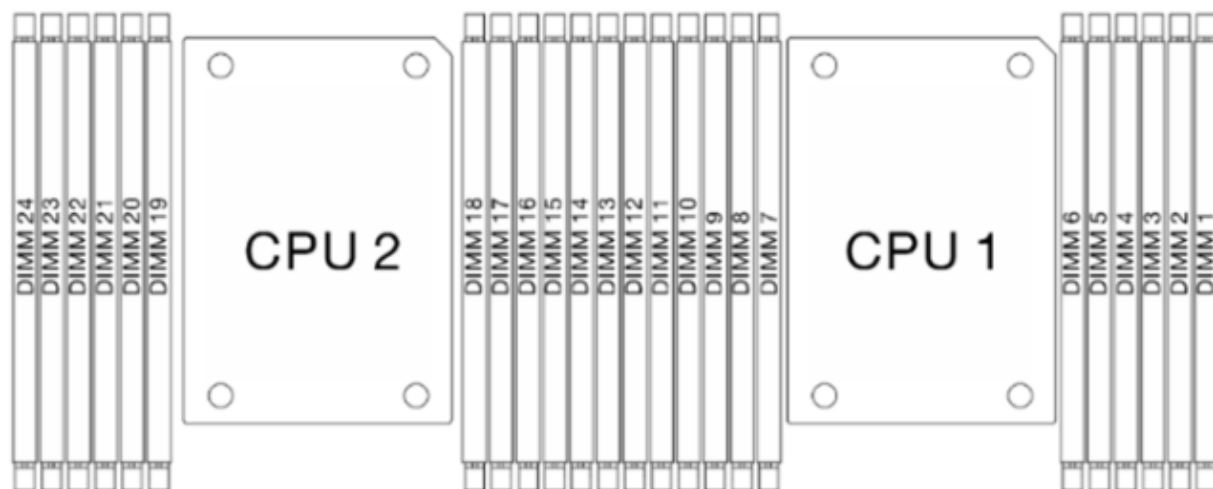
- Speed: 4800 MT/s to 6400 MT/s vs. 3200 MT/s for DDR4
- Voltage: 1.1 V vs 1.2 V for DDR4, a 20% energy saving
- PMIC: Power control and distribution for DRAM, RCD, and SPD hub – meaning more efficiency and reduced signal noise
- SPD Hub: Integrates Serial Presence Detect (SPD) EEPROM with other hub functions, manages access to external controllers, and separates the memory load on the internal bus from the external bus
- Integrated thermal sensor: Dynamic thermal management mechanism, which allows more precise control of system cooling conditions
- Dual 32-bit subchannels: To improve efficiency and reduce data access latency of the memory controller



Memory rules for Genoa processors

AMD Genoa ThinkSystem V3 servers use Lenovo TruDDR5 memory operating at up to 4800 MHz. The servers support up to 12 memory channels and up to 24 RDIMMs.

- DIMMs in the same channel must be of the same type and speed.
- The memory operating speed depends on the processor model and UEFI settings.
- When mixing memory modules with different capacities, install the highest capacity memory modules first. No more than two memory module capacities can be installed.
- Memory mirroring and memory rank sparing are not supported.



Note: For more information, refer to each system's Setup Guide on [Lenovo Support](https://lenovo.com/support).

Memory module installation order

DIMM population sequence for one processor

Total DIMMs	CPU 1											
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
1 DIMM							1					
2 DIMMs						2	1					
4 DIMMs				4		2	1		3			
6 DIMMs				4	6	2	1	5	3			
8 DIMMs		8		4	6	2	1	5	3		7	
10 DIMMs		8	10	4	6	2	1	5	3	9	7	
12 DIMMs	12	8	10	4	6	2	1	5	3	9	7	11

DIMM population sequence for two processors (Independent mode)

Total DIMMs	CPU 1											
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
2 DIMMs							1					
4 DIMMs						3	1					
8 DIMMs				7		3	1		5			
12 DIMMs				7	11	3	1	9	5			
16 DIMMs		15		7	11	3	1	9	5		13	
20 DIMMs		15	19	7	11	3	1	9	5	17	13	
24 DIMMs	23	15	19	7	11	3	1	9	5	17	13	21
Total DIMMs	CPU 2											
	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24
2 DIMMs							2					
4 DIMMs						4	2					
8 DIMMs				8		4	2		6			
12 DIMMs				8	12	4	2	10	6			
16 DIMMs		16		8	12	4	2	10	6		14	
20 DIMMs		16	20	8	12	4	2	10	6	18	14	
24 DIMMs	24	16	20	8	12	4	2	10	6	18	14	22

Note: In the following tables:

- S1 to S24 indicates DIMM slots 1 to 24.
- 1 to 24 indicates the installation order.

For example, when 12 DIMMs are installed for two processors, the installation order is slot 7, 19, 6, 18, 9, 21, 4, 16, 8, 20, 5, 17.

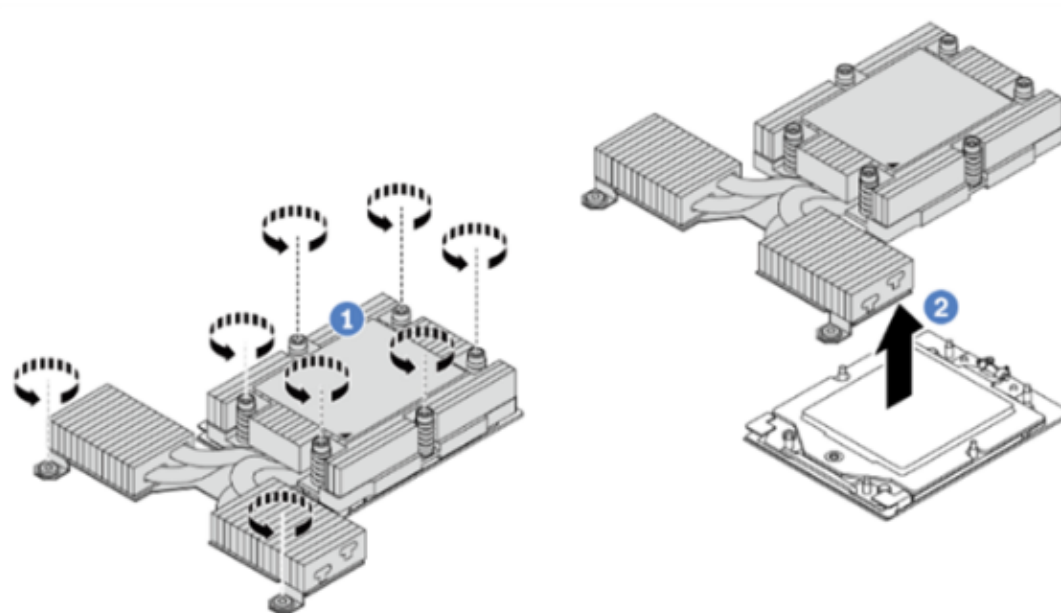
Replacing a heat sink

Work through the following procedures to replace a heat sink for an EPYC processor.

Removing a heat sink

Step 1. Use a Torx T20 screwdriver to unfasten all the screws on the heat sink in the removal sequence shown on the heat sink label.

Step 2. Carefully lift the heat sink from the processor socket.



Replacing a heat sink

Work through the following procedures to replace a heat sink for an EPYC processor.

