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ORACLE SOLARIS 10 PERFORMANCE ADVANTAGES

KEY BENEFITS

- Performance gains for all network-intensive applications
- Performance gains of up to 50x through application tuning
- Increased application throughput on systems with one to eight CPUs
- Improved scalability for multithreaded applications
- Optimized for next-generation CMP and AMD Opteron technologies

Optimizing performance and efficiency requires coordinating underlying technologies, system configuration and utilization, tools, applications, and system tuning. A newly enhanced TCP/IP stack in Oracle Solaris 10 lowers overhead by requiring fewer instructions to process packets. Oracle Solaris Dynamic Tracing (DTrace) makes it possible to troubleshoot systemic problems in real time or diagnose performance bottlenecks on the fly. In addition, system performance optimization with Oracle Solaris 10 running on x64- and x86- based systems allows head-to-head comparisons with Linux and BSD.

Oracle Solaris 10 Performance Enhancements

Meeting increased throughput demands with the same—or even less—resources has become a critical issue in today's business computing environment. Oracle Solaris 10 helps resolve this issue by providing breakthrough small-system performance gains—outperforming the competition on customer applications as well as industry-standard benchmarks. Oracle Solaris 10

- Delivers near-linear performance gains of 92 percent for database applications and 88 percent for Java platform applications
- Speeds up Web workload processing by 47 percent on SPARC platforms with four processors over Oracle Solaris 9, and more than 80 percent over Oracle Solaris 8
- Increases Web workloads on x86 architecture systems, delivering up to 43 percent improvement over Oracle Solaris 9 with two processors
- Increases Secure Sockets Layer (SSL) Data Encryption Standard (DES) performance by 77 percent. Performance for 3DES increases by 130 percent over Oracle Solaris 9
- Improves performance up to 38 percent for Oracle Solaris 10 over Linux on dual-processor Sun Fire systems from Oracle
- Outperforms commercial distributions of Linux on x64 systems.
- Sets performance and price/performance world records on multiple platforms

Superior Networking Performance

Oracle Solaris 10 has always included an enhanced TCP/IP stack. By optimizing the code and making it easier to develop drivers supporting new hardware technologies, customers have seen speed increases of as much as 50 percent when moving network-based applications to Oracle Solaris 10. An enhanced software

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stack not only reduces CPU overhead when processing network packets, it also improves scalability. More network connections can be supported, and throughput can scale linearly with the number of CPUs and interface cards. This enables the latest 10-gigabit cards to deliver throughput converging on wire speed. The latest Oracle Solaris 10 innovations ensure optimized handling of interrupts for the UltraSPARC T1 processor and in-kernel acceleration of SSL traffic.

Application Performance Tools

With DTrace, system administrators, integrators, and developers can use dynamic instrumentation and tracing capabilities to see what the system is doing, for both the kernel and user processes. It can be used on production systems without modifying applications. DTrace is a unique and powerful tool that gives a true, system-level view of application and kernel activities—even those running in a Java Virtual Machine. This baseline data gathering reduces the time for diagnosing problems from days and weeks to minutes and hours, enabling faster data-driven fixes.

Improved Kernel Performance

Latency reduction in the Oracle Solaris 10 kernel is the result of workload analysis and micro-benchmarking. Through this effort, many system and library calls were sped up by as much as a factor of 15, mostly by fine-tuning kernel algorithms and locating bottlenecks with DTrace. A large number of system calls were improved by 25 percent. In addition, the LibMicro4 benchmark was created to help developers identify performance gaps. It is portable, scalable, extensible, and easy to use. As an aid to the developer community, Oracle offers it as open source.

Multithreading Advancements

By simplifying underlying thread implementation, existing applications can achieve dramatic performance and stability improvements without requiring recompilation. In Oracle Solaris 10, Threaded Local Storage (TLS) was added, simplifying and improving thread memory utilization. The combination of a new threads model and the latest Java Virtual Machine technology significantly improves SPECjbb2000.

Memory Placement Optimization (MPO)

Oracle Solaris 10 uses memory placement optimization (MPO) to improve memory placement across a server's physical memory, resulting in increased performance. MPO support is extended to UltraSPARC IIIi and AMD Opteron-based systems, in addition to Oracle's Sun Fire 6800 through Sun Fire E25K server lines. Utilizing MPO, Oracle Solaris 10 can ensure that memory is as close as possible to processors that access it, while still maintaining workload balance within the system. As a result, TPC-H runtime is reduced considerably, TPC-C performance increases, and many high-performance computing (HPC) applications run in half the time.

Conclusion

Oracle Solaris 10 offers significantly improved performance for all applications. Users immediately benefit from an enhanced network stack, radically improved kernel, advanced tracing technology, and special optimizations for memory allocation and chip multithreading.

Contact Us

For more information about Oracle Solaris 10, please visit oracle.com/solaris or call +1.800.ORACLE1 to speak to an Oracle representative.

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