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# **Servicing the ThinkSystem 4350/5350/9350 RAID/HBA series adapters**

ES42190

August 2021



## Prerequisites

- ES51780C - Servicing the Lenovo ThinkSystem storage controllers  
<https://lenovoedu.lenovo.com/course/view.php?idnumber=ES51780C>
- ES51757B – Introducing ThinkSystem tools  
<https://lenovoedu.lenovo.com/course/view.php?idnumber=ES51757B>
- ES41759B – ThinkSystem problem determination  
<https://lenovoedu.lenovo.com/course/view.php?idnumber=ES41759B>

# Objectives

After completing the course, you will be able to:

- Describe the features of the new Lenovo RAID/HBA adapters
- Identify the differences between the RAID/HBA adapters
- Describe how to configure RAID adapters with different tools
- Describe the problem determination steps and explain how to troubleshoot issues with the new Lenovo RAID/HBA adapters

# Product overview

Product description and product pictures

The Lenovo logo is positioned in the top right corner of the slide. It consists of the word "Lenovo" in a white, sans-serif font, oriented vertically. The text is set against a rectangular background with a vertical color gradient that transitions from green at the top to blue at the bottom.

Lenovo

## **New Lenovo RAID/HBA adapters product overview**

Lenovo has announced a new cost-effective series of Lenovo RAID/HBA adapters for ThinkSystem V2 servers. The new adapters are as follows:

- ThinkSystem 4350-8i SAS/SATA 12 Gb HBA
- ThinkSystem 4350-16i SAS/SATA 12 Gb HBA
- ThinkSystem RAID 5350-8i PCIe 12 Gb Adapter
- ThinkSystem RAID 9350-8i 2 GB Flash PCIe 12 Gb Adapter
- ThinkSystem RAID 9350-16i 4 GB Flash PCIe 12 Gb Adapter

# ThinkSystem 4350-8i SAS/SATA 12 Gb HBA

The 4350-8i SAS/SATA 12 Gb HBA adapter has the following features:

- Half-Height Half-Length (HHHL) Small Form Factor (SFF) card
- PCIe 3.0 x8 form factor, low profile
- Based on the Adaptec PM8222 SmartIOC 2100
- Eight internal 12 Gbps SAS/SATA ports
- Cacheless (not upgradeable)
- Supports HDD and SSD
- No SED support
- No RAID support
- Supports JBOD (known as “raw” or “HBA mode” in Adaptec parlance)





# ThinkSystem 4350-16i SAS/SATA 12 Gb HBA

The 4350-16i SAS/SATA 12 Gb HBA adapter has the following features:

- Half-Height Half-Length (HHHL) Small Form Factor (SFF) card
- PCIe 3.0 x8 form factor, low profile
- Based on the Adaptec PM8238 SmartIOC 2100
- 16 internal 12 Gbps SAS/SATA ports
- Cacheless (not upgradeable)
- Supports HDD and SSD
- No SED support
- No RAID support
- Supports JBOD



## ThinkSystem RAID 5350-8i PCIe 12 Gb adapter

The RAID 5350-8i PCIe 12 Gb adapter has the following features:

- Half-Height Half-Length (HHHL) Small Form Factor (SFF) card
- PCIe 3.0 x8 form factor, low profile
- Based on the Adaptec PM8222 SmartIOC 2100
- Eight internal 12 Gbps SAS/SATA ports
- Cacheless (not upgradeable)
- Supports HDD and SSD
- No SED support
- Supports Mixed Mode (default), HBA (JBOD) Mode, and RAID Mode
- Supports RAID 0, 1, 10, and 5
  - Supports intermixing SAS and SATA HDDs and SSDs. A mix of SAS and SATA drives in the same array is not supported. A mix of HDDs and SSDs in the same array is not supported