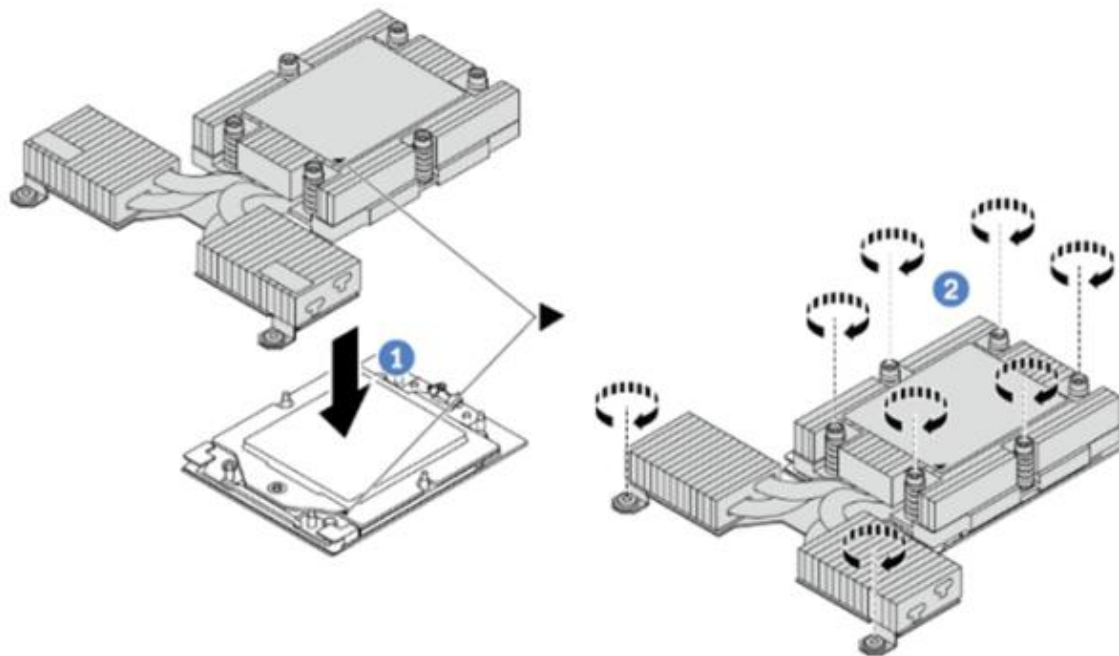
Removing a heat sink

The torque required to fully fasten the fasteners is 1.22 to 1.46 newton-meters (10.8 to 13.0 inch-pounds).

Step 1. Align the triangular mark and screws on the heat sink with the triangular mark and threaded posts on the processor socket, and then install the heat sink onto the processor carrier.

Step 2. Fasten all the screws in the installation sequence shown on the heat sink label.

Installing a heat sink



Replacing a processor module

Work through the following procedures to replace an EPYC processor.

Removing a processor

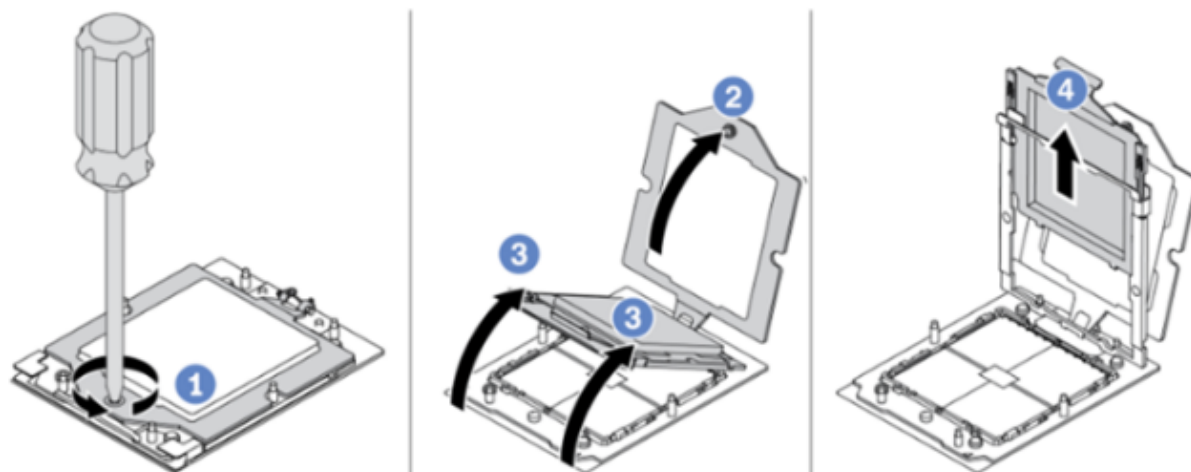
Step 1. Use a Torx T20 screwdriver to unfasten the captive screws.

Step 2. Slightly lift up the retention frame.

Step 3. Slightly lift up the rail frame. The processor is spring-loaded in the rail frame.

Step 4. Hold the blue tab of the processor carrier and slide the processor carrier out of the rail frame.

Installing a processor



Replacing a processor module

Work through the following procedures to replace an EPYC processor.

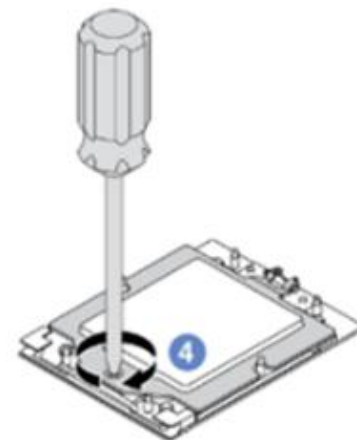
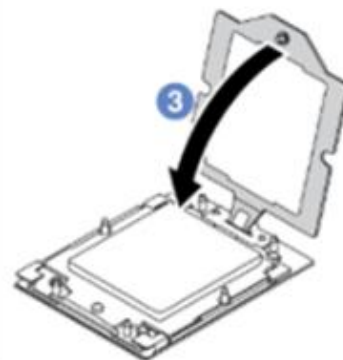
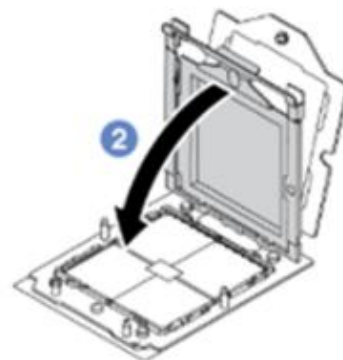
Removing a processor

Step 1. Slide the processor carrier into the rail frame.

Step 2. Push the rail frame down until the blue latches lock into place.

Step 3. Close the retention frame.

