

## ISSUE 2

## OPEN SOURCE FOR THE ENTERPRISE

## INSIDE THIS ISSUE

OpenSolaris and the Image  
Packaging System

**Featured Gartner Research –**  
What Sun's OpenSolaris  
Strategy Means

Open Source Software from Sun:  
Innovation Businesses Can Trust

Customer Snapshot –  
Internet Consultancy Optimizes  
Database Solution with MySQL,  
PostgreSQL and the Solaris  
Operating System

For more information on OpenSolaris,  
please visit [www.opensolaris.com](http://www.opensolaris.com)

For more information on  
open source software, please visit  
[www.sun.com/opensource](http://www.sun.com/opensource)

Featuring  
**Gartner**

## OpenSolaris and the Image Packaging System

*by Jim McHugh, Vice President, Data Center Marketing, Sun Microsystems, Inc.*

Today's leading enterprises are increasingly shunning proprietary software in favor of open source alternatives that offer a number of competitive advantages, including better security, improved reliability, access to the latest innovations and lower costs. Simply put, open source software gives customers choice. And choice represents a huge competitive advantage for enterprises that previously found themselves forced into corners by proprietary software vendors.



Jim McHugh

OpenSolaris has been designed from the ground up to offer real world business advantages to customers looking to move away from proprietary operating systems. OpenSolaris embraces the packaging and model improvements of open source operating systems and marries them with the proven, enterprise-grade technology found in the Solaris™ Operating System. Together with other open source technologies like MySQL and GlassFish, OpenSolaris gives enterprises the options they crave while also bringing the global support and indemnification from Sun that they require.

While the Solaris Operating System provides unmatched reliability and performance, as well as a number of features not available in any other OS, Sun recognizes the same conservative release schedule that serves many enterprises well can also inhibit access to the latest technologies. And, as with any operating system, administrators often face challenges managing increasingly complex systems – working hard to stay on top of the necessary patches and updates. Today, many enterprises require both fast access to the latest innovations and an easy way to keep existing systems up-to-date.

With the launch of OpenSolaris operating system, Sun addresses both of these issues. OpenSolaris is a new distribution model for Solaris technology that provides a new release every six months, delivered in a development and deployment environment familiar to Linux/GNU and Unix users. With OpenSolaris – which provides the foundation for future releases of the Solaris OS – developers and businesses can take advantage of the latest Solaris innovations in a distribution that meets their evolving development and deployment needs.

## Executive Perspective

In addition to a more responsive distribution model, OpenSolaris delivers a significant new advantage with its Image Packaging System, which provides automated, easily customizable patching for a wide range of components. It's the most comprehensive packaging system of its kind, offering even distinguishing benefits by leveraging key Solaris features such as ZFS, Solaris Containers, and Predictive Self Healing to make deployment easier. For example, Solaris ZFS snapshots enable IT managers to roll back to an earlier stage in the deployment process if a problem is discovered with a package during deployment – which saves significant time over having to manually back out of the deployment. By marrying such advanced Solaris technology with this new innovation in packaging, OpenSolaris enables faster, more consistent deployments.

While the new OpenSolaris release gives customers control over which components are made available within their systems, the OpenSolaris Image Packaging System provides necessary updates automatically from Sun repositories as well as a wide range of open source repositories – all through

a single user interface in OpenSolaris. Companies can also establish their own network repository to control what's deployed in their own systems.

And finally, the OpenSolaris Image Packaging System is backwards-compatible with Solaris, which means that a company's previous investment in the Solaris Packaging System is preserved. It's this level of flexibility, control, and ease-of-use that makes OpenSolaris a huge value for today's leading-edge compute environments.

For software developers or ISVs, the OpenSolaris Image Packaging System offers a delivery mechanism that helps them get their applications out through their own package repository. This new release means that they can easily expand their reach and gain more insight into what their customers are running. And ISVs can also ensure that their application will run correctly on their customers' systems because their customers will have all the necessary patches – a huge advantage for Sun partners, developers, and customers.