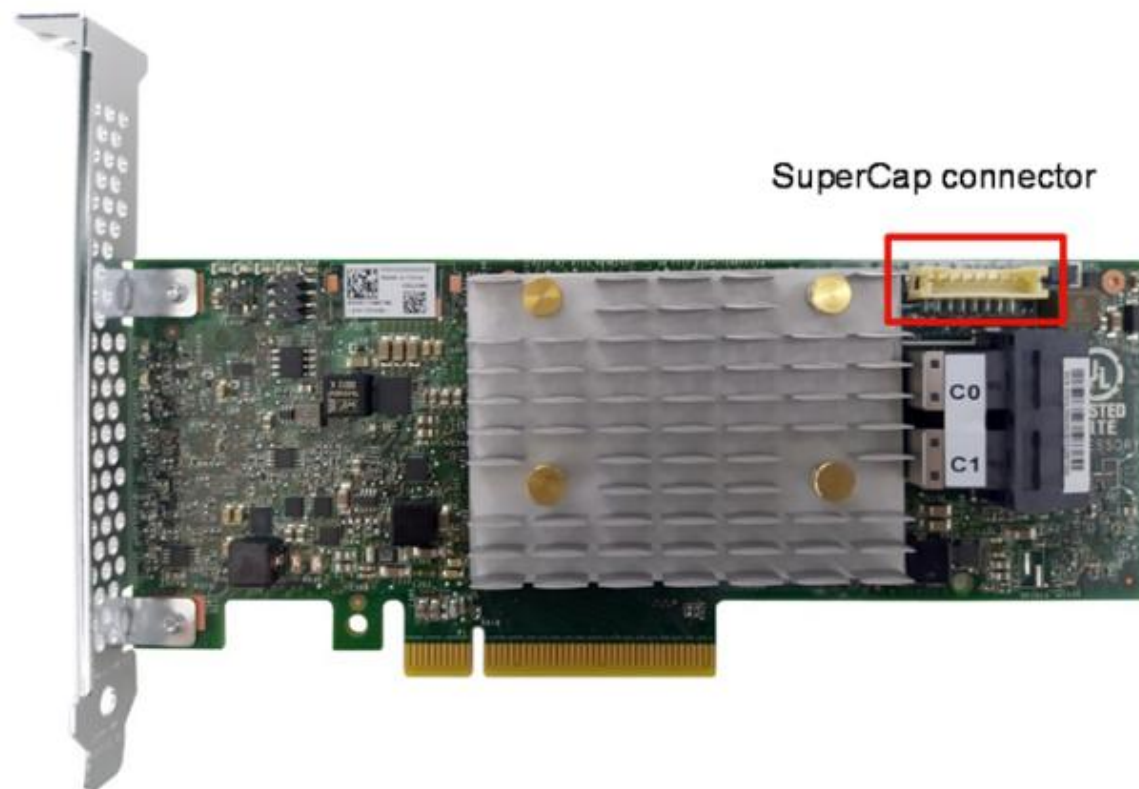
**Note:** The RAID 5350-8i PCIe 12 Gb adapter looks identical to the 4350-8i HBA. Check the label on the back of the adapter to verify each product.



# ThinkSystem RAID 9350-8i 2 GB flash PCIe 12 Gb adapter

The RAID 9350-8i 2 GB flash PCIe 12 Gb adapter has the following features:

- Half-Height Half-Length (HHHL) Small Form Factor (SFF) card
- PCIe 3.0 x8 form factor, low profile
- Based on the Microchip Luxor ROC PM8204
- Eight internal 12 Gbps SAS/SATA ports
- Supports HDD and SSD
- No SED support
- Supports Mixed Mode (default), HBA (JBOD) Mode, and RAID Mode
- Supports RAID 0, 1, 10, 5, 50, 6, 60, 1 Triple, 10 Triple
- 2 GB cache onboard
- Supports maxCache 4.0 SSD Caching
- Cache protection through SuperCap and flash backup (cache offload on power loss)



**Note:** The RAID 9350-8i adapter looks very similar to the 4350-8i HBA and RAID 5350-8i adapter, but it has a SuperCap connector on the PCB.



# ThinkSystem RAID 9350-16i 4 GB flash PCIe 12 Gb adapter

The RAID 9350-16i 4 GB flash PCIe 12 Gb adapter has the following features:

- Half-Height Half-Length (HHHL) Small Form Factor (SFF) card
- PCIe 3.0 x8 form factor, low profile
- Based on the Microchip Luxor ROC PM8236
- 16 internal 12 Gbps SAS/SATA ports
- Supports HDD and SSD
- No SED support
- Supports Mixed Mode (default), HBA (JBOD) Mode, and RAID Mode
- Supports RAID 0, 1, 10, 5, 50, 6, 60, 1 Triple, 10 Triple
- 4 GB cache onboard
- Supports maxCache 4.0 SSD Caching
- Cache protection through SuperCap and flash backup (cache offload on power loss)



**Note:** The RAID 9350-16i adapter looks very similar to the 4350-16i HBA, but it has a SuperCap connector on the PCB.

# ThinkSystem V2 server support

The new Lenovo RAID/HBA adapters are currently only supported on the ThinkSystem SR630 V2 and SR650 V2 servers, and there is limited backplane support. AnyBay backplanes and expanders are not supported. Click the buttons for more information.

## SR630 V2

## SR650 V2

SR630 V2					
Adapter / backplane	4350-8i HBA	4350-16i HBA	RAID 5350-8i	RAID 9350-8i 2 GB	RAID 9350-16i 4 GB
Four 3.5-inch SAS/SATA - Front	V	Currently not supported	V	V	Currently not supported
Eight 2.5-inch SAS/SATA - Front	V	Currently not supported	V	V	Currently not supported

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Scroll down for more information

SR630 V2

SR650 V2

SR650 V2					
Adapter / backplane	4350-8i HBA	4350-16i HBA	RAID 5350-8i	RAID 9350-8i 2 GB	RAID 9350-16i 4 GB
Eight 3.5-inch SAS/SATA - Front	V	V	V	V	V
12 3.5-inch SAS/SATA - Front	V	V	V	V	V
Eight 2.5-inch SAS/SATA - Front	V	V	V	V	V
Four 3.5-inch SAS/SATA – Mid	V	V	V	V	V



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## SR630 V2

## SR650 V2

SR650 V2					
Adapter / backplane	4350-8i HBA	4350-16i HBA	RAID 5350-8i	RAID 9350-8i 2 GB	RAID 9350-16i 4 GB
Eight 2.5-inch SAS/SATA - Front	V	V	V	V	V
Four 3.5-inch SAS/SATA – Mid	V	V	V	V	V
Four 3.5-inch SAS/SATA – Rear	V	V	V	V	V
Two 3.5-inch SAS/SATA – Rear	V	V	V	V	V