OPEN SOURCE IN THE ENTERPRISE: FULFILLING THE PROMISE

White Paper
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Abstract

Open source is a part of most enterprise's IT environment today. While it has the potential to help companies speed their time to market and lower IT costs, open-source software comes with a wide range of license fee structures. Additionally, enterprises need sufficient support in order to use or deploy software for mission-critical applications. This white paper explores the advantages and possible disadvantages of open-source software, the types of companies that deliver open-source products and services, guidance for how to get started with open source, and the clear advantages offered by Sun.

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Executive Summary

Open-source software has become ubiquitous in the IT world, with wide-spread use in Fortune 500 corporations as well as in universities, developing economies, governments, and student populations.

While many companies use open source for the cost advantages, it offers a number of other benefits, including:

- Early access to new technology
- Faster time to market
- Ease of deployment
- Freedom from vendor lock-in
- Greater security

However, enterprises need to be aware of some potential pitfalls. Open-source licensing fees can make the software expensive. While community support and bulletin boards are free, that level of support may not be enough for mission-critical applications or deployment. When exploring open-source software alternatives, enterprises can work with:

- Aggregators (like Red Hat), which collect and package software created by others and then charge for support and updates
- Support companies (like SpikeSource, SourceLabs, and OpenLogic), which put together common open-source software into stacks and offer enterprises integration and support services
- Creator, distributor and supporters (like Sun), which dedicates significant engineering staff to work with the community, aggregates community innovations, and delivers enhanced and thoroughly tested open-source software with full enterprise support

Enterprises looking at open-source software have a growing number of choices. In addition to addressing the issues above, this paper provides advice on evaluating open-source alternatives to ensure that the software delivers the long-term advantages that companies need.

Chapter 1

Open Source is Everywhere

Many CXOs may not think that they're using open-source software in their enterprises. But the truth is, most businesses today are already running open-source software somewhere within the organization — and in many of these companies, it's being used quite broadly.

Of course, it wasn't too long ago that the only open-source software you'd find in the enterprise was the Linux operating system and a handful of tools. But today, it's open-source everything: "Early success widened the focus," says one Forrester report, "to include development tools, infrastructure components such as application servers and databases, and higher-level components such as portal servers and content management systems."

So how pervasive is open source today? More than 2 billion phones and another billion PCs run Java™ technology. There are 12 million users of the MySQL™ database, with another 60,000 downloads occurring every day. There have been more than 14 million downloads of the Solaris™ and OpenSolaris™ operating systems. And in a 2008 study, Gartner found that two-thirds of the clients they surveyed were using open-source software in mission-critical applications. Clearly, open source has made significant strides in — and a real impact on — the enterprise.

Bottom line? Open source is the ideal business and development model for today's global, interconnected economy — sparking innovation and participation that benefits individuals and communities, enterprises and markets. The clock will never turn back on students, developing economies, fledgling universities, or the Fortune 500 who have found value in the wisdom of the open-source community. Open standards and open-source software are literally changing the face of the planet, creating opportunity wherever the network can reach.

1. Source: Forrester, "Open Source Adoption: Notes from the Field: Adoption Moves Up the Stack, but Concerns Vary by Region", Jeffrey S. Hammond, Diego Lo Giudice, July 3, 2008

Chapter 2

The New Economics of Open Source

Harnessing the power of open-source software in your organization can reset the economics of information technology. As a rule of thumb, mature open-source products often provide 80% of the features at 10% of the cost of traditional closed, proprietary solutions. The majority of open-source software distributions are free, easy to install, highly customizable, and easily integrated with the hardware and software most companies have now. Plus, they include many of the bells and whistles found on proprietary software. Because open source benefits from a vast community of dynamic, creative developers, the software is often cleaner and more lightweight than its proprietary cousins. And open-source service and support can cost enterprises far less than contracts with proprietary vendors.

True, some companies resist open source out of concerns for the level of production support that will be available. But that issue is diminishing as respected enterprise vendors such as Sun offer support on par with proprietary software support for those who seek it. That, in addition to the millions of deployments in use for some of the more mature open-source offerings, makes open source more than ready to play at the enterprise level.

While many companies have open source in use today, few are fully capturing its economic advantages on a broad basis — and those who do so most aggressively will enhance their speed to market and lower their IT costs.

