

# Solaris™ 10 Operating System

One OS for SPARC® and x86 based systems



## Highlights

The Solaris™ Operating System meets and exceeds customer expectations for:

- **Virtualization:** Optimize resource utilization to deliver predictable service levels with Solaris Containers
- **Networking:** Attain near-wirespeed throughput with the open, programmable Solaris networking stack
- **Security:** Implement a secure foundation for deploying services with Solaris leading-edge security features
- **Database:** Lower costs with PostgreSQL, the enterprise open source database optimized for the Solaris OS



Enterprises are under tremendous pressure to do more with less, roll out new business services faster, fit more servers into the same space, and comply with new regulations, all while their budgets are shrinking and headcount is frozen. Can an operating system really help you address these issues and turn IT into a business advantage? The answer is yes, with the Solaris™ Operating System.

The Solaris OS is the strategic platform for today's demanding enterprise. It's the only open operating system that has delivered proven results, running everything from mission-critical enterprise databases to high performance Web farms, from large-scale SMP systems to industry-standard x86 systems from HP, IBM, Dell, and Sun.

For customers facing challenging business and technical requirements — such as lowering costs, simplifying system administration, and maintaining high service levels — the Solaris 10 OS is the ideal cross-platform choice. Its innovative, built-in features deliver breakthrough virtualization and utilization, high availability, advanced security, and industry leading performance to meet these stringent requirements — all at a great price.

Ten things to know about the Solaris 10 OS

### 1. Great product

The Solaris OS continues to be a place of innovation and investment. This constant innovation has paid off by delivering benefits that can save companies time, hardware costs, power and cooling, all while preserving investments in software and training. In short: innovation matters, because it saves you money.

### 2. Great price

You can use the Solaris 10 OS commercially, in production, at no cost. Plus, Solaris support is 20% to 50% less than equivalent support from Red Hat.

### 3. Open source

The Solaris OS code base is the foundation of the OpenSolaris™ open source community (visit [opensolaris.org](http://opensolaris.org)). In addition, the Solaris OS already includes 188 of the leading open source packages — ready to run.

### 4. Application compatibility — guaranteed

The Solaris OS delivers binary compatibility from release to release and source compatibility between SPARC® and x86 processors; with the Solaris Application Guarantee backing it, it's something you can count on. And for the ultimate in conversion ease, use Solaris 8 and 9 Containers on Solaris 10, a "P2V" way to run your existing application environments on the latest SPARC systems.

### 5. One Solaris — same features on hundreds of systems

With a single source code base, the Solaris 10 OS runs on x86 and SPARC and processor-based systems — and delivers the same features on all platforms. You can develop and optimize applications on the Solaris OS for use on hundreds of systems from leading vendors such as Sun, HP, IBM, and Dell.

#### 6. Designed to run securely all the time

The leading-edge security features in the Solaris 10 OS help you reduce the risk of intrusions, secure your applications and data, assign the minimum set of privileges and roles needed by users and applications, and control access to data based on its sensitivity label. All this, plus Solaris is Common Criteria certified.

#### 7. Designed for observability

Solaris Dynamic Tracing (DTrace) technology makes it fast and easy to identify performance bottlenecks, especially on production systems. System administrators can use this to troubleshoot even the most difficult problems in minutes instead of days; developers can use it to optimize applications, with significant performance gains possible — real-world use has yielded increases up to 50 times previous performance.

#### 8. Designed for virtualization

Solaris 10 has powerful virtualization features built-in, at no additional charge. With Solaris Containers, you can maintain the one application per server deployment model while consolidating dozens or even hundreds of applications onto one server. Share hardware resources while maintaining predictable service levels. This breakthrough technology lets you virtualize your environment and thus increase utilization rates, cut system and licensing costs; while gaining the ability to quickly provision and move Solaris Containers from system to system.

#### 9. Designed for high availability

Predictive Self Healing is a key feature in the Solaris 10 OS that helps you increase system and service availability. It automatically detects, diagnoses, and isolates system and software faults before they cause downtime. And it spans the full range from diagnosis to recovery on SPARC, AMD Opteron™ and Athlon, and Intel Xeon and Core Duo processor-based systems.

#### 10. Designed for performance

The Solaris 10 OS has set over 170 price performance records since its release, unleashing even more power from existing applications. Sun™ Studio compilers and developer tools are also available at no additional cost, and can be used to bring even greater performance to your applications.

