

# Accelerate Your 4- and 8-Socket Server Refresh Cycle

## Article

The server refresh cycle is the length of time that passes between installations of new servers and related hardware in a data center. Traditionally, refresh cycles have averaged 3-5 years. However, in some cases, 3 years is too long as application requirements in analytics and big data processing are requiring more than what the older server can handle.

Replacing servers and other critical hardware allows organizations to deploy updated equipment intended to improve performance, reliability, and take advantage of new software and hardware capabilities.

### Refresh Planning Considerations

When considering and planning for a potential datacenter server refresh, several areas need to be investigated and analyzed. Once you have a good understanding of the below areas you will be better prepared to communicate and justify the need for your server refresh. These include:

- Understand specifications of your current servers**  
 Perform an IT audit and clearly catalog the processors, memory, I/O, storage and software running on the servers.

- Understand business needs**

This includes the targeted applications, storage, I/O and processing power required. What is the expected benefit of the server refresh? This could be improved cost per performance, server consolidation, improved reliability or new advanced applications that the older servers couldn't adequately handle. Are you outgrowing your data center space, cooling or power capabilities? Do you have new security or compliance requirements?

- Understand industry upgrade cycles**

New and better processors are being launched almost yearly. The associated server hardware components (memory, adapters, storage) are continually improving themselves to keep in line with the latest processors. The OS vendors are updating their software to take advantage of the latest processor innovations. The hardware and OS vendors begin to drop support for older generation of servers.



- **Understand the cost of maintaining older servers**

Take into account the Total Cost of Ownership (TCO) of maintaining the older servers. The associated cost to run and maintain your older servers are numerous. This includes hardware maintenance fees, software maintenance fees, network expenses, power and facilities cost. Older hardware means complicated breaks, stalling, and lagging, so just to keep the device from completely breaking down, you will have to keep patching and fixing, which is expensive. Server warranties typically expire after 3 years of purchase. Extended warranties can be expensive. New systems will be easier and less likely to break down, come with a new three-year warranty and have a lower TCO.

- **Understand performance declines**

Applications are based on the current hardware specifications to take advantage of technology advancements. Therefore, aging equipment will slow down applications running on them causing inherent performance drops. The relative performance really starts to drop by year 3 and 4 of server's lifecycle.

- **Understand security & compliance**

Security hackers are now more sophisticated than ever. As your server hardware ages, hackers have had more opportunity to break past the security guards. Meanwhile, the latest firmware and patching updates constantly applied. This process can be cumbersome and time intensive, as you have to ensure hardware and application compatibility. This process gets harder the older as your server becomes older.

In addition to security holes, you have to make sure that all your systems comply with regulatory requirements. By simply always patching and fixing, you are creating a suboptimal solution to meet those standards, and you are constantly treading on the border of being out of compliance.

- **Understand your virtualization requirements**

More virtual machines running on fewer physical servers will reduce facility cost, power consumption, support cost and maintenance cost. However, virtualization on a large scale can demand powerful servers that far exceed the capabilities of the older servers in terms of memory, processing power and fast I/O.

- **Understand increased RAS capabilities of new servers**

The cost of downtime, especially running business critical or mission critical application is very high. New servers have the latest Reliability Availability and Serviceability (RAS) features.

- **Understand that new applications and IT trends might require new servers**

New servers might be required, not an option to run the latest decision support, in-memory database, data analytics, data mining or OLTP. Most of the workloads require high degrees of memory and processor capabilities.

## **Case Study – Refreshing older 4 Socket Servers with ThinkSystem SR950**

A [case study](#) was performed where a company replaced 20 of their older HPE DL580 servers with four new ThinkSystem SR950 4S servers. The study found that the ThinkSystem SR950 servers would deliver a Return on Investment (ROI) of 392%, an Internal Rate of Return (IRR) of 124%, four-year total savings of 70% and Payback period of 10 months.

Significant case study savings were found in these areas:

- **Hardware Maintenance – 93% savings**

To maintain the server hardware, the annual maintenance cost is a significant expense. Replacing 20 of the HPE servers with only four of the ThinkSystem servers saves \$265,519 or 93% in hardware maintenance cost.

