

# BUILD A HIGH-PERFORMANCE, OPEN WEB PLATFORM FOR YOUR ENTERPRISE WITH SUN GLASSFISH™ PORTFOLIO

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## **Abstract**

Today's IT leaders are driven to build more with less — but the industry has provided tools that are prohibitively expensive, too difficult to acquire/use/support, or that support competing standards. The Sun GlassFish™ Portfolio is a complete, open Web application platform that provides businesses with innovations from leading open-source communities, packaged in a solution that offers flexible subscription-based pricing and enterprise-class support. It offers enterprises of all sizes the extreme scalability and reliability they need for mission-critical applications.



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## Table of Contents

<b>Executive Summary</b> .....	<b>1</b>
<b>The Challenges in Today's World</b> .....	<b>2</b>
Community innovations vs. proprietary solutions .....	3
<b>Sun's Solution</b> .....	<b>4</b>
<b>Top 10 Reasons To Use the Sun GlassFish Portfolio</b> .....	<b>7</b>
<b>Industry Scenarios</b> .....	<b>10</b>
The GlassFish Portfolio in Government .....	10
The GlassFish Portfolio in Telecommunications .....	10
The GlassFish Portfolio in Healthcare .....	11
<b>Conclusion</b> .....	<b>12</b>
Learn more .....	12

## Chapter 1

# Executive Summary

The advantages of Web applications are counter-balanced by the complexities required for extensive growth.

Companies have grown their IT infrastructures around two platform types: proprietary and open source.

Sun takes the risk out of open-source software by conducting extensive QA and interoperability testing.

Business leaders today look to the Web to increase business efficiency and capitalize on new revenue potential. Web applications provide great opportunities for businesses to increase the capabilities of their internal programs from simple content and email to highly collaborative and extensive deployment applications that often match specific corporate goals and business processes. But these advantages are counter balanced with the complexities required for extensive growth.

Over the last decade, companies have grown their IT infrastructures around two platform types: a formally supported proprietary middleware stack (BEA, IBM, Sun, Microsoft, Oracle, SAP, others) and free-access, open-source software. The former became the corporate standard and was used for most mission-critical applications, while open source became the choice for more immediate-need, less critical applications; however, LAMP, Tomcat, Ruby, and PHP have frequently been leveraged for even mission-critical applications in many enterprises.

The need to leverage IT to grow new revenue and profits at a lower total cost of ownership (and a lower initial cost of development) have moved enterprises to evaluate open-source platforms to enable growth. Some enterprises are looking for a “dual standard” with existing or mission-critical applications remaining on expensive, proprietary software and new or non-mission critical applications being placed on open-source software.

Sun Microsystems is uniquely positioned and qualified to deliver and support key open-source software at an enterprise, mission-critical level. Sun takes the risk out of open-source software by both redistributing the binaries from open-source projects and making an extraordinary effort to ensure the open-source software is performant and reliable by subjecting it to the same standards, quality assurance, and interoperability testing as Sun’s commercial software.

The Sun GlassFish™ Portfolio provides the middleware software and services needed to deliver Web applications throughout the enterprise at a significantly lower cost while providing outstanding performance and reliability. The most complete open Web application platform available, the GlassFish Portfolio has flexible subscription-based pricing to enable enterprises to scale, and offers enterprise-class support to fit the needs of any size business. The Portfolio’s pricing model enables enterprises to reduce cost while increasing their services and capabilities to their customers.

## Chapter 2

# The Challenges in Today's World

## Reach, risk, and return

Enterprises must balance their need to increase their reach, decrease their risk, and ensure a healthy return on investment.

Driven by market conditions, businesses are struggling to deliver new services that increase corporate profitability at a reduced cost, and get to market faster and with much lower complexity. Enterprises are looking to increase their reach through new Web-enabled services with increasing capability and simplicity of use. They also want to decrease their risk by protecting access to data and services and ensuring usage and access compliance. Finally, they need to increase their return on investment with greater profitability from services and lower initial and long-term costs.

The growth of the Web means more people are accessing more services for more hours of each day in more ways.

The growth of the Web means more people are accessing more services for more hours of each day in more ways. Business leaders have looked to the Web to extend business processes, including enterprise productivity and revenue strategies. The responsibilities of IT leaders are often stretched well beyond installing and maintaining technologies to planning and often adapting business processes along with the technologies.

Companies are leveraging technology to extend their services and capabilities to existing customers and prospective customers who have become accustomed to a high-quality online experience that is not only rich in features, but is also always available. These customers may be in the same location as the company providing the service, but it is more likely that the customer is in another city, state or even country. Services must be available 24 hours a day to accommodate the customer at the times the customer chooses to interact with a company's service.

As the implementations have grown, so has the risk. Projects may fail or simply be inefficient. The management of applications may make projects too costly to be effective. Or customer-facing applications may need continual adaptation to meet both corporate and customer demands.

Risks surrounding availability, overrun costs, management complexities, security, and compliance all affect the decision to start new projects. Some projects may never be tried simply because the risks are considered too great.

Customers are looking to implement ever-increasing requirements while reducing the cost of existing implementations and reducing the expenditures required for new ones.

## Community innovations vs. proprietary solutions

Corporate IT infrastructures have grown around two platform types: proprietary and open source. Often, companies will have a corporate standard with a particular vendor (e.g., Oracle WebLogic) and yet have extensive, although uncoordinated, use of open-source applications (e.g., LAMP). Even within standard platforms, they have to deal with the forced heterogeneity of both Java™ Platform, Enterprise Edition (JavaEE) and .NET technologies within the same infrastructure. This type of challenge is why Sun has focused on bringing together the leading open-source communities and the requirements of enterprises worldwide.

High-cost, proprietary products and vendor lock-in constrain companies from embarking on new software initiatives.

Proprietary vendors focus on compliance with industry standards, providing a complete platform, mission-critical support, and extreme reliability and scalability. But proprietary enterprise software has often been prohibitively expensive for departments, smaller projects, small/medium-sized businesses, and startups. The combination of high-cost, proprietary products and vendor lock-in constrain businesses from embarking on new software initiatives. The capital expenditures and associated financial risk required to deploy proