

Argonne National Laboratory



Standardizing on Sun Servers, the Solaris™ OS, and the Sun Java™ Enterprise System to Unify Strategic Applications

Highlights

Organization

Argonne National Laboratory
www.anl.org

Industry/Market

- Scientific Research

Key Challenges

- Provide access to decentralized Web portals for both local and remote users
- Integrate disparate Web applications onto a single signon (SSO) Web portal
- Reduce complexity in supporting heterogeneous platforms and multiple operating systems
- Streamline application development, troubleshooting, and maintenance
- Reduce total cost of ownership (TCO) while increasing IT staff productivity and operational efficiency

Solution

- Consolidate disparate platforms and multiple operating systems by standardizing on Sun servers and the Solaris™ Operating System
- Deploy a centralized, SSO Web portal for accessing all business, communications, and backoffice applications using the Sun Java™ Enterprise System

Business Results

- 100 percent return on investment (ROI) in 18 months
- Saved \$50,000 a year in software licensing and support
- Predictable, manageable licensing costs, with increases capped at 5 percent a year
- Greatly increased security of IT environment



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- David Salbego, IT Infrastructure Manager, Argonne National Laboratory

Research Leadership Drives Need for Standardized IT Environment

Chartered in 1946 as the country's first national laboratory, Argonne National Laboratory (Argonne) is one of the U.S. Department of Energy's largest research centers. Argonne has about 3000 employees, including more than 1000 scientists and engineers, of whom more than half hold doctorate degrees. Argonne's annual operating budget of nearly \$500 million supports nearly 200 research projects, ranging from studies of the atomic nucleus to research on global climate change. Since 1990, Argonne has worked with more than 600 companies and numerous federal agencies as well as other organizations. Based in Argonne, Illinois, the laboratory is operated by the University of Chicago.

Like most private and public research facilities, Argonne must maintain a wide range of applications for users working both locally and remotely. With its wealth of scientific expertise, the laboratory must also support a variety of internal and external Web portals that deliver backoffice, administrative, and communications services to the lab's eclectic array of subjectmatter experts. Despite enabling its research staff to quickly develop and customize a myriad of specialized applications, decentralization has also limited the ability of Argonne's IT management to exercise control over the

complexity - and cost - of its computing environment. To make matters even more challenging, Argonne's assortment of server platforms and operating systems required specialists for each technology. This meant the lab's small IT staff had to be versed in a broad spectrum of computer hardware, software, operating systems, and applications in order to maintain and support users. With the need to maximize taxpayer investment in research, the lab's management needed to find a more costeffective and efficient way to deliver IT services.

According to David Salbego, IT Infrastructure Manager, there was much at stake for the Argonne organization. "The key deliverable for my team is to maintain absolutely the highest reliability for our key infrastructure systems," Salbego explains. "These include our Web, application, Oracle, and portal servers. It's my job to make sure that none of these services goes down, or that if we do have a planned outage, everyone knows beforehand." Salbego describes the complex IT environment that his organization must support. "We have a large mix of UNIX® and Linux systems that run on IBM, SGI, HP, and Sun platforms," Salbego continued. "For us, it really comes down to standardization and efficiency. We've only got a limited number of resources, and we can't be experts in everything."

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David Salbego

IT Infrastructure Manager,
Argonne National Laboratory

Sun Performance Helps Argonne to Build a Unified Infrastructure and a Centralized Web Portal

With such a heterogeneous IT environment, Salbego realized the constraints of his mission. "With our small staff, it just made sense to have experts who only needed to know one operating system versus having one expert for each of our other operating systems," Salbego recalls. "That meant we had to implement a standardization initiative that would provide us with the best tools for doing our job. That's why we standardized on Sun servers and the Solaris Operating System." Salbego and the Argonne IT team were no strangers to Sun. "Sun has been a highly reliable and stable platform for Argonne. As an early adopter of the Sun platform, it just made sense for us to standardize on Sun throughout our IT environment," Salbego continued. "Since Sun was already our dominant platform, we determined that the other 25 percent of our infrastructure was costing us a lot of money. And with Sun, we would only need to manage one technology."

With the decision made to standardize on Sun, Salbego placed an order for six Sun Fire™ 280R servers, each running on two highperformance UltraSPARC® III processors. He based his choice of servers on the reliability, availability, and scalability (RAS) capabilities of Sun Fire servers, including redundant hotswap power supplies with independent power cords and front-accessible drives. The Sun Fire servers also provided Sun Remote System Control for simple, lights-out management. In addition, the servers' 4U form factor fit neatly into standard 19-inch racks, which made it the perfect choice for a lab environment where space was at a premium. And Salbego purchased a SunSpectrum SilverSM support service agreement for the Sun Fire servers.