- **Software Maintenance – 80% savings**

For both the old HPE systems and new ThinkSystem SR950 systems, the company uses Microsoft Windows 2016 Datacenter and VMware VSphere Enterprise. Replacing 20 of the HPE servers with only four of the ThinkSystem servers saves \$617,040 or 90% in software maintenance cost.

- **Network Cost – 80% savings**

Replacing 20 of the HPE servers with only four of the ThinkSystem servers saves \$960 or 80% in power and facility cost. Network equipment cost for the current HPE server infrastructure and the new ThinkSystem SR950 infrastructure over the four-year period.

- **Power and Facility Cost – 70% savings**

The Lenovo ThinkSystem SR950 and HPE DL580 servers both require 4U of standard rack space. Replacing 20 of the HPE servers with only four of the ThinkSystem servers frees up 64U of rack space in the datacenter and saves \$46,120 or 70% in power and facility cost.

## Case Study – Refreshing older 8 Socket Servers with ThinkSystem SR950

A [similar case study](#) was performed where a company replaced 8 of their older HPE DL980 servers with 2 new ThinkSystem SR950 8S servers. The study found that the ThinkSystem SR950 servers would deliver a Return on Investment (ROI) of 319%, an Internal Rate of Return (IRR) of 103%, four-year total savings of 71% and Payback period of 11 months.

Significant case study savings were found in the same areas as the 4S case study but with the following results:

- Hardware Maintenance – 93% savings
- Software Maintenance – 95% savings
- Network Cost – 80% savings
- Power and Facility Cost – 84% savings

## Why the ThinkSystem SR950?

Here are a few reasons to use the ThinkSystem SR950 for your 4S or 8S server refresh:

- **Performance**

The Lenovo ThinkSystem SR950 continues its dominance of data center performance by increasing the total #1 World Record benchmarks to 77 (as of September 14, 2018). This outstanding performance is achieved with configurations ranging from 3S, 4S, 6S and 8S and a variety of workloads ranging from Big Data Analytics to Infrastructure Virtualization.

Read more in the article [ThinkSystem SR950 Performance Leadership Continues](#)

- **Usability**

In the data center, a server's usability is very important to support installation, maintenance and upgrade activities. The Lenovo ThinkSystem SR950 provides a high level of usability in the system design. The overall design of the Lenovo ThinkSystem SR950 is based on a modular service model where access is from the front and rear only. This means that nearly all parts can be removed from the front or rear of the system, even parts that are located in the center of the machine (e.g., fans, memory DIMMs, and processors)

Read about the [Usability in the Design of the SR950](#).



- **Configuration Flexibility**

The SR950 can be configured from 2S to 8S, from 24 DIMM slots to 96 DIMMs slots and from three PCIe slots on the main system board to up to 14 PCIe slots with risers. Some configurations support a max of 12 storage bays and six NVMe while others support a maximum of 24 storage bays and 12 NVMe. The SR950 supports three series of Intel Scalable Processors (5100 Series, 6100 Series and 8100 Series) each of which provides varying levels of capabilities and performance.

Read about the [SR950 Server Configurations](#).

- **Reliability**

Server downtime is very costly to enterprises, especially business or mission critical workloads. Always-on has become a global requirement and affects almost every aspect of our lives. The Lenovo ThinkSystem SR950 contain multiple levels of RAS capabilities to ensure the servers maintain the highest level of Reliability, Availability and Serviceability (RAS).

Read about the [RAS Features of the Lenovo ThinkSystem Intel Servers](#) .

## **Conclusion**

Once you understand your current situation and the associated TCO cost savings, it can be simple to justify refreshing your older 4S or 8S servers to the ThinkSystem SR950.

## 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](#)
- [Lenovo ThinkSystem SR950 New Options and Features - December 2017](#)
- [ThinkSystem SR950 Performance Leadership](#)
- [Lenovo Servers for Mission Critical Workloads](#)
- [Microsoft and Lenovo ThinkSystem SR950 – A Perfect Match](#)
- [\*\*Accelerate Your 4- and 8-Socket Server Refresh Cycle\*\*](#)
- [SAP Business Process Applications and Lenovo ThinkSystem SR950 – A Perfect Match](#)
- [ThinkSystem SR950 New Options - March 2018](#)
- [SAP HANA and Lenovo ThinkSystem SR950 – A Perfect Match](#)
- [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

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## Related product families

Product families related to this document are the following:

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

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