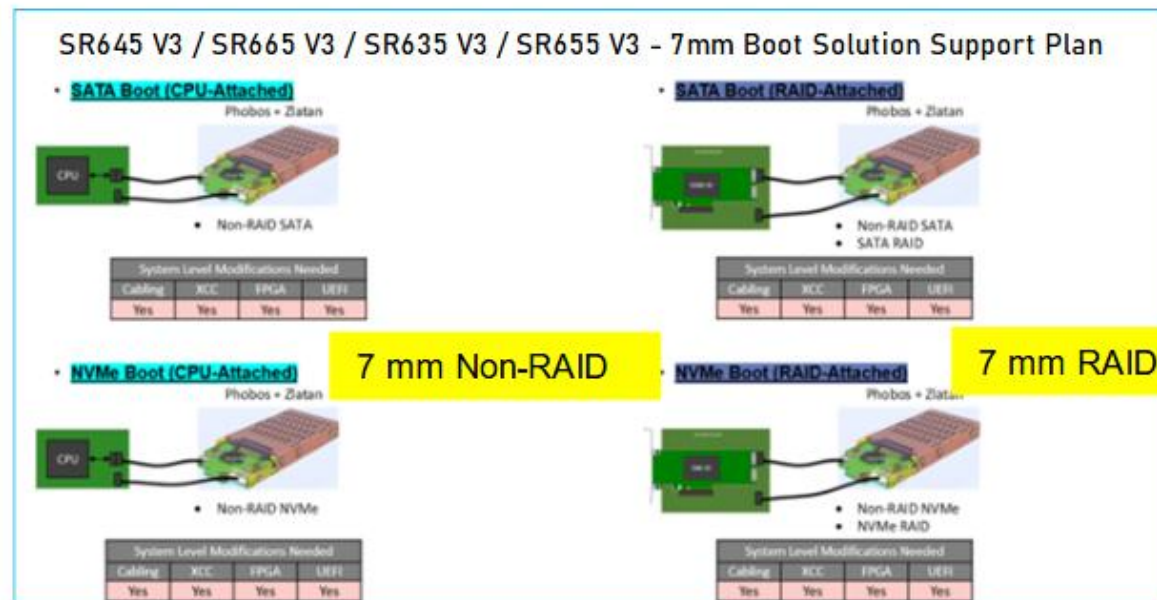
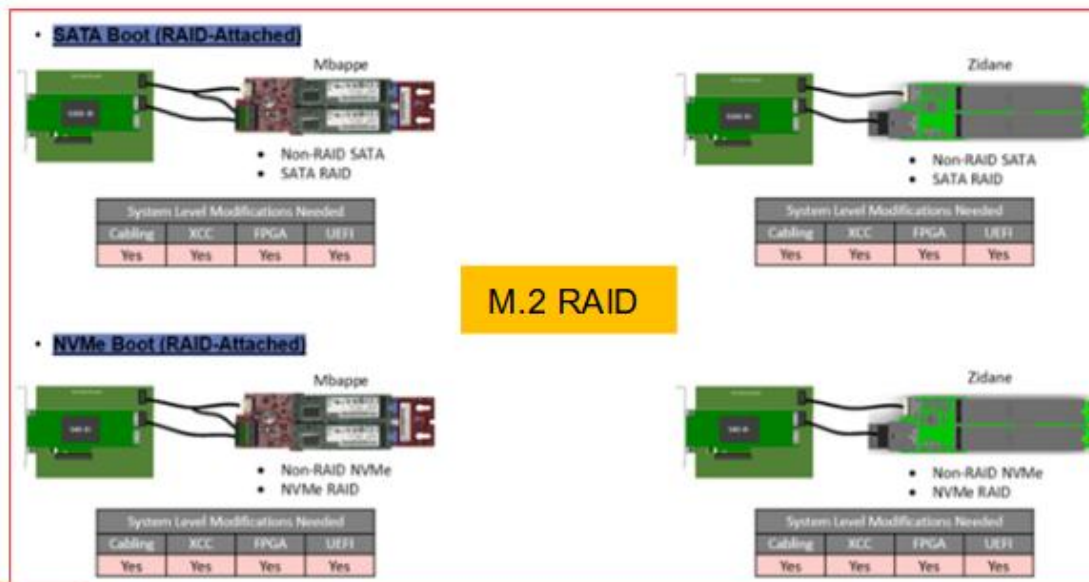
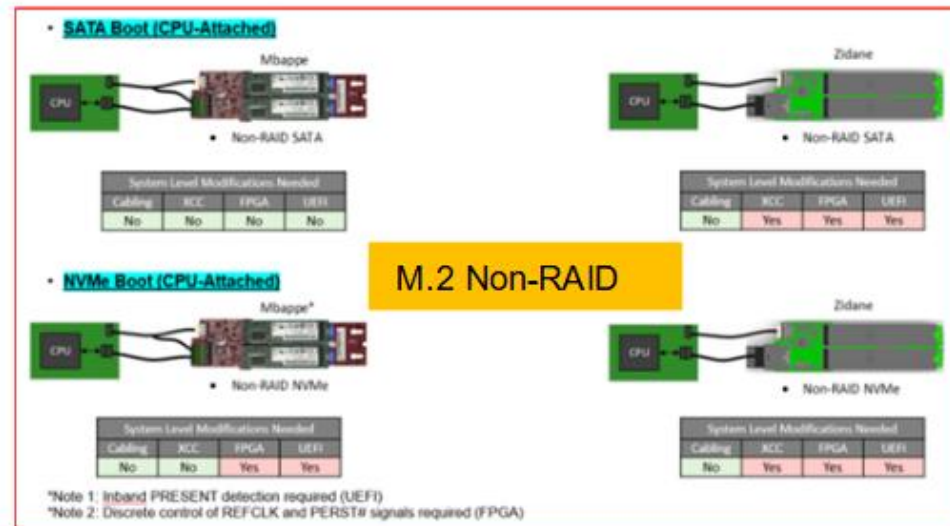
Step 4. Use a Torx T20 screwdriver to fasten the captive screws.



M.2 adapters and 7 mm kit

AMD-based ThinkSystem V3 servers support the following configurations:

- New M.2 x4 NVMe x1 SATA kit (Zidane)
- M.2 & 7 mm SATA RAID kit – need to use the 5350-8i RAID card
- M.2 & 7 mm NVMe RAID kit – need to use the 540-8i RAID card



AMD Platform Secure Boot



This feature (or platform secure boot) helps defend against threats to firmware. It is designed to provide protection in response to growing firmware-level remote attacks being seen across the industry. AMD Secure Boot extends the AMD silicon root of trust to help protect the system by establishing an unbroken chain of trust from the AMD silicon root of trust to the BIOS. The UEFI secure boot helps continue the chain of trust from the system BIOS to the OS Bootloader. This feature helps defend against remote attackers seeking to embed malware into firmware.

