

# ThinkSystem SR950 Server Configurations

## Article

The Lenovo ThinkSystem SR950 is designed for your most demanding, mission-critical workloads, such as in-memory databases, large transactional databases and real-time analytics, ERP, CRM, and virtualized server workloads. The powerful 4U ThinkSystem SR950 can grow from two to eight Intel Xeon Scalable Family processors and with 96 DIMM that supports up to 12 TB of high-speed memory. The modular design of SR950 speeds upgrades and servicing with easy front or rear access to all major subsystems to maximize server availability.



Figure 1. The SR950 server is available in 24-drive and 12-drive configurations

Let's take a look at the SR950 various primary configurations that impact the processing power, memory, I/O and storage of the server.

### Configuration Summary

The Lenovo ThinkSystem SR950 supports five different primary configurations, depending on the desired number of processors, drive bays, PCIe slots and upgradability to an 8 socket configuration.

The two key decision points in building an SR950 that significantly impact your overall server configuration:

1. Do you need the capability of a simple 8-socket upgrade path?
  - If yes, select SR950 2S to 8S Base (note requires 8100 Series CPUs)
  - If no, select SR950 2S to 4S Base (upgrade to 8S requires a 4S to 8S Upgrade Kit and Lenovo service)
2. Do you need more than 12 storage bays and 6 NVMe?
  - If yes, select 24 Hard Drive Maximum System
  - If no, select 12 Hard Drive Maximum System

There are five overarching configurations of the SR950:

- *Four-Socket Performance* - The highest-performing 4-socket server, at the lowest cost when up to 12 drives is enough and without the need for a simple upgrade (can be upgraded to 8S but requires the 4S to 8S Upgrade Kit and Lenovo hardware installation)
- *Four-Socket Performance/Storage Rich* - The highest-performing 4-socket server, when needing more than 12 drives without the need for a simple upgrade (can be upgraded to 8S but requires the 4S to 8S Upgrade Kit and Lenovo hardware installation)

- *Four-Socket Upgradable* - The lowest-cost 4-socket server capable of being easily upgraded to 8 socket and when 12 drive bays with 4 processors is enough storage.
- *Four-Socket Upgradable / Storage Rich* - 4-socket server capable of being easily upgraded to 8-socket and needing more than 12 drive bays with 4 processor
- *Eight Socket Storage Rich* - Full featured 8-socket server with up to 24 drive bays and the maximum number of PCIe x16 slots

We describe each of these in the remainder of the article.

## Four-Socket Performance

Select this configuration when you need a strong performing 4S server and 12 storage drives including up to 6 NVMe drives is enough. Can be upgraded to 8S but requires a 4S to 8S Upgrade Kit and Lenovo hardware installation.