OpenSolaris is yet another illustration of Sun's dedication to open source and customer choice. To help create

a world free of the constraints of proprietary software, Sun does more than merely assemble other people's innovations. Sun builds unique value and intellectual property and then contributes these innovations back into communities – thereby cultivating the vibrancy of open source ecosystems. Thousands of Sun engineers – working on OpenSolaris, MySQL, GlassFish and Java, as well as with multitudes of other open source communities – share knowledge and innovations with other open source contributors around the world. This puts Sun in a unique position among large enterprises operating in an open source world.

For developers and enterprises, the easy-to-use and automated environment of the OpenSolaris Image Packaging System offers real world competitive advantages for enterprises that have been previously locked-in and slowed down by proprietary operating system vendors.

Sincerely,  
Jim McHugh  
Vice President, Data Center Marketing  
Sun Microsystems, Inc.  
[www.opensolaris.com](http://www.opensolaris.com)

## What Sun's OpenSolaris Strategy Means

by George J. Weiss, VP Distinguished Analyst, Gartner, Inc.

**Many IT organizations are confused about Sun's OpenSolaris strategy and its relationship to a project called "Indiana." Users are looking for clarification concerning Sun's objectives and need to be better informed when OpenSolaris goes live in May 2008.**

### ANALYSIS

Sun is engaged in a major initiative to prove that Solaris can evolve into a new breed of operating system — more powerful and richer than the Linux distributions — while capitalizing on the process and model improvements brought about by open-source distribution methods and tools. To exploit and channel Linux momentum, Sun is adopting two core approaches:

- Enable IT organizations to build a software stack made up of open-source and community-developed components for volume-based platforms in emerging new infrastructures and businesses
- Develop Solaris from its proprietary roots into a package management distribution similar to Linux (and with Linux user tools and features) that benefits from community contributions to sustain innovation and agility and fits evolving and emerging new architectures

IT infrastructure managers need to understand that Sun is reinventing Solaris as a side-by-side Linux and Unix alternative in every aspect, other than the core kernel that derived from Unix. Sun believes it can then appeal to two major market segments:

- One that wants a commercial, stable and mission-critical operating system

- One that comprises emerging Web and e-commerce businesses on the Internet, cloud and mobile communications that want rapid innovation and inputs to the development process (such as Google)

Sun needs to expand its footprint in the latter arena, but this market tends to exploit open-source software (OSS). This community needs:

- System packaging with access to thousands of open-source packages
- User interfaces and repositories for the package management systems
- Access to large and dynamic communities

Traditional Sun Solaris is usually not a consideration in the latter case. Therefore, about three years ago, Sun decided to revamp its software and operating system strategy to make Solaris open-source. It deduced that it needed to replicate approaches that had been successful in Linux. The overarching strategy, which became known as "Project Indiana," is aimed at making OpenSolaris a distribution with a flexible packaging system. Its core thesis is to rejuvenate proprietary Solaris, as an instantiation of Unix, into an open-source, community-based operating system. The distribution of OpenSolaris, which is currently in beta,

is intended for first general availability in May 2008.



George Weiss

### Questions and Answers

To help IT infrastructure planners understand Sun's approach

to and strategy for the software stack, particularly OpenSolaris, the following questions and answers about Project Indiana can help IT organizations prepare for OpenSolaris.

#### What is Project Indiana, and how does it relate to Solaris?

Project Indiana is a distribution originated by Sun and by members of the OpenSolaris community. Many will be Sun Solaris devotees; however, this area will also interest independent developers. Sun's goal is to deliver a distribution packaging scheme as part of OpenSolaris that will enable users to select open and proprietary packages with which to build an integrated system and application environment.

