



OpenSolaris™

For Education



We know that innovation happens everywhere. That is one of the reasons that Sun has made the Solaris operating system available under the terms of the Open Source Initiative (OSI) approved, Common Development and Distribution License (CDDL), version 1.0. Millions of development hours worth of code and over 1,600 patents have been contributed to the open source community. There is now a community of thousands of software developers around the world, including a growing community of academic developers who are leveraging the innovations in OpenSolaris to improve curricula and instruction and advance their research.

Highlights

Solaris, the world's most advanced operating system, has been open-sourced by Sun through the OpenSolaris program.

Talk to your Sun account executive about:

- Hosting an OpenSolaris launch on your campus;
- Becoming an OpenSolaris Center Of Excellence;
- Collaborating with Sun to integrate OpenSolaris into your operating systems curriculum;
- Hosting OpenSolaris workshops on your campus.

OpenSolaris has all the powerful new features in the Solaris operating system that are helping educational institutions optimize system utilization levels, deliver extreme performance, consolidate the number of servers needed to run their education institutions and provide unparalleled security — all with relentless availability and support for SPARC and x64/x86 platforms. While these innovations represent significant new value for IT professionals concerned with production environments, they also present new opportunities for educators, researchers and students in academic and research environments.

DTrace

DTrace is a comprehensive dynamic tracing framework for troubleshooting systemic problems in real time. With DTrace, administrators and developers can tune applications for performance and troubleshoot systems—all with little or no performance impact. DTrace is also an ideal tool for computer science professors and students. It provides visibility into kernel and application activity, giving you operational insights not available on any other operating system. DTrace allows computer science educators to demonstrate abstract principles on real, production systems and researchers to better and more quickly understand and improve software systems. DTrace will quickly become a valuable instructional tool in your quest to

foster advancements in instruction as well as saving significant time when debugging complex problems.

Solaris Containers

Solaris Containers isolate software applications and services using flexible, software-defined boundaries. Each application can be given a private environment, virtually eliminating error propagation, unauthorized access, and unintentional intrusions. Education enterprises will see improved resource utilization and reduced downtime. Solaris Containers can also be used as an instructional tool. For example, students could be allocated an IP address and a Solaris Container to allow them to safely share one machine. Such an approach serves the dual purpose of maximizing system resources and creating a safe “sandbox” in which students can experiment. Solaris Containers are also particularly valuable for researchers utilizing Grids. Imagine a Grid configuration that is shared by multiple researchers. Because the Solaris Container's isolation and security features ameliorate concerns about sharing resources, multiple researchers can use the Grid simultaneously. Thanks to the N1 Grid Containers capability, the researchers can determine how to allocate Grid resources. If necessary, they can restart each container in a matter of seconds using the Instant Restart capability.

Solaris ZFS

Solaris ZFS, the break-through 128-bit file system, will make you forget everything you thought you knew about file systems: knowing about ZFS will be immensely useful to today's Computer Science student.

ZFS greatly reduces the administrative burden of file systems, eliminating many complicated administration concepts entirely. All data is protected by 64-bit checksums with 99.9999999999999999% error detection and correction, and ZFS will then automatically repair corrupted data - part of Sun's quest to build truly self-healing systems. As a 128-bit file system, it provides 16 billion billion times the capacity of 32 or 64-bit file systems, exceeding the quantum limits of earth-based storage.

This revolutionary technology was first available to the OpenSolaris community and surely represents the future of file systems.

Security

Solaris 10 incorporates advanced security features designed to protect the education enterprise at multiple levels. The security system protects against both malicious external attacks and data access violations from the inside. The Process Rights Management component provides fine-grained control over which users—and what processes—have what rights when. IT administrators now can assign “the least privilege” necessary for students to do their coursework, participate in research or even maintain a portion of the department infrastructure.

These are but a few examples of how the innovations in Solaris can be used by the academic community via the OpenSolaris program. Of course, OpenSolaris contains all the innovations contained in Solaris 10 such as Predictive Self-Healing, ZFS, Integrated SAN Support and a completely rewritten

TCP/IP stack that results in blazing performance. We're confident that students, faculty and researchers will harness these features and create innovative applications that we have not even imagined.

Community Involvement

Community involvement and input is critical to the success of the OpenSolaris program. We look forward to your participation in the OpenSolaris community.

- Hosting an OpenSolaris launch: Sun can co-host an OpenSolaris launch event on your campus to kickstart the engagement of faculty, students and IT managers in the OpenSolaris community. OpenSolaris provides researchers the means to conduct research with, and students the opportunity to learn from, the most advanced operating system in the world.
- Becoming a Center of Excellence: Sun's Center of Excellence (COE) program is designed to promote joint activities between Sun and educational institutions or research organizations employing Sun's technology, with a particular focus on supporting activities that are deemed exceptionally advanced. Educational institutions that enter into a COE agreement with Sun will develop a joint activity plan for pursuing educational or research activities which typically span one to three years.
- Developing OpenSolaris curriculum: Solaris innovations such as Dynamic Tracing (DTrace), provide a unique opportunity for instructors to develop innovative new curricula for their operating system classes that will help students develop deeper understanding of operating system design and workings. We offer collaboration with Sun resources to develop new instruction materials.

- Hosting OpenSolaris workshops: Share information and ideas about open source code and OpenSolaris projects. Build an OpenSolaris development community on your campus.

Resources for the Academic Developer

Sun is pleased to offer a portfolio of free resources to help faculty, students and researchers get the most from your participation in the OpenSolaris community. Visit the Sun Developer Network, Sun Academic Developer Program at <http://developers.sun.com/academic> for more information on these resources which include:

- Free downloads of Solaris 10, Sun Studio 11 and other Sun developer tools;
- Free Solaris 10 Web-based training;
- Learning resources and forums like the New To Solaris Center.

Get the Details

Visit opensolaris.org and subscribe to the OpenSolaris Academic and Research Community or contact us at edu-opensolaris@sun.com to get more information on OpenSolaris at your campus.

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