Why more and more SAP customers are migrating to Solaris

Your SAP environment is critical to business operations. Migrating your SAP systems to Oracle Solaris delivers the availability, performance, scalability, flexibility, and security you need for mission-critical operations, all at a lower total cost of ownership than other UNIX and Linux systems. And, Oracle ACS Lifecycle Migration Services and Oracle Migration Factory help you make the change quickly and easily with minimal downtime so you can take advantage of the benefits of Oracle Solaris faster.

**Key Features**
- Highly available and reliable
- Full range of scalability
- High performance
- Efficient, comprehensive management
- Enhanced security
- Built-in virtualization
- Integrated and certified with SAP

**Key Benefits**
- Reduced total cost of ownership
- Increased flexibility and performance
- Improved productivity
- Higher system consolidation
- Enhanced availability and reliability for mission-critical business applications
- Simplified migration with minimal downtime

**Introduction**

Oracle’s tagline, “Hardware and Software, Engineered to Work Together,” promises dramatic improvements in scalability, flexibility, reliability, and productivity of application and business systems, combined with reduced costs and risk. Oracle and SAP applications, along with industry-leading middleware and database software technologies, operate on a wide variety of Oracle and non-Oracle hardware platforms. But it is Oracle’s investment in deep application-to-disk integration, end-to-end testing with fault injection, and documented best practices for running SAP software on Oracle hardware that helps customers most effectively manage the ever-increasing pressure to consistently deliver more value with less cost and risk.

As a key component in Oracle’s end-to-end integration, Oracle Solaris creates enormous value for customers. And, for organizations that are overdue for an upgrade of their UNIX, Linux, and other platforms running Oracle and non-Oracle databases for SAP applications, migrating to Oracle Solaris delivers the opportunity for great improvements in performance, scalability, reliability, and security.

Until recently, the risk of downtime for their always-on databases and business applications and already long IT project backlogs has kept many enterprise IT organizations from migrating to newer and more advanced technologies and systems. In these organizations, aging UNIX and Linux systems—including IBM AIX and HP-UX systems—are failing to keep pace with growing service and application demands. With the future of these platforms uncertain, IT managers are now looking for alternative platforms that can deliver the functionality, performance, scalability, reliability, availability, and security needed to support business priorities. Oracle’s SPARC and x86 systems running the Oracle Solaris operating system provide an obvious alternative and safe platform for running critical business applications like SAP. And, for HP-UX customers, transitioning to Oracle Solaris is even easier, as HP-UX and Oracle Solaris share a common UNIX history—and are more alike than they are different.
Why move to Oracle Solaris?

For organizations that need to modernize or expand their infrastructure, Oracle offers a leading alternative that delivers higher performance, scalability, and flexibility, reduces risk to IT operations, and has a lower total cost of ownership (TCO) than similar HP and IBM UNIX solutions. Through Oracle’s new infrastructure offerings, customers can reduce capital expenses by up to 1.6x, lower their TCO by up to 2.6x, and benefit from world record OLTP and data warehouse performance that is up to 2.4x faster than IBM’s Power AIX systems. And, with published, long-term system roadmaps, Oracle is the safest platform choice for mission-critical business applications.

These benefits are a result of Oracle’s focused long-term investments in end-to-end integration from applications to silicon. Oracle integrates and optimizes Oracle and SAP applications, Oracle Database, middleware, operating system, and infrastructure platforms to deliver the best results possible when deployed together. By deploying complete solutions that are engineered to work together, organizations that migrate to Oracle realize significant cost savings, achieve major performance improvements, and benefit from lower risk, all while reducing the need for significant, high-cost, custom consulting services.

Oracle is also investing heavily in research and development to extend the unique mission-critical cloud capabilities of Oracle’s Solaris operating system and server and storage technologies, and in the process is changing the economics of computing landscape for the better. Traditionally, large-scale, multiprocessor systems were only available at a significant premium per compute power compared to smaller systems. Simply put, traditionally, a 16-processor system was priced significantly higher than eight 2-processor systems. Now, Oracle can deliver higher performing, more efficient systems at a lower cost and is passing those savings on to its customers.