#### When will OpenSolaris be officially released?

The first developer release was delivered 31 October 2007, with the second developer previewed on 12 February 2008. The first production release is scheduled for May 2008. What is in the first developer release? The first release involves a single CD: Installer, ZFS as default file system, Image Packaging System to enable packages to be pulled from a network repository (similar to Linux APT-GET), GNU utilities and Gnome 2.20.

### What is the purpose of introducing Project Indiana in the OpenSolaris community?

The aim is to attract a broader development community to feed innovation to Solaris. By invoking a package management system, with Linux tools and compatibility, Sun hopes to cover the gap in Solaris for available open-source applications. Project Indiana should enable thousands of OSS packages to be integrated into builds. That will provide users with the flexibility to mix and match Solaris with open-source packages.

### What are the benefits to Sun?

This initiative provides Sun with two essentially nonoverlapping markets:

- Developers who want a wide variety of OSS packages, such as Apache, MySQL (MySQL AB was recently acquired by Sun), Perl, GCC, GNOME and X, with fast-forward, rapid-release momentum and the latest innovations from Sun, such as ZFS, DTrace and Sun utilities
- The traditional Sun development organizations that demand Sun's binary and backward compatibility and snapshot rollback feature, especially for mission-critical deployments

### What mechanism will Sun use to provide the same kinds of package management as Red Hat package manager YUM and APT-GET?

Instead of emulating other package management systems, such as Red Hat's or Debian's, Sun has created Image Packaging System to ensure that it maintains quality control and stability and avoids the compatibility

problems that often occur from dependencies created among various package releases. With partners such as Intel, Sun is also a key player in ensuring that important drivers are available on a timely basis. With Image Packaging System, Sun hopes to maintain two important advantages compared with Linux: rollback (through use of ZFS) and binary compatibility moving forward.

### Will backward and binary compatibility be retained on Project Indiana releases?

If the chief aim is to provide GNU tools and utilities to maintain a Linux "personality," then we would expect OpenSolaris-based distributions to break backward compatibility, as happens on Linux distributions. However, depending on the installation options chosen, Sun's Solaris distributions will enable users to maintain compatibility. Sun will be challenged to set rules by which innovations are qualified and accepted to eliminate or minimize incompatibility, to differentiate itself from what has been the trend in the Linux community and to maintain the binary compatibility that traditional Solaris users have come to expect. Sun has an Architectural Review Committee to ensure quality coding standards and binary compatibility.

### Doesn't Sun face the dilemma of creating the same compatibility problems faced by Linux users in trying to emulate in OpenSolaris and Indiana a similar OSS fast release process with little attention to backward compatibility?

Yes, and Sun must balance the needs of two markets that are not necessarily

in harmony on priorities. One is willing to compromise to get more-rapid innovation; the other wants slower movement, with guarantees of stability.

### How does the OpenSolaris development community compare to the Linux development community?

Although there are similarities in purpose and intent (openness, discussion threads and so forth), the OpenSolaris community is still forming a meritocracy and creating a network of authorized maintainers similar to Linux's. One example is the argument that has developed over whether the GNU tool chain should be part of the default path. On one hand, it attracts Linux developers; on the other, it creates backward compatibility issues.

For example, one developer commented, "We [should] care about reaching out to the huge community of non-Solaris developers, the vast majority of whom have been living in the GNU userland and will be upset about any changes unless they are huge improvements, which, in most cases, the Solaris Classic userland isn't. The good things about Solaris are overwhelmingly kernel stuff, not userland stuff."

### How will Sun monetize the opportunity?

Sun will monetize the way that typical Linux distributions do, with the added advantage that Sun has more monetizing opportunities than Red Hat, for example, and greater visibility than Novell in many data centers. Sun can deliver foundation OSS (such as the components of the Linux, Apache, MySQL, Perl stack) and the hardware platforms, with deeper

reach into enterprises deploying and planning mission-critical applications. It has front-end x86 commodity servers and storage, as well as a back-end, vertically scalable database and consolidation architecture to present a full, holistic system integration approach under single-vendor accountability. The other Unix vendors depend on Linux for x86, and traditional, non-open-source Unix on the back end. They face an increasingly “melting” boundary problem of choices between Unix and Linux and their seamless integration in multitiered architectures.