Chapter 3

What Open Source Is All About

Most companies started using open source to simply get things done faster or to save money — but savings aren't the only reason they're opting for an open-source approach. The decision to go with open source delivers a wide variety of benefits:

Cost savings. Open-source software offers radically different economics than the previous generations of expensive and proprietary software products. By lowering the capital expense of deployment, companies can free up substantial capital that can be channeled into operational expenses. Open source can also provide more choice of support — from communities and bulletin boards to comprehensive subscription services. And the new generation of eager, savvy developers coming out of universities, the ones software vendors and enterprises alike are hiring, have cut their teeth on open source and use it almost exclusively.

Early access. Open-source products are available without barriers and provide access to source code, enabling developers in enterprises to bring in open-source solutions to meet business requirements at minimal cost. Because the software can be downloaded and used immediately and without obligation, organizations can often prototype or even build working systems in the time it normally would take to write an RFP and negotiate a proprietary license. Open-source products are also attractive to developers and enterprises because they provide easy access to leading-edge technologies, which are fully supported before commercial release.

Speed to innovation. By utilizing open source's momentum, technology can evolve rapidly. Open source makes it easy to combine projects, enabling developers to deliver robust products and services that much faster. And it enables developers to innovate around the work of others, which shortens development cycles. As Maurizio Davini, head of the University of Pisa Department of Physics' Computing Center, says, "Open source represents an express lane to sharing and spreading technological expertise that can function as a base and amplifier for further studies and development."

Ease of deployment. Unlike proprietary software, which often supports hundreds of rarely used features, open-source software generally provides only the essential capabilities, which makes deployment, and eventually support, much easier. Most mature open-source software now comes with easy-to-use installation software, graphical management tools, and online help.

Freedom from platform lock-in. Open-source software is typically available on dozens of platforms, so enterprises can choose the most economical combination of hardware and software for their needs. Open source also helps ensure that all those participating in the community develop from the same base technology. Developers have ready access to source code and to critical data, giving them a high degree of flexibility and preventing lock-in to a single company or platform.

Greater security. Because open-source software is developed in plain view and used by thousands, it can't be hacked, and bugs are quickly detected and dealt with. Open-source projects go through orders of magnitude more hours of quality assurance than their proprietary counterparts, and their robustness is tested every day. Should an issue arise, an entire community of developers stands ready to remedy it.

Chapter 4

Open Source: It's *More* Than Enterprise Ready

In its early phases, a piece of open-source software can already be a valuable solution to a business problem — but you're not going to bet your company on it. However, once it reaches the marketplace and the collective creativity of the open-source community is brought to bear, the maturation process can start. This vast community (which includes not only developers but also customers, vendors, and system integrators) begins openly stress-testing iterations, exploiting strengths and addressing weaknesses, and adding innovative features while removing what doesn't work. Over time, bugs are fixed, and the software becomes more reliable, scalable, predictable, and sustainable. It's enterprise ready.

So who are the principal users of open source — the organizations that are putting these mature, enterprise-caliber technologies to the test in the real world?

Businesses. Most companies, in tough economic environments as well as in boom times, are trying to do more with less. An open-source approach to technology enables them to procure, deploy, and manage their IT infrastructures to meet the goal of "better, faster, cheaper." And the rate of enterprise adoption of open-source software has been significant: The Open Source Census, a global, collaborative project launched in early 2008, "discovered" more than 300,000 open-source package or project installations in just six months.

And some CIOs have discovered open source in use in their own organizations, even without a corporate standard or mandate. One U.S. bank's CIO asked for an inventory of the bank's IT applications and was surprised to find more than 300 of them written on MySQL, an open-source database software for which he did not have a support contract. Fortunately, that was an easy problem to fix.

Governments. In early 2009, the British government mandated the use of open standards (and open source where it's the least-expensive option), required revision of procurement policies to make open source the equal of other options, and encouraged reuse of developed code — for example, by open sourcing government solutions. And information and communications technology (ICT) providers in Europe, Brazil, and China are working together on a platform to foster the use of open-source technologies in their industry.

How much could open source benefit governments? One online community for government leaders claims that the U.S. government alone could save upward of $20 billion simply by taking an open-source approach to IT. And a European Commission report released in February 2008 estimates that aggressive adoption of open source would increase the gross domestic product of the European Union by .1%, or more than 1 billion.