In the past, IBM has delivered most performance gains and enhancements in its Power servers and AIX systems. Meanwhile, Oracle has delivered radical improvements in Oracle Solaris and SPARC performance, focusing on ease of lifecycle management, virtualization, and networking. Additionally, it has extended its lead with the best-performing and most reliable platform for running business applications and databases. While Intel is focused on general purpose computing, and IBM is making only modest gains in its system performance, Oracle increased and focused research and development on the enterprise infrastructure market—stepping out with the strongest technology portfolio for the enterprise IT customer. Oracle’s infrastructure portfolio reflects ideas and strategic designs that continuously provide new innovations for its customers. And, Oracle continues to invest in Solaris development to deliver groundbreaking new functionality, like OpenStack integration, ZFS enhancements, compliance tools, and zones, for enterprise use.

Availability

Your SAP systems are critical to business and must be up and running at all times. With numerous reliability and availability features in server, networking, and storage management, Oracle Solaris can improve the availability of your SAP landscape. The Oracle Solaris Predictive Self Healing framework helps diagnose, isolate, and recover from hardware and application faults. Oracle Solaris Cluster, fully integrated with Oracle Solaris and engineered for business-critical applications, extends reliability across
multiple systems and site to provide high availability and disaster recovery for your mission-critical SAP applications. With multi-site, multi-cluster disaster recovery services, Oracle Solaris Cluster features automated application failover and coordination with application, storage, and host-based replication solutions. Oracle cluster agents for Oracle Databases and SAP applications deliver instant, solution-specific failure detection and recovery, reducing service recovery time and minimizing outages due to component failure. And, with co-located support and development, support for your entire SAP environment is just a single call away.

**Scalability and Performance**

Oracle Solaris is ideal for applications like SAP that require high-performance systems, batch processing, high I/O rates, and large memory-addressing capabilities. Scaling from entry-level to large enterprise systems, terabytes of main memory, and hundreds of Gbps, Oracle Solaris allows more consolidation of your SAP landscape, saving you money and easing system maintenance and management. Oracle Solaris ZFS supports files and file systems as large as 16 exabytes (EB) and provides innovative data storage and management features to handle huge amounts of data efficiently and cost-effectively. Some of these features include data deduplication and data compression, optimized code paths from application to hardware, and data backup and migration technologies such as snapshots. And, Oracle Solaris benefits from ongoing improvements that enhance scalability and performance, so you can be sure your SAP environment is always performing to the max.

**Efficiency and Management**

Oracle Solaris contains many innovations that ease management tasks for administrators. For example, Oracle Solaris ZFS provides snapshots, read-only copies of an Oracle Solaris ZFS file system or volume that can be used to almost instantly save the state of a file system at a given point in time. Snapshots can be used to recreate file systems at a later date. This is useful for performing backups in very tight windows, as well as moving large data volumes to other systems.

Oracle Solaris 11 also includes a number of different technologies related to configuration management. The Service Management Facility (SMF) provides administrators with the ability to configure services running on a system with seamless configuration management through system upgrades. Puppet has been included in Oracle Solaris 11 to allow administrators automated configuration enforcement across systems, with enhanced support for a number of new resource types to support Oracle Solaris technologies. The Remote Administration Daemon provides secure, remote administrative access to an Oracle Solaris system, including the ability for developers to write programmatic administrative interfaces.

Oracle Enterprise Manager Ops Center gives you a single console for managing thousands of systems and provides deep insight into hardware, storage, network, virtualized resources and OSes. It simplifies operations and reduces costs by centralizing and automating time-consuming life cycle management tasks. And, integration with SAP Landscape Virtualization Management (LVM) allows you to manage and automate both SAP and infrastructure administration tasks, including starting, stopping, copying, and refreshing SAP instances and provisioning servers, from a single interface.
Overall, Oracle Solaris allows you to respond more quickly to change requests and lets you operate more efficiently.

**Security and Compliance**

As more employees, customers, suppliers, and partners access SAP NetWeaver’s collaborative environment, the need for security increases, further driven by regulations governing data integrity. Oracle continues its 20-plus year commitment to building security into the operating system with capabilities that include user and process rights management, role-based access control, secure execution, and an integrated firewall. Oracle Solaris is engineered for security and compliance to protect data, applications, users and the system itself from a variety of external and internal threats. Oracle Solaris combines the power of industry standard security features, unique security and anti-malware capabilities, and compliance management tools for low risk application deployments and cloud infrastructure. Oracle Solaris builds in many isolation and security features, such as support for on-chip encryption, a robust cryptographic framework, Trusted Extensions, and virtualization capabilities. Other Oracle Solaris security features include:

- **Digital signatures.** Provided for all files shipped in Oracle Solaris, digital signatures enable administrators to check the integrity of critical system files and meet requirements for security compliance.
- **Secure execution.** Secure execution enables the system to run only valid, signed executables, preventing rogue applications, Trojan horses, and viruses from executing.
- **Role-based access controls.** Role-based access controls grant users and applications only the minimum capabilities needed to perform specific tasks. When integrated with industry-leading Oracle Identity Management tools and SAP specific Governance, Risk, and Compliance (GRC) components, the result is the most powerful security solution on the market. These combined software tools address the end-to-end lifecycle of user identities across all enterprise resources, within and beyond the firewall.
- **Secure by default.** Starting with Oracle Solaris 11, Oracle platforms are secure out of the box. All data services must be enabled explicitly, with only the serial port enabled by default.

And, an integrated compliance framework built on OpenSCAP ensures compliance requirements are easily assessed and monitored through the complete software lifecycle, from development to production.

**Virtualization**

Oracle works with SAP to integrate and validate its virtualization technologies with SAP Business Applications and the SAP NetWeaver platform, allowing SAP and Oracle customers to improve productivity, flexibility, and system utilization rates through virtualization and consolidation. Oracle’s cross-platform virtualization management technology provisions and manages flexible pools of resources that users can share and allocate to many SAP instances. Built-in resource management features enable sharing of compute, memory, and I/O resources, improving server utilization to up to 85 percent of capacity. Upgrading SAP on Oracle technology can improve user productivity, consolidate workloads, and better utilize resources — resulting in dramatically reduced data center costs.
Oracle Solaris 11 includes a built-in virtualization technology called Oracle Solaris Zones that provides a highly efficient, near-zero overhead and scalable solution for mission critical workloads. Oracle Solaris Kernel Zones provide support for independent kernel and patch levels giving greater flexibility, ideal for cloud deployments. Fully supported for SAP applications, Zones for Solaris 10 and Solaris 11 offer easy implementation and minimal impact on performance, making these tools a popular choice with SAP customers. Oracle Solaris Zones easily support the consolidation of old and new projects on one server, such as a Solaris 10 zone on Solaris 11.

Oracle VM Server for SPARC, included with Oracle Solaris at no charge, provides highly efficient, enterprise-class virtualization capabilities for supported Oracle SPARC servers. Oracle VM Server leverages the built-in SPARC hypervisor to subdivide a supported platform’s resources using partitions called logical (or virtual) domains. Each logical domain can run an independent operating system. Oracle VM Server for SPARC flexibly deploys multiple Oracle Solaris operating systems simultaneously on a single platform. OVM Server also creates up to 128 virtual servers on one system to take advantage of the massive thread scale offered by Oracle SPARC servers.

OVM Server for x86 is a free server virtualization and management solution that makes enterprise applications easier to deploy, manage, and support. Backed worldwide by affordable enterprise-quality support for both Oracle and non-Oracle environments, Oracle VM facilitates application deployment and management on a fully certified platform reducing operations and support costs while simultaneously increasing IT efficiency and agility.

Each of these virtualization technologies can be used together or separately for flexibility. With these virtualization technologies built into Oracle Solaris, SAP workloads can be allocated to isolate I/O or CPU-intense applications to their own virtual machines, with dedicated resources that can easily be managed and reassigned as needed. With virtual clustering, dedicated zone clusters can be configured to run specific SAP applications according to predefined cluster management policies.

Integration and Certification

SAP supports Oracle Solaris as the operating system platform for both database servers and SAP application server installations.

Oracle has the deep SAP expertise you need to get the most out of your SAP environment. With over 25 years of collaboration with SAP, Oracle is the top database provider for SAP deployments and has the longest experience with SAP R/3 and SAP NetWeaver of any database provider. Dedicated engineering and support resources from both companies work together on end-to-end development, integration, and optimization and ensure fast customer issue resolution so you can operate your SAP and Oracle environment with confidence.