## Challenges

The concept of OpenSolaris and Sun’s journey to creating new and emerging market opportunities through the open-source model is a bold gambit, but it’s not without challenges:

- Representing the Linux GNU users without sacrificing the stable brand image of Solaris
- Building a vibrant community with dynamic innovation, while maintaining the compatibility and stability of the kernel application programming interface and the userland interface

- Building reference implementations for independent software vendors that minimize continual re-certifications
- Creating a functional package management system that enables users and developers to add packages easily
- Generating interest in the emerging hybrid community it envisions

Sun must respond to this key issue: If OpenSolaris becomes a GNU/Linux experience without Linux, but with Solaris, what is the advantage of OpenSolaris, other than sticking with Linux, which may offer a greater complement of packages and drivers, as well as a large worldwide development community?

## Recommendations

- If you’re a traditional Sun organization, continue to rely on Sun for commercial support, despite the free availability of Solaris.

- Take advantage of free and open Solaris to build and test new open-source stacks (such as with MySQL, now owned by Sun) under an open-source governance policy.
- Participate in or monitor the OpenSolaris community development process to validate adherence to compatibility standards, choices and options among packages, and quality of deliverables.
- If you want a mixed Solaris and Linux strategy, evaluate the new package management and repository with Linux user tools and interfaces combined with Sun-developed components and added-value software products in diagnostics, file system, clustering and virtualization management software.

Gartner RAS Core Research Note  
G00155019, George J. Weiss,  
27 February 2008

## Open Source Software from Sun: Innovation Businesses Can Trust

by Jeff Jackson, Vice President, Solaris Engineering, Sun Microsystems, Inc.

It's not surprising that more and more companies of all sizes are using open source software. The innovation that open source offers is a huge competitive advantage – and the price is right. However, testing methods and quality assurance aren't always strong in the world of open source. And, while open source communities are great sources of information, support, and innovation, many companies demand greater accountability to ensure that issues will be resolved when they arise.

As a worldwide leader in open source, Sun engineers have been participating in open source communities and listening to what customers want for years. Today, with the launch of the OpenSolaris operating system, Sun is offering the choice of a truly open source operating system – backed by a company that has a team of thousands of engineers who regularly contribute to the innovation and support of the software. Sun also provides the assurance of proven, extensive testing processes and worldwide support that fits the needs of both startups and the largest global enterprises. These critical advantages are part of what makes OpenSolaris different from other open source operating systems.

While developers accustomed to Linux distributions will find OpenSolaris very familiar, OpenSolaris is more than

just another Linux. The OpenSolaris OS is based on the Solaris Operating System, an enterprise-class OS that is the result of a \$500 million research and development investment by Sun. OpenSolaris includes access to unique features like Dynamic Tracing (DTrace), Solaris Containers, Predictive Self Healing, and ZFS, as well as the latest innovations from the OpenSolaris community. Plus, the OpenSolaris operating system runs on more than 1,000 AMD, Intel, and SPARC® platforms, providing great advantages in terms of flexibility and scalability.

Of course, the operating system is only part of the picture. Sun also offers market-leading middleware and key open source software like MySQL (the world's most popular open source database), GlassFish (with hundreds of thousands of downloads a month), and VirtualBox (a multiplatform hypervisor that offers a huge advantage to developers by enabling multiple operating systems running on a single computer). Today, Sun provides an end-to-end environment for open source development and deployment – all from a single, trusted vendor that offers a range of support options.

But with the wealth of open source options available today, how can enterprises evaluate the products that are the best fit for a particular

business strategy and existing IT environment?