Beyond standardizing on Sun servers and the Solaris Operating System, the lab faced a parallel requirement that also demanded a best-practices solution. Over the years, Argonne project managers and team leaders had been using a wide array of development tools when necessary to build homegrown applications. The problem was that each of these required a range of technical expertise and experience that taxed the bandwidth of the Argonne IT team. Adding additional support headaches and user complexity was the burgeoning population of individual and group Web portals that had to be accessed individually.

Ross Pallan, Portal Project Manager, recalls how he and his team decided to address this problem of managing multiple - and often incompatible - development technologies. "One of our key challenges was to provide more consistent support to our developers," Pallan remembers. "We determined that it would be far more efficient if users would only have to learn one language rather than bounce back and forth between several. And there were just too many disparate Web portals for us to adequately support each one. As a result of our findings, we recommended to Argonne management that we launch an initiative to integrate the lab's key backoffice and communications Web portals into a unified single sign-on (SSO) intranet. That's when we also elected to go with the Sun Java™ Enterprise System as our principal platform." The choice of the Sun Java Enterprise System was logical since the lab had already been using the Sun Java System Web Server, Sun Java System Access Manager, and Sun Java System Directory Server to create a centralized authentication capability for the lab's roster of internal and external users.

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Ross Pallan

*IT Project Manager,
Argonne National Laboratory*

Sun Java Enterprise System Delivers a Development Solution for Argonne's Web Portal

Pallan's vision for the Argonne Web portal was for a unified development and deployment framework that would enable users to securely access key applications and information, as well as businesscritical processes, for improved collaboration and decision making. Pallan recalls, "Our old system was really a hodgepodge architecture. So many applications with separate user IDs and passwords also made it difficult and expensive for our Help Desk personnel to support our users. Our big goal was to consolidate our applications under one umbrella, with SSO capability. So it just made sense for us to leverage the integrated functionalities of the Sun Java Enterprise System to accomplish that task."

The initial step for developing the unified Web portal was to identify which applications the team should consolidate first. The decision was made to migrate three highusage applications that would pay immediate dividends for the lab's intranet community: Performance Appraisal System, Internal Transfers, and Applicant Information System. As Pallan and his team began to develop a plan of action for the lab's centralized portal, they determined that they would need some upfront professional guidance. That's when he put out the call to Sun. The results were quick and profound. Just 10 weeks after their first onsite visit, Sun consultants provided Argonne with assistance in updating and refining the project plan by developing a network and portal topology, as well as in managing the installation, configuration, and integration services for Argonne's Web portal deployment.

Recommendations made by the Sun con-

sultants also included training credits and free Web-based training.

Argonne's Future Looks Bright With Sun

Since coming online in October 2004, the Argonne Web portal has helped the lab to consolidate its Java support contracts, which now provides predictable licensing fees with a five percent cap on increases. Pallan pointed out another important outcome for Argonne: "Sun's subscription model for deploying Sun Java Enterprise System software was much more economical than purchasing components separately, as offered by other vendors. As a result, we estimate a cost savings of more than \$50,000 per year in licensing and support." Argonne also expects to achieve 100 percent return on investment (ROI) in 18 months.

With a standardized infrastructure built on Sun servers, the Solaris Operating System, and the Sun Java Enterprise System, the Argonne IT team is confident that it can continue to deliver an open standards-based, scalable, and integrated IT capability to its hightech users. In fact, Salbego is already planning for the lab's migration to the Solaris 10 OS. "All of its new features make Solaris 10 a very interesting product," according to Salbego. "We will be testing Solaris 10 in the near term, and hope to start the migration process within the next 46 months. That's why we just sent three of our Solaris administrators to the 'Solaris 10 for Experienced System Administrators' class."

In addition, Pallan and Salbego have also purchased a Sun Software Premium Support agreement, which will help the Argonne IT team to reduce the complexity of its infrastructure while lowering the cost of software licensing and support.

Beyond its reduction in IT cost and complexity, the Sun Java Enterprise System provides a scalable and reliable solution for Argonne's integrated Web portal, which now helps enable the lab to synchronize its IT investment with its business priorities and user requirements. Salbego concludes, "The feedback we've been getting from our user community indicates that the single signon Web portal is a big success. Our Sun Fire servers are continuing to deliver rock solid performance. Our planned migration to Solaris 10 will lock in the value of our rationalized operating system environment. And the good news about our SunSpectrum support agreements is that we haven't really needed them so far. If you add it up, our decision to standardize on Sun was a wise one."

Sun Technology

- Sun Fire 280R servers
- UltraSPARC III processors
- Solaris 9 Operating System, with planned migration to the Solaris 10 Operating System
- Sun Java Enterprise System

Sun Services

- Sun consultants provided architectural design and implementation assistance for the Sun Fire servers
- Sun installed, configured, and tested the Sun Java Enterprise System components
- SunSpectrum Silver support service agreement for Sun Fire servers
- Sun Software Premium Support service agreement

Learn More

For more information on the Argonne National Laboratory, visit www.anl.gov. And to learn about Sun solutions for education and research, visit www.sun.com/edu.