Students. The next generation of technologists are graduating with a considerable amount of open-source knowledge and experience. With open source, students can study how some of the world's leading software is crafted, including Sun's Solaris Operating System, the MySQL database, and the Java platform. Open-source communities offer access to some of the world's leading software engineers — and many of today's developers feel that they learn more, and faster, by participating in open-source communities.

Job opportunities for open-source developers have increased dramatically — and many developers come into the job market with open-source experience.

Many students have already been contributors to major open-source projects, and for the most part, they've done it as a labor of love — although some have been paid for their contributions. What's more, they're excited about the work they perform and they gain a deep sense of satisfaction from their participation within the wider community. So it's not surprising that when developers at the previously mentioned U.S. bank were asked to quickly develop an important application, they would reach for the software that they knew the best and trusted the most — open-source MySQL software.

Chapter 5

The Source of Open Source

While the benefits of open source are earning it full-throated acclamation across the enterprise, cooler heads, including Sun, urge a bit of caution: You need to choose open-source technology and your open-source vendor because they support your company's business model — not because they're the flavor of the month.

The pitfalls for the enterprise are, for the most part, the flip side of the benefits. For example, there are issues of cost:

- TCO is lower with open source, but only if the licensing fee is less expensive — and that depends entirely on the product.
- Community support and bulletin boards are free. But will that level of support be sufficient for your most mission-critical applications, or will you end up carrying additional support to meet customer needs?
- Procurement is simple, but how much help will you need to deploy open source? And how much code aggregation will you have to do on your own?

There are issues surrounding some open-source technologies that can actually slow the pace of innovation if not addressed,including:

- How big and committed is the community that contributes to the technology, and are students active in their support?
- The contribution agreements used by vendors, open-source communities, and other organizations to set forth the terms under which contributions to an open-source project can be made can affect your time to market. Consider how quickly these agreements allow for innovations to the project to be incorporated into the main code base — and into the technology you're deploying.

And perhaps most important of all, there are questions around the business model of your open-source technology suppliers — and the level of support and responsiveness you can expect from them.

By offering components of value around the code, open-source suppliers give customers the option of picking and choosing what's valuable to them. Customers can opt to integrate the software themselves, write their own documentation, and deploy and scale it on their own, or they can choose to receive help, documentation, tools, and services from a vendor. Of course, a user's business environment can change over time, so the outlay of money is always in line with the return of value.

That said, there are three types of companies delivering open-source products and services in one form or another:

- **The aggregator** — The best example of this type of supplier is Red Hat, which collect and package pieces of software created by others into a distribution they call Red Hat Enterprise Linux. The company then charges for support and updates. But aggregators like Red Hat don't employ the code contributors themselves — and that means that they often can't provide the support and responsiveness that enterprise customers have come to rely on from their proprietary vendors. In fact, PC makers often employ their own support staff to service their Linux customers, even though they're paying for that service from the aggregator.

  Of course, some of the more tech-savvy enterprises do their own aggregation. Companies such as Google and Facebook have the capacity to build and scale their own LAMP stack — but for others, that prospect is a daunting and very real barrier to entry. And without the technical know-how to support their open-source environment, companies can find themselves paying more for their *free* and open-source software than they would for the proprietary alternative.
- **The support company** — These companies, such as SpikeSource, SourceLabs, and OpenLogic, help enterprises address integration and support issues, putting together common open-source products into stacks and then providing services around them. Enterprises face the same challenge with support companies as they do with aggregators: with few code creators on the payroll, open-source support companies simply can't deliver the quick, responsive service that enterprises need.
- **The creator, distributor, and supporter** — Sun personifies the complete open-source vendor, a company that's as much innovator as aggregator. Take the GlassFish™ portfolio, for example: the product is primarily created by innovative Sun engineers. But there's a vast and growing community outside of Sun that supports it, providing quality- or features-based enhancements that Sun aggregates and deliver to its customers. And solid contributor agreements enable Sun to provide the same level of indemnification for third-party code as it does for its own, homegrown software. (Indemnification works to help ensure that there's little chance of a company bringing patent-infringement suits against users of the software and takes on the cost of fighting such claims should they be brought.)

  By making its software freely available, Sun can then monetize it with commercial subscriptions and services, alongside optimized hardware systems. Sun's enterprise customers view downtime or administrative complexity as more expensive than a software subscription — they have more money than time. And for them, access to enterprise-grade features and mission-critical support and maintenance are excellent investments.

