MSC's SimManager on a SPARC T7 Server

Consolidating 12 Instances of MSC's SimManager with Oracle Database 12*c* to Achieve 75,000 Simulations a Day

The challenges of building the innovative products required by the marketplace continue to grow dramatically. More than any other engineering process, simulation technologies are taking center stage to ensure companies are able to bring great products to market. The volume and complexity of the simulation data is growing by orders of magnitude. The best simulation solutions therefore must provide a reliable and fast data access platform, with scalability and longevity, and be quick to implement and cost effective to support, resulting in broad design possibilities and fast go-to-market execution. These solution essentials are exactly what Oracle's solution for MSC Software's SimManager simulation process and data management system delivers.

The Joint Oracle and MSC Software Solution

In this solution brief, Oracle's SPARC T7 server with Oracle Solaris 11 is deployed to consolidate multiple instances of MSC's SimManager server, associated web application server, and a supporting instance of the Oracle Database 12*c* server, onto a single platform. An automotive design workload representative of enterprise product development is used to demonstrate how a single SPARC T7 server can accomplish the work of a complex cluster of multiple x86 Lintel servers while achieving 75,000 simulations in a single day.

Hardware Components

The solution features Oracle's SPARC T7-1 server, which is a single-processor system with 32 cores, each handling up to 8 threads (virtual CPUs) using unique dynamic threading technology. The SPARC M7 processor can adapt dynamically to provide extreme single-thread performance, or to enable massive throughput by running up to 256 threads. Each processor core contains Oracle's unique SQL in Silicon feature of SPARC M7, which adds co-processing capability to offload and accelerate important data functions, dramatically improving efficiency and performance of Oracle Database.

Software Components

MSC's SimManager is an easily deployable and highly configurable web-based simulation and test data management system that addresses all phases from project initiation through product launch and beyond. Using SimManager, simulation
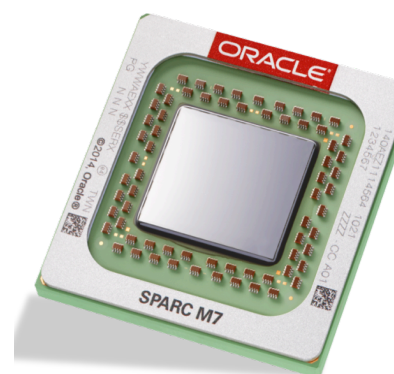
"Our testing found SPARC M7 to be extremely scalable and able to deliver better core-to-core throughput than an Intel Xeon X5 v3 server running a SimManager workload."

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Integrated Cloud Applications & Platform Services

operations are more productive and effective, reducing the cost and time typically required to bring superior products to market. To do this, SimManager relies heavily on Oracle Database 12*c* as the foundation for managing large amounts of data from a central location. Oracle Solaris 11 virtualization enables SimManager to run in a virtual environment with no performance cost to the solution.

Benefits of the Solution

» **Performance**: Automotive design workloads of 75,000 simulations were processed in one day with better core-to-core throughput than an x86 E5 v3 server.

» **Scalability**: A single socket of the SPARC T7-1 server consolidated 12 SimManager server instances concurrently, delivering massive system throughput and storage capacity.

» **Manageability**: With Oracle Solaris 11 virtualization, the SPARC T7 server is able to run multiple instances of SimManager in a shared thread pool with a supporting instance of Oracle Database 12*c* in a single-system environment. Oracle Enterprise Manager Ops Center can be added to seamlessly manage this integrated solution from a single management console.

» **Time to Production**: Oracle Database 12*c* combined with MSC's SimManager dramatically reduces the amount of manual work required to set up analysis of design scenarios, helping to expedite decisions for optimal product design.

» **Reduced Complexity**: The SPARC T7 server running Oracle Solaris 11 with built-in server, network, and storage virtualization technologies offers a simplified solution compared to commodity Linux/x86 server solutions with a separate hypervisor.

» **Support**: Single-vendor sourcing of this solution with Oracle Premier Support for Systems provides a single point of contact should any issues arise with the system hardware or software.
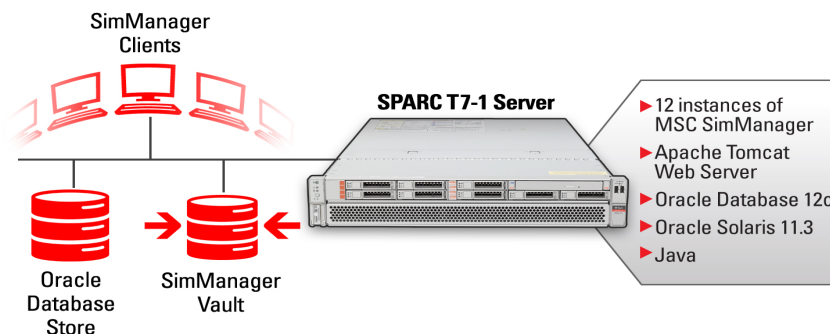
This configuration consolidates 12 instances of MSC's SimManager server, with associated web application server and Oracle Database 12*c* server, onto a single platform, which can be scaled up and customized to meet solution requirements of any size.

Conclusion

The SPARC T7-1 server running Oracle Solaris 11 is able to perform 75,000 SimManager simulations in one day while maintaining sufficient headroom for additional processing on the same server. Just four instances of SimManager are typically accommodated with x86 Lintel servers. Oracle Database performance plays a critical role in the success of MSC Software's SimManager simulation solution. Recent SQL in Silicon enhancements to the SPARC T7 processor have the ability to increase performance even further, while freeing up valuable CPU resources.

SimManager™
Simulation Process & Data Management

MSC Software

HARDWARE CONFIGURATION

- One SPARC T7-1 server
- One 32-core, 4.13 GHz SPARC M7 processor (eight threads per core)
- 490 GB memory
- Six 600 GB 2.5" SAS-3 drives
- One Oracle nonvolatile memory express (NVMe) solid-state drive (1.6 TB)
- Two of Oracle's StorageTek 2540 arrays (1.6 TB each)

SOFTWARE CONFIGURATION

- SimManager Release 2014.0.2
- Oracle Database 12*c* Release 12.1.0.2.0
- Oracle Solaris 11.3
- Java Version 1.7.0
- Apache Tomcat Version 7.0.29

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