First, prospective users can join a project's community to get a feel for how vibrant, active, and engaged the community is; for example, with the OpenSolaris project and other Sun open source software communities, members can talk directly with the Sun engineers working on a project. Second, developers and users can examine the product road map and revision schedule to see if that the timeline synchronizes with their needs. Then, they can download the software and start using it. And finally, they can examine how the code is reviewed and tested to ensure quality.

At Sun, we apply rigorous commercial product development processes to all of our open source products. Sun invests a lot of time and money ensuring that our products are reliable, stable, and secure, so businesses can deploy Sun products with confidence.

Today, developers and companies can choose from a wide range of open source software and tools. The key is selecting products that offer the capabilities they need with the support and backing they can trust.

Sincerely,  
Jeff Jackson, Vice President, Solaris Engineering, Sun Microsystems  
[www.opensolaris.com](http://www.opensolaris.com)



Jeff Jackson

# Internet Consultancy Optimizes Database Solution with MySQL, PostgreSQL and the Solaris Operating System

**OmniTI**, founded in 1997, is an Internet consultancy located in Columbia, Maryland. OmniTI serves customers with large-scale Web sites – those with 30 to 50 million users or more. A strong advocate of open source solutions, the consultancy specializes in scalability and performance consulting, security services, Internet architecture design, and Web application development.

### Business Issues

- Provide scalable database solution
- Improve database performance, optimized for operating system
- Reduce software licensing costs

### Solution

OmniTI migrated a customer's data warehouse from Oracle to PostgreSQL and migrated from Linux to the Solaris 10 Operating System, which includes the ZFS file system and the comprehensive, dynamic tracing framework of DTrace.

### Success at a Glance

Many say OmniTI "wrote the book" on open source. However, as an Internet consultancy whose customer list reads like the "Who's Who" of the Web 2.0 marketplace, OmniTI always recommends the best product for the job, whether it is open source or commercial.

"We solve problems with business software," says Theo Schlossnagle, principal and founder of OmniTI Computer Consulting. "We try to remain technology agnostic, but open source has matured to such a point that most of the time, it's difficult to justify an alternative." About 98 percent of the company's solutions include open source software, and the OmniTI Labs Web site serves as a free repository for open source tools and projects.

When one of OmniTI's customers faced skyrocketing costs to scale up an Oracle database to meet its

growing needs, OmniTI looked at several commercial and open source databases. OmniTI decided to replace the Oracle database with PostgreSQL, because the feature set is comparable to Oracle's and the migration was expected to be smooth.

The original Oracle database was a 1.8 terabyte data warehouse, with between 5,000 and 10,000 PL/SQL functions that routinely initiated complex business intelligence queries against the data set. The data warehouse worked with the customer's half-terabyte Oracle 8i online transaction processing (OLTP) database, which performed up to 10,000 transactions per second. OmniTI decided to migrate the data warehouse to PostgreSQL, which took OmniTI only 3 months, rather than the standard 4-12 months with most data migrations. To keep the project within scope, the OLTP database, with its large amount of customized code, went unchanged.

*"[OpenSolaris] gives us the ability to both strategize and prototype systems based on leading edge features."*

*– Theo Schlossnagle,  
Principal, OmniTI*

At first, the new PostgreSQL application ran on 64-bit Linux, but when the customer experienced 20 outages in four months, OmniTI migrated to the Solaris 10 Operating System. The migration took only one day. Although most of the outages were hardware-linked, Solaris 10 – unlike Linux – offers features that quickly identify hardware issues so they can be resolved.

OmniTI also deployed MySQL database to import and export data for the customer's solution. OmniTI runs hundreds of PostgreSQL and MySQL

### Business Results

- Saved \$400,000 on licensing fees initially and \$200,000 on maintenance fees annually
- Improved reliability and scalability of database
- Achieved better database performance
- Reduced troubleshooting time from days to hours

### Products/Services/Solutions

- Solaris 10 Operating System
- OpenSolaris
- PostgreSQL
- Sun Fire V890 Server
- MySQL

## Customer Snapshot

databases for its clients, so Schlossnagle has a good idea of the strengths of each. “PostgreSQL can handle extremely complicated business intelligence on billion-row data sets, with a feature set that is comparable to Oracle’s. In fact, Oracle database administrators can easily apply their knowledge of how databases work to PostgreSQL.” By contrast, he notes, “MySQL works well for large-scale raw data manipulation such as handling the import and export of data and is probably the fastest database on the market.”