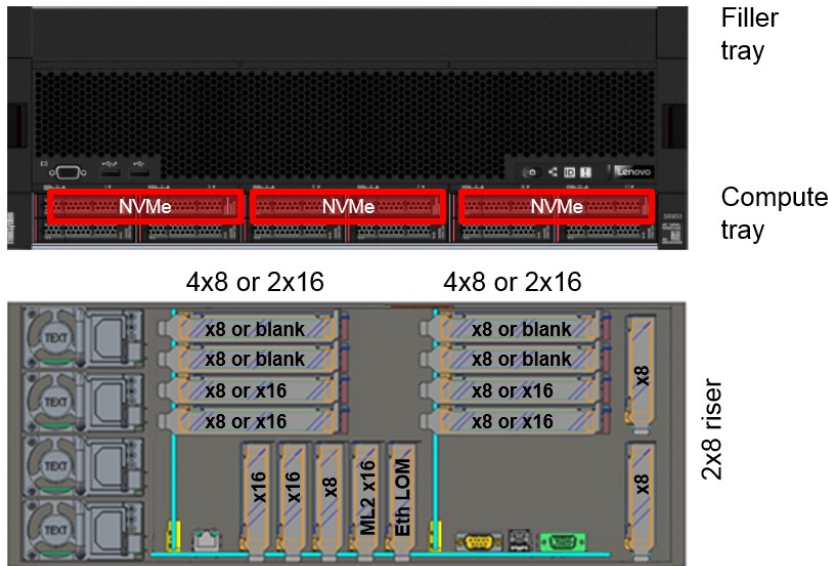


Figure 2. Four-Socket Performance

CPU	4 Intel Xeon Scalable processors (5100, 6100 and 8100 series) or 2 (6100, 8100 series)
Memory	Up to 6TB with 48 DIMMs
Storage	Up to 12 storage bays including up to 6 NVMe. Choice of backplanes that support SAS/SATA or SAS/SATA/NVMe.
RAID	Single RAID adapter support up to 12 drives
PCIe Riser	Up to two 4-x8 or 2-x16 PCI Riser and 2-x8 Riser
PCIe Slots	13 PCIe, 1 ML2, 1 LOM
Upgradable to 8S	Requires a 4S to 8S Upgrade Kit and Lenovo service in addition to the full upper Compute Tray
Cost	Lowest cost SR950 configuration
How to Configure	Select SR950 2S to 4S Base and 12 Hard Drive Maximum

## Four-Socket Performance / Storage Rich

Select this configuration when you need a strong performing 4S server and need more than 12 storage drives or more than 6 NVMe drives. Can be upgraded to 8S but requires a 4S to 8S Upgrade Kit and Lenovo hardware installation.

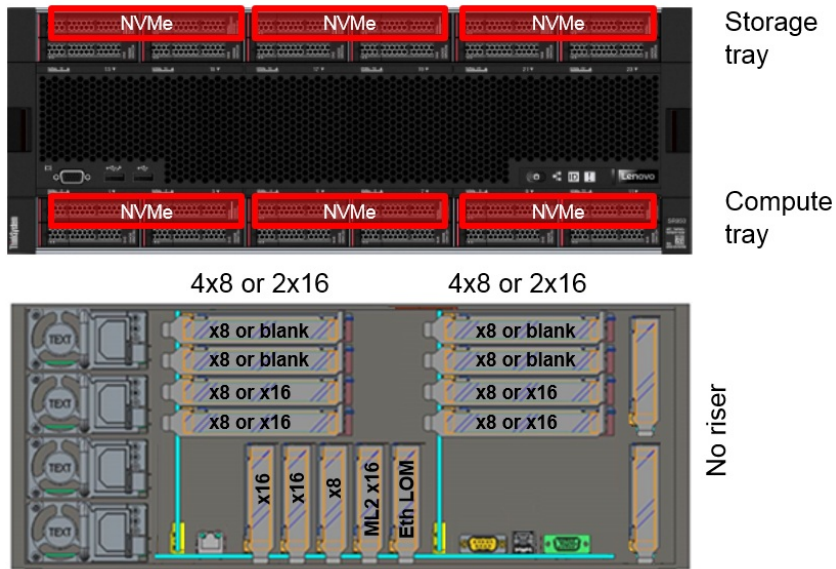


Figure 3. Four-Socket Performance / Storage Rich

CPU	4 Intel Xeon Scalable processors (5100, 6100 and 8100 series)
Memory	Up to 6TB with 48 DIMMs
Storage	Up to 24 storage bays including up to 12 NVMe. Choice of backplanes that support SAS/SATA or SAS/SATA/NVMe.
RAID	Two RAID adapter support up to 12 drives each
PCIe Riser	Up to two 4-x8 or 2-x16 PCI Risers
PCIe Slots	11 PCIe, 1 ML2, 1 LOM
Upgradable to 8S	Requires a 4S to 8S Upgrade Kit and Lenovo service in addition to the full upper Compute Tray
Cost	Somewhat higher cost than 4S Performance with only 12 storage Bays
How to Configure	Select SR950 2S to 4S Base and 24 Hard Drive Maximum

## Four-Socket Upgradable

Select this configuration when you need a 4S server capable of a simple upgrade to 8S when 12 storage drives including up to 6 NVMe drives is enough prior to upgrade.