#### For business, industry, and developers

The Solaris 10 OS offers the technology, flexibility, and versatility you need to get down to business immediately, whether you're a small developer, a large enterprise, or anything in between.

#### OpenSolaris participation

More than an open source project, OpenSolaris is also a community and a Web site for collaboration. Solaris source code, downloads, developer tools, mailing lists, user groups, and events — all available at opensolaris.org. OpenSolaris technology features a single source base for SPARC and x86 platforms. It includes key innovations delivered in the Solaris 10 OS, such as DTrace, Solaris Containers, Predictive Self Healing, Solaris ZFS, and Solaris Trusted Extensions — as well as providing access to new technologies as they're being developed. The OpenSolaris project provides developers and users with a low-risk option for evaluating Solaris source code, plus an excellent opportunity to participate in shaping the direction of the Solaris OS.

#### Development tools

Developers need integrated, ready-to-use tools that are compatible with all the environments in which they must deploy applications. With that in mind, Sun includes popular software tools from the free and open source world and complements them with access to key Sun developer tools like Sun Studio and unique Solaris 10 utilities such as DTrace.

#### Solaris 10 technologies

With the Solaris OS, you get compelling new features that your applications can take advantage of immediately with few, if any, changes. Binary and source compatibility with previous releases also helps make it easier to move to Solaris 10 from earlier releases of Solaris.

#### DTrace

Now system administrators, integrators, and developers can use the dynamic instrumentation and tracing capabilities in the Solaris OS to see what's really going on in the system. DTrace can be used on production systems — without modifying applications. It is a 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 and ultimately reduces the time to fix those problems.

#### Solaris Containers

Solaris Containers is an OS-level virtualization technology built into the Solaris OS. Using flexible, software-defined boundaries to isolate software applications and services, this breakthrough approach allows multiple private execution environments to be created within a single instance of the Solaris 10 OS. Each environment has its own identity, including a discrete network stack, separate from the underlying hardware, so it behaves as if it's running on its own system — making consolidation simple, safe, and secure.

By dynamically controlling application and resource priorities, businesses can define and achieve predictable service levels. System administrators can easily meet changing requirements by quickly provisioning new Solaris Containers or moving them from system to system or disk to disk within the same system as capacity or configuration needs change. Solaris Containers also offer the ability to emulate other environments, such as support for Linux applications, or prior Solaris releases.

In addition to Solaris Containers, Sun also offers Logical Domains (LDoms), a hardware partitioning technology that allows multiple versions of the Solaris OS to run on the same Sun CoolThreads™ server.

### Solaris ZFS

The Solaris ZFS file system is designed from the ground up to deliver a general-purpose file system that spans from the desktop to the datacenter. Anyone who has ever lost important files, run out of space on a partition, spent weekends adding new storage to servers, tried to grow or shrink a file system, or experienced data corruption knows the need for improvement in file systems and volume managers. Solaris ZFS addresses these shortcomings efficiently and with minimal manual intervention.

### Predictive Self Healing

Predictive Self Healing is an innovative capability in the Solaris 10 OS that automatically diagnoses, isolates, and helps you recover from many hardware and application faults. As a result, business-critical applications and essential system services can continue uninterrupted in the event of software failures, major hardware component failures, and even software misconfiguration problems.

- Solaris Fault Manager continuously monitors data relating to hardware and software errors. It automatically and silently detects and diagnoses the underlying problem and can automatically take the faulty component offline on SPARC, and AMD Opteron processor based systems. Easy-to-understand diagnostic messages link to articles in Sun's knowledge base to help clearly guide administrators through corrective tasks requiring human intervention.
- Solaris Service Manager (SMF) creates a standardized control mechanism for application services by turning them into first-class objects that administrators can observe and manage in a uniform way. These services can automatically be restarted if they're accidentally terminated by an administrator, fail as the result of a software programming error, or interrupted by an underlying hardware problem.

### Performance

Optimizing performance and efficiency in Solaris 10 is the result of many factors: underlying technologies, system configuration and utilization, tools, applications, and system tuning. An enhanced networking stack minimizes latency and offers improved network performance for most applications out of the box.