With its new solution, OmniTI’s customer not only gained a better performing database that is optimized for its system, but also achieved significant savings. By migrating from Oracle to PostgreSQL, the customer saved \$400,000 in initial licensing costs – and nearly an additional \$200,000 annually in maintenance fees.

The solution uses two 4-way dual-core Sun Fire V40z servers with 32GB of RAM running PostgreSQL and takes

advantage of Solaris 10 features such as DTrace . Through DTrace the PostgreSQL database solution can be optimized by tracing the path of a query to determine how efficiently resources are being used. “With DTrace, you can debug all the way down to the hardware level, so you can identify issues and fix them quickly,” says Schlossnagle. “It’s reduced troubleshooting from days to hours.”

The solution also relies on the ZFS file system in Solaris 10. During a catastrophic accident when 1.8 terabytes of data were lost, Schlossnagle restored the entire database in just seconds using ZFS. “I typed ZFS rollback and one second later I had my database from this morning,” says Schlossnagle. OmniTI also contributes code back to the community. For example, it offers a ZFS-based backup tool on the OmniTI Labs Web site. When developing solutions for its customers in-house, OmniTI also uses Solaris 10 Containers for server virtualization, which helps the

company save on its server footprint and costs. One machine at OmniTI powers 40 development environments.

In some parts of its operations, OmniTI uses OpenSolaris as well. “We do a lot of open source development. We have several servers that run OpenSolaris, specifically for the leading edge features. OpenSolaris has proven to be invaluable in keeping our team abreast of new developments before they hit the Solaris label. It gives us the ability to both strategize and prototype systems based on leading edge features,” says Schlossnagle.

As for the customer that OmniTI migrated to PostgreSQL, the savings and optimized database performance is once again proving the value of OmniTI’s approach, providing evidence that with PostgreSQL, OmniTI did, indeed, recommend the best software for the job.

Source: Sun Microsystems

## About Sun

Sun Microsystems has a public commitment to Free and Open Source software and in doing so has contributed more code to Free Software than any other organization in the public or private sector. As well as leveraging many industry wide open source projects, Sun has taken the unique step of opening its core software, hardware, microprocessors and storage technologies and sharing them as free and open source. This action enables Sun to build its products through the preferred means of co-production and to grow the potential market for Sun products and services. Sun understands that free and open technologies attract users while allowing developers to identify new opportunities, creating new markets and opportunities. Sun’s strategy can be summed up in one word – share.

For more information about OpenSolaris, please visit [www.opensolaris.com](http://www.opensolaris.com).

For more information about Sun’s open source projects, please visit [www.sun.com/opensource](http://www.sun.com/opensource).

Business Trends is published by Sun Microsystems. Editorial supplied by Sun Microsystems is independent of Gartner analysis. All Gartner research is © 2008 by Gartner, Inc. and/or its Affiliates. All rights reserved. All Gartner materials are used with Gartner’s permission and in no way does the use or publication of Gartner research indicate Gartner’s endorsement of Sun Microsystems’ products and/or strategies. Reproduction and distribution of this publication in any form without prior written permission is forbidden. The information contained herein has been obtained from sources believed to be reliable. Gartner disclaims all warranties as to the accuracy, completeness or adequacy of such information. Gartner shall have no liability for errors, omissions or inadequacies in the information contained herein or for interpretations thereof. The reader assumes sole responsibility for the selection of these materials to achieve its intended results. The opinions expressed herein are subject to change without notice. CN01022009