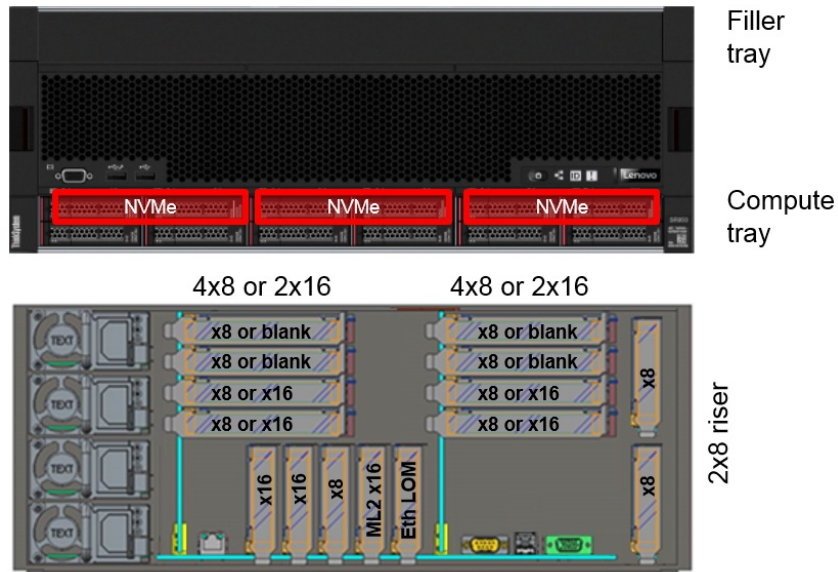


Figure 4. Four-Socket Upgradable

CPUs	2 or 4 Intel Xeon Scalable processors 8100 series (only 8100 series processors are capable of 8S scalability)
Memory	Up to 6TB with 48 DIMMs (prior to upgrade)
Storage	Up to 12 storage bays including up to 6 NVMe. Choice of backplanes that support SAS/SATA or SAS/SATA/NVMe. (prior to upgrade)
RAID	Single RAID adapter support up to 12 drives (prior to upgrade)
PCIe Riser	Up to two 4-x8 or 2-x16 PCI Riser and 2-x8 Riser
PCIe Slots	13 PCIe, 1 ML2, 1 LOM
Upgradable to 8S	Simple upgrade to 8S, involves a full upper Compute Tray being added
Cost	Lowest cost SR950 capable of being upgraded to 8S
How to Configure	Select SR950 2S to 8S Base, 12 Hard Drive Maximum and 2 or 4 CPUs

## Four-Socket Upgradable / Storage Rich

Select this configuration when you need a 4S server capable of a simple upgrade to 8S and need more than 12 storage drives including up to 6 NVMe drives prior to upgrade.