Note: This feature only applies to Genoa ThinkSystem V3 servers. For more information about PSB features, refer to the [AMD website](#)

System management

Users can manage AMD-based systems with XCC2

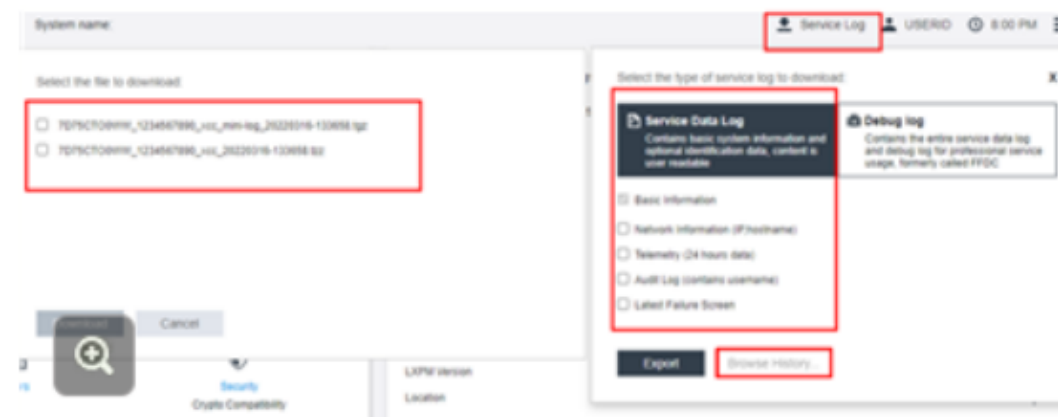
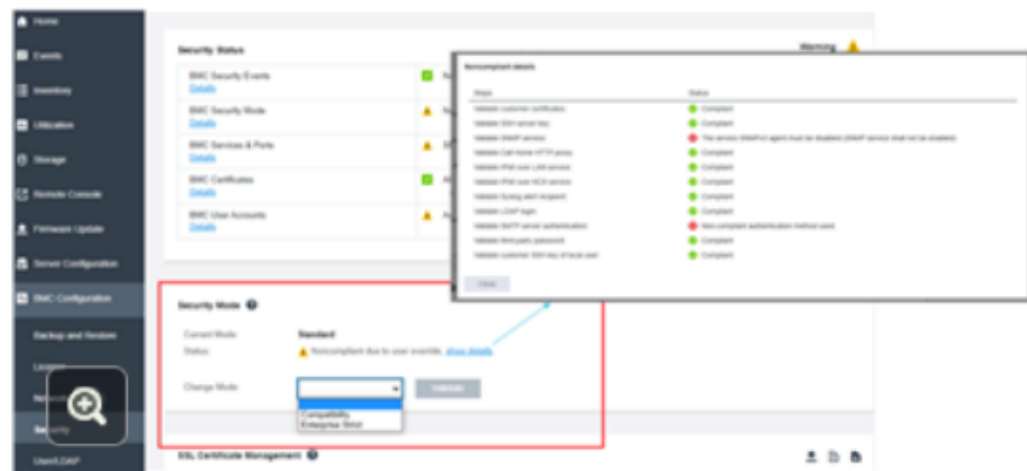
New XCC chip with enhanced performance and security

Advanced security enhancements

- Enhanced security modes
- Enhanced NIST 800-193 (PFR) support
- System Guard to protect against supply chain attacks

New features to extend manageability and serviceability functions

- Redfish standard-based firmware update enhancement
- Support for the SD card option to extend XCC storage
- XCC federated group support
- Enhanced LDAP configuration to support a complex hierarchy
- Customer-configurable thermal fan speed profile
- Mini-log (Service Data Log)



Summary

This course enabled you to:

- Describe the key components and technology of the EPYC platforms
- Describe the ThinkSystem support for AMD processor levels and features
- Describe memory support and configuration rules
- Describe AMD processor heat sink and hardware features