Lenovo Servers for Mission Critical Workloads
Article

A Mission Critical workload is a workload or application that is essential to the survival of a business or organization. When a Mission Critical workload fails or is interrupted, business operations are significantly impacted.

Mission Critical workloads

Mission Critical workloads support the business in every dimension, its organization, its employees, and its customers. These workloads are the most demanding types of applications and databases running on servers today. Mission Critical applications, such as ERP, CRM, business intelligence, data warehousing, and analytics, advance and support business in many fundamental ways. In the modern, global corporate landscape, it is almost certain that users will need to access these systems at any time of day, demanding around-the-clock, 24/7 availability. Any outage of Mission Critical server infrastructure directly impacts revenue and profitability, so downtime must be avoided.

Many businesses today still continue to run critical applications and store important data in legacy closed-platform silos. The acquisition cost of these systems has always been high, and customers typically are not able to choose hardware and software independently. Over time, ongoing operating costs have continued to escalate. Maintaining the hardware and applications—and finding skilled support resources to help manage SLAs, all contribute to these costs.

Any outage of the Mission Critical server infrastructure results in reduced revenue, reduced profitability, reduced employee productivity, and reduced customer loyalty. Any interruption in the operation or availability of these workloads will have a ripple effect throughout the organization because downtime interferes with business processes and interrupts business continuity. That means that Mission Critical workloads, must run on highly reliable and available platforms to ensure that business processes are running smoothly.

As customers transform their datacenters to support Mission Critical workloads, there has been increasing demand for "Unix" like performance, RAS, scalability, and security on x86. This, in turn, has led to increased interest in x86-based scale-up systems, in which compute, storage, and networking have been integrated into a single, more efficient system with a larger number of sockets and cores to achieve a better cost-performance ratio.

Identifying Mission Critical workloads

The volume and importance of Mission Critical workloads is increasing every day. Downtime is unacceptable in a 24 x7 x 365 world.

High reliability and availability is a must have. Identifying Mission Critical workloads is key:

- Lost sales and/or customers
- Financial or regulatory penalties
- Damage to your company's reputation
- Impact on revenue and productivity
- Recovery time and recovery point objectives
- Role in application performance and data retention
- Security requirements

Typical requirements to support Mission Critical workloads

Mission Critical workloads require systems that can handle demanding applications and databases, are high performing, easy to service, and have a high degree of availability. Let's take a look the key five requirements for systems supporting Mission Critical workloads.

1. **High Reliability & Availability**
   Detection and self-healing of errors as well as the ability of the system to continue processing production workloads, even in the presence of faults.

   The Lenovo ThinkSystem SR850 and SR950 servers feature advanced reliability, availability and serviceability (RAS) features. These servers drive outstanding system availability and uninterrupted application performance needed to host Mission Critical applications.

   The Lenovo Press Article RAS Features of the Lenovo ThinkSystem Intel Servers provides further information on the cost of downtime, defining RAS and the unique RAS features of ThinkSystem servers, including the SR950 and SR850.

2. **Scalability**
   Databases expand and applications are accessed by a growing number of users over time. The capacity to support growing workloads is paramount. The ability to scale up involves more than merely adding processors; it includes the ability to balance the scale-up with enough memory and I/O resources to ensure continued performance at high levels

   The 4U SR950 provides seamless scalability to meet increasing workload demands and allow you to scale the system to meet your needs. The SR950 supports from 2 processors all the way up to 8 processors. In terms of storage, the SR950 supports up to 24 HDD/SSD and up to 12 NVMe drives in 4 or 8 socket configurations. For rear I/O, you can add PCIe risers to increase I/O capabilities up to 17 rear facing LOM/adapters. The SR950 supports 1 DIMM per socket or up to up to 12 DIMMs per socket (total 96 in 8S) to match your memory needs.

   The 2U SR850 can scale from 2 processors to 4 processors. The SR850 has space for 16x 2.5-inch drive bays, up to 8 of which can be configured as AnyBay drives - supporting SAS, SATA or NVMe drives. The server supports up to 10 rear slots, 9 general purpose PCIe 3.0 slots, and dedicated flexible LAN-on-motherboard (LOM) slot. Seven slots are on the system board and three are through a riser card. All slots are available with two processors.
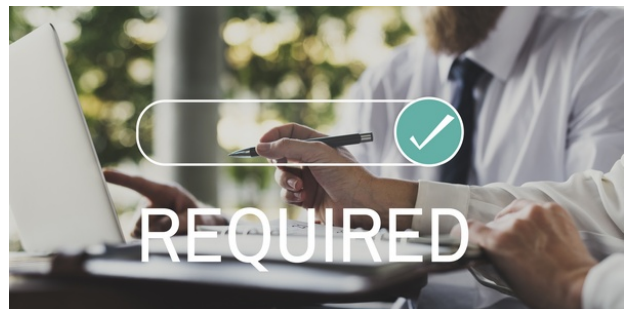
3. **Virtualization**

   Virtualization technology creates a more dynamic and fluid environment in which compute capacity can be treated as a resource pool, protecting application service levels and improving agility and responsiveness to business needs. Importantly, virtualization isolates workloads so that they do not interfere with one another.

   The SR850 and SR950 provide strong virtualization capabilities with scalable memory levels. The SR950 supports up to 96 DIMM and 12TB of memory in a 8 socket server. Both servers support the most popular VM Operating systems such as VMware, Red Hat Enterprise Linux and Oracle VM.

4. **Serviceability**

   Good Serviceability allows clients to avoid repeat failures with accurate diagnostics, perform concurrent repairs on higher failure rate items and perform quick and easy repairs or upgrades.

   Both SR850 and SR950 support a front LCD panel and mobile device capabilities for system status, firmware levels, network and health information. Both also provide hot add storage, PSU and fans. The SR950 modular design and front/rear access provides unmatched serviceability and upgrades.

5. **Performance**

   A strong performing server can handle Mission Critical workloads and continue to operate at peak performance when demands increase to due to seasonal variations, planned or unplanned events, changes in the data center or anytime workloads demands increase above normal operations.

   The ThinkSystem SR950 server was designed for performance. The 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.

ThinkSystem SR850 and SR950 Overview

The Lenovo SR850 and SR950 are new 4-socket-capable rack servers with strong performance, memory and storage capabilities. Both servers support demanding Mission Critical workloads.

The Lenovo SR850 is a 2U Rack server capable of up to 4 processors and 48 DIMM. The SR850 features a CPU and Memory mezzanine board. Clients have flexibility to configure from 2 Socket 24 DIMM to 4S 48 DIMMs. The SR850 delivers exceptional price/ performance in a dense 2U rack server.

Lenovo ThinkSystem SR850

The Lenovo SR950 is a 4U Rack server capable of up to 8 processors and 96 DIMMs. The SR950 features a modular system with all components accessible via the front or rear of the server. Clients can configure multiple configurations from 2 sockets and 24 DIMM to 8 sockets and 96 DIMMs. The SR950 delivers the highest performance, greatest I/O capabilities and the most NVMe support

Lenovo ThinkSystem SR950

Conclusion

As you can see Mission Critical workloads, if interrupted, could become "showstoppers" for business processes within the enterprise. Thousands of end users are accessing transactional workloads and corporate databases — and any outage has a "ripple effect" throughout the organization.

Mission Critical workloads, whether they are applications or databases, must run on highly reliable, scalable and capable platforms such as the Lenovo SR850 and SR950 to ensure that business processes are running smoothly.

Further reading

For further reading, see these resources

- SR950 product web page
- SR950 Product Guide

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:

- Large Memory Capacity Servers

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