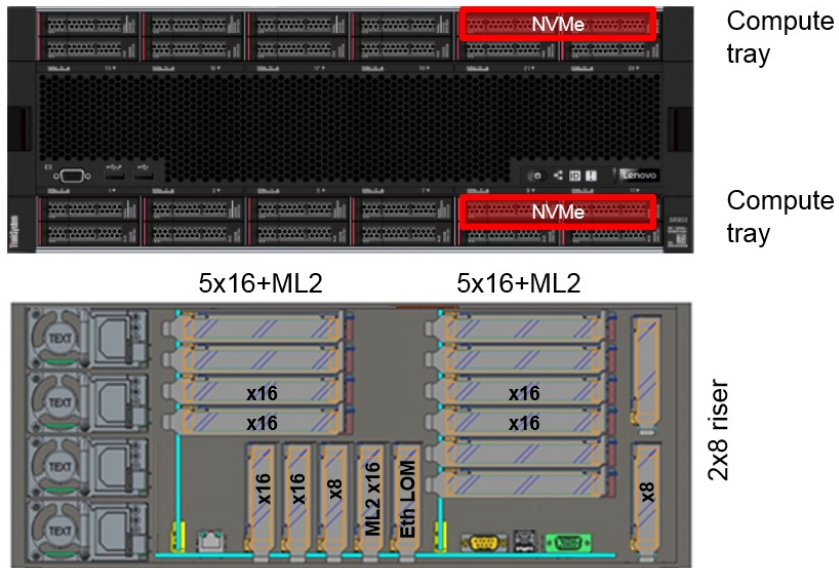


Figure 5. Four-Socket Upgradable / Storage Rich

CPUs	4 Intel Xeon Scalable processors 8100 series (only 8100 series processors are capable of 8S scalability)
Memory	Up to 6TB with 48 DIMMs (prior to upgrade)
Storage	Up to 24 storage bays including up to 4 NVMe. Choice of backplanes that support SAS/SATA or SAS/SATA/NVMe. (once upgraded will support 12 NVMe)
RAID	Two RAID adapter support up to 12 drives each
PCIe Riser	Up to two 5 x16+ML2 Riser and 2 x8 Riser
PCIe Slots	8 PCIe, 1 ML2, 1 LOM (once upgraded to 8S, will match 8S PCIe)
Upgradable to 8S	Simple upgrade to 8S involves two 2S system boards being added
Cost	Higher cost prior to upgrade but lower upgrade cost. This is due to the Compute System Tray being installed prior to upgrade.
How to Configure	Select SR950 2S to 8S Base, 24 Hard Drive Maximum and 4 CPUs

## Eight Socket / Storage Rich

Select this configuration when you need a high performing 8S server with up to 24 storage drives including up to 12 NVMe. Also provides a tremendous amount of x16 PCIe.



Figure 6. Eight Socket / Storage Rich

CPUs	8 Intel Xeon Scalable processors 8100 series (only 8100 series processors are capable of 8S scalability)
Memory	Up to 12TB with 96 DIMMs
Storage	Up to 24 storage bays including up to 12 NVMe. Choice of backplanes that support SAS/SATA or SAS/SATA/NVMe.
RAID	Two RAID adapter support up to 12 drives each
PCIe Riser	Up to two 5 x16+ML2 Riser and 2 x8 Riser
PCIe Slots	14 PCIe, 2 ML2, 1 LOM
Upgradable to 8S	Configured and shipped as 8S
Cost	Higher cost prior to upgrade but lower upgrade cost. This is due to the Compute System Tray being installed prior to upgrade.
How to Configure	Select SR950 2S to 8S Base, 24 Hard Drive Maximum and 8 CPUs

## Conclusion

The SR950 is a very configurable system in terms of processors, memory, storage and I/O. Understanding the five different primary configurations will help you optimize the SR950 to best match your needs for performance, scalability and capabilities.

## Further reading

For further reading, see these resources

- [Lenovo Press product guide on the SR950](#)
- [SR950 product web page](#)

This article is one in a series on the ThinkSystem SR950 and SR850 servers:

- [Five Highlights of the ThinkSystem SR950](#)
- [Five Highlights of the ThinkSystem SR850](#)
- [Choosing between Lenovo ThinkSystem SR850 and SR950](#)
- [Workloads for 4-Socket and 8-Socket Servers](#)
- [Usability in the Design of the ThinkSystem SR950](#)
- [The Value of Refreshing Your 4-Socket Servers with the ThinkSystem SR950](#)
- [ThinkSystem SR950 Memory Decisions](#)
- [ThinkSystem SR950 Server Configurations](#)
- [The Value of Refreshing Your 8-Socket Servers with the ThinkSystem SR950](#)
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- [Accelerate Your 4- and 8-Socket Server Refresh Cycle](#)
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- [ThinkSystem SR950 Performance Leadership Continues](#)
- [New Solution for SAP HANA - Lenovo ThinkAgile HX](#)
- [The Advantages of Keeping Mission Critical Workloads On-Premises vs Going to the Cloud](#)
- [SQL Server Migration and Lenovo ThinkSystem SR950](#)

## About the author

Randall Lundin is a Senior Product Manager in the Lenovo Infrastructure Solution Group. He is responsible for planning and managing ThinkSystem servers. Randall has also authored and contributed to numerous Lenovo Press publications on ThinkSystem products.

## Related product families

Product families related to this document are the following:

- [4-Socket Rack Servers](#)
- [8-Socket Rack Servers](#)
- [Mission Critical Servers](#)
- [ThinkSystem SR950 Server](#)

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This document, LP0775, was created or updated on January 3, 2018.

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