With DTrace, you can delve deeply into today's complex systems when troubleshooting systemic problems or diagnosing performance bottlenecks — in real time and on the fly. And system performance optimization with the Solaris 10 OS running on x86-based systems enables head-to-head comparisons to other operating

systems, such as Linux and BSD running on the same types of hardware. Additional built-in technologies that help deliver increased application performance include:

- High-performance networking stack
- File-system performance
- Tools and libraries
- Multiple page-size support (MPSS)
- Memory placement optimization (MPO)

### Security

Security is more than a mix of technologies; it's an ongoing discipline. Sun understands this and continues its 20-year commitment to enhancing security in the Solaris OS. Solaris User and Process Rights Management work in conjunction with Solaris Containers to enable the secure hosting of thousands of applications and multiple customers on the same system. To implement a secure foundation for deploying services, administrators can minimize and harden the Solaris OS even more. Additionally, Solaris Trusted Extensions protects the most sensitive data in your organization using labels to implement Mandatory Access Control.

- Verify your system's integrity by employing Solaris Secure Execution and file verification features
- Reduce risk by granting only the privileges needed for users and processes
- Simplify administration and increase privacy and performance by using the standards based Solaris Cryptographic Framework
- Secure your system using dynamic service profiles, including a built-in, reduced-exposure network services profile
- Control access to data based on its sensitivity level by using the labeled security technology in Solaris Trusted Extensions

## Networking

Exponential growth in Web connectivity, services, and applications is generating a critical need for increased network performance. With the Solaris 10 OS, Sun meets future networking challenges by radically improving network performance without requiring changes to existing applications. The Solaris 10 OS speeds application performance via the Network Layer 7 Cache and enhanced TCP/IP and UDP/IP performance. The latest networking technologies, such as 10-Gigabit Ethernet and hardware off-loading, are all supported out of the box. Additionally, the Solaris 10 OS supports current IPv6 specifications, high availability, streaming, and Voice over IP (VoIP) networking through extended routing and protocol support — meeting the carrier-grade needs of a growing customer base.

## Platform choice

The Solaris 10 OS is optimized for both Sun and third-party systems running 64-bit SPARC, AMD, and Intel® processors. This makes it possible to create horizontally and vertically scaled infrastructures and offers the flexibility to easily add compute resources. The OS runs on hardware ranging from laptops and single-board computers to datacenter and grid installations, while serving applications ranging from military command-and-control systems to telecommunications switch gear and stock trading.

## Interoperability

The Solaris 10 OS provides interoperability from the desktop to the datacenter across a range of hardware systems, operating platforms, and technologies, making it the ideal platform for today's heterogeneous compute environments. Not only does it interoperate with both Linux and Microsoft Windows, it also supports popular open source applications and open standards such as Universal Description, Discovery, and Integration (UDDI); Simple Object Access Protocol (SOAP); Web Services Description Language (WSDL); and eXtensible Markup Language (XML).

- Provides source and binary compatibility for Linux applications and interoperability with Microsoft Windows systems
- Includes Perl, Hypertext Processor (PHP), and other widely used scripting languages
- Includes Apache, Samba, sendmail, IP Filter, BIND, and other popular open source software
- Supports Java application development and deployment with the Java Platform, Enterprise Edition (Java EE) and Java Platform, Standard Edition (Java SE)
- Includes authentication support for LDAP-based directory servers and Kerberos-based infrastructures

### Learn More

To learn more about the Solaris 10 OS, visit [sun.com/solaris](http://sun.com/solaris).

To give it a try, visit [sun.com/solaris/get](http://sun.com/solaris/get). A free, Web-based training course is available at [sun.com/solaris/freetraining](http://sun.com/solaris/freetraining).

To make the move to Solaris, see [sun.com/solaris/move](http://sun.com/solaris/move).

## PostgreSQL

PostgreSQL for Solaris is the popular and mature PostgreSQL open source database compiled and integrated into the Solaris 10 OS. It has been performance-optimized and enhanced to take advantage of advanced Solaris technologies — with support for native DTrace probes, Predictive Self Healing, and Solaris Containers — and is fully supported by Sun with enterprise-class 24x7 global offerings. Sun engineers collaborate with the PostgreSQL community and contribute their work back to the community. PostgreSQL for Solaris offers the assurance of reliability, scalability, and performance associated with advanced databases on the Solaris OS and all the cost benefits of open source.