Sun also services other companies' open-source products; for example, Ericsson based its SailFin carrier-grade application server on GlassFish technology, then contributed the product to Sun. Now Sun sells and supports it so Ericsson doesn't have to.

What's more, a seasoned enterprise company like Sun also stands behind its software, meaning that it offers everything that an open-source support supplier can provide, and more — a development roadmap, technical support from the developers, and other services, such as:

- Commercial support
- Training and consulting
- Responsibility for the product roadmap
- Clear ownership of intellectual property
- A large number of third-party tools
- Best-practice resources to ensure success

Chapter 6

Getting Started

Here's how you can get started with implementing open source in your enterprise.

- **Download and play with the open-source product you're considering.**
  You can download a copy of the software you're interested in — OpenSolaris 2008.11 software, for example — and experience it from a Live CD or install it on one of your systems (it supports more than 1,000). Then have your IT pros put it through its paces.
- **Make sure the product has an established track record.**
  When companies are choosing a platform, they typically ask about its viability today — and its future. They don't want to be the first customer using the software. They want to know the platform already has an ecosystem around it and that it's ready for production-grade use. If you buy the world's most brilliant operating system, but it doesn't run on your hardware or with your software, it's useless.
- **See that the product has a substantial following and an active community.**
  Size and momentum are critical success factors for an open-source product to ensure that it attracts ongoing maintenance and support.
- **Acquire the software from an authorized source.**
  Where source code is available, there's a possibility of obtaining products from unauthorized sources. Enterprises should only acquire open-source products directly from a vendor that vouches for the technology or from the primary online repository for a particular product. If they don't, they could lose access to the most current and supported version of the software.
- **Ensure that a commercial vendor offers production-level support.**
  Some mature products are supported by the vendors who provide them, who make money from those services. This can get complicated, because when the enterprise runs a wide gamut of open-source software, it's often responsible for coordinating service and integrating components. Some vendors assemble stacks of commonly combined open-source software and provide services for them, including integration and support. And many tech-savvy organizations rely on some combination of community support and internal expertise.

Whatever type of support you choose, it's important to realize that as you move into the production phase of your open-source project, you'll need about the same level of support as you would for any proprietary software.

- **Remember that many enterprises use a mixed environment.**
  Moving to open source need not be an either/or scenario. The beauty of open source is that it can easily coexist with your enterprise's current environment. New IT projects are a great way to get started with open source. Acquisition flexibility can result in a mix of open-source software, packaged software, and custom code.

  For organizations with more time than money, downloading and deploying open-source software for free, without any relationship with the vendor, is definitely an option. Enterprises that have the time to manage more complexity and invest in the in-house skills required to sustain the deployment can also get the software for free.

  For organizations with more money than time, a subscription or license with a vendor such as Sun delivers more scale, efficiency, reliability, and dependability through the addition of IP and support. Although the software maintenance isn't free, it usually costs only a fraction of the comparable services for proprietary software. For large organizations, the ongoing savings can be in the tens of millions of dollars.

Chapter 7

Major Open-Source Projects and Products

Adoption is the key to the success of any open-source project. The more widely adopted the software is, and the more contributions it receives, the more robust and rich the software will be — and the more likely it will be to have commercial support available.

Here are the major open-source projects, listed by functional segments:

Category	Projects	Maturity	Sun Offering
Database	MySQL, PostgreSQL	12 years	MySQL, MySQL Cluster
Application and Web platform	GlassFish, JBoss, Apache	10 years	GlassFish Portfolio
Integration platforms	OpenESB, Mule	4 years	Open ESB
Development Tools	NetBeans™, Eclipse	12 years	NetBeans
Identity	OpenSSO, OpenDS, OpenLDAP	4 years	OpenSSO, Identity Manager
Operating systems	OpenSolaris, Linux — various, BSD	25 years	OpenSolaris
Virtualization	Xen, OpenxVM	6 years	xVM Portfolio
Storage	Open Storage	3 years	Sun Storage 7000
File Systems	NFS, UFS, ext, Lustre, ZFS™ and many more	Varies	NFS, Lustre, ZFS included in OpenSolaris
Browsers	Mozilla™	15 years	
Productivity tools	OpenOffice.org™	20 years	StarOffice

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