Oracle hardware and software engineers work together to ensure that SAP applications, Oracle Database, and middleware are integrated and optimized with compute, storage, networking, and operating system resources. The result is extreme performance, unique features, built-in robustness, exceptional security, and seamless integration of operating system, hardware and application software. In the event of a problem, support is delivered from a single enterprise for faster resolution.
Simplify the Migration to Oracle Solaris

One of the largest single success factors for any IT project is quality planning. And the same is true for migration projects like moving business systems to Oracle Solaris. Breaking down a migration project into the key steps can help customers realize that migration effort, risk, and duration are often more about where one is currently than where one is planning to go! And customers are in the best position to describe their business needs and determine where they are today with their IT infrastructure supporting Oracle software technology. As such, a plan needs to start with a scoping assumption of which parts of an IT infrastructure need to be included in a plan: a system on which the migration process is to be tested, a key system that needs the benefits of migration now, or multiple systems in the IT landscape. Additionally, having some objectives for the migration duration time and migration recovery point requirements for each of the scoped systems can help in making the right planning tradeoffs.

Oracle ACS Lifecycle Migration Services and Oracle Migration Factory

Oracle ACS Lifecycle Migration Services and Oracle Migration Factory help you migrate your operating system, system tools, and SAP database quickly and optimally so your business can benefit from the latest technologies. With more than 10 years of Oracle database migration experience and over 1,800 migrations performed, Oracle experts analyze your SAP environment and guide you in choosing from multiple migration approaches based on current industry best practices and standards. They also provide you with a direct connection to Oracle Support and product development throughout the migration process. Delivered online through the secure Oracle Advanced Support Gateway, Oracle’s migration services give you access to the latest tools and automation to help you migrate your SAP database faster, more efficiently, and with less downtime. Real-time monitoring and reporting ensures that any issues are found and mitigated quickly. No sensitive or migrated data leaves your data center during the process so you can be sure that your information is protected. Oracle migration services include:

- Pre-migration analysis of key database, operating system, and environment aspects critical to a successful migration
- Migration automation and dynamic tuning to increase migration performance and ensure accuracy
- Parallelized data migration to reduce downtime
- Migration testing and validation
- Real-time, comprehensive reporting throughout the migration process
- SAP certified migration

Migration guides and system mappings are available for RHEL, IBM AIX/Power, and HP HP-UX systems at http://www.oracle.com/technetwork/server-storage/solaris11/overview/evaluate-1530234.html.


Solaris Migration Case Study

A large food distribution and retail company determined they had scalability and
performance issues with their existing IBM AIX-based SAP system. These issues were impeding the rollout and implementation of SAP across the company’s numerous business units. Their infrastructure had high development and runtime costs. Operational activities such as daily database backups were tedious and took most of a day to run. With significant database growth projected, the company needed a high-performance, scalable, and cost-effective new SAP infrastructure.

After a comprehensive and objective investigation into the options for meeting the stated goals, the company chose to migrate their SAP environment to Oracle Exadata and Oracle Solaris.

Due to the nature of the business, minimizing downtime was critical. A near-zero downtime migration was required. The Oracle ACS Migration Services team has the tools, experience, and personnel to perform this type of migration. Oracle and the customer worked together to leverage the correct and best resources at each phase of the project.

From concept to rollout, the migration process took less than 5 months, including capacity planning, delivery, initial build, testing, and production go-live. The process went smoothly, with minimal outage time and even better performance than expected. The new infrastructure is also greener and easier to maintain than the previous IBM systems.

With the new Oracle-based SAP infrastructure, significant runtime improvements between 200% and 1600% were realized immediately. The migration also lowered data center costs by 7x and significantly reduced the hardware footprint of the company’s SAP environment. The new Oracle infrastructure allows the company to operate more efficiently and prepares their SAP environment for future growth.

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<th>IMPROVEMENT IN RESPONSE TIMES</th>
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<th>RUNTIME IMPROVEMENT FOR SELECTED SAP WORKLOADS</th>
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**Conclusion**

IT organizations can simply and easily improve productivity, flexibility, scalability, and reliability of mission-critical applications and business systems—and reduce costs and risk—by migrating their SAP environment to Oracle Solaris running on Oracle hardware.
And, if they’re overdue to upgrade legacy UNIX or Linux systems, the opportunity for improvement is even greater.

With the proper planning and assessment, customers can migrate with ease and confidence. By taking advantage of training resources available from Oracle University and applying Oracle Optimized Solutions as end-state architecture, customers have all the tools to migrate to a better future. Moreover, customers have the Oracle Migration Factory experts to assist with their deep experience, tools and methods for migration.

To find out more about how to begin migration now and receive the benefits of Hardware and Software, Engineered to Work Together, customers can check out: http://www.oracle.com/aixtosolaris.

CONTACT US
For more information about Oracle solutions for SAP customers, visit oracle.com/sap or email saponoracle@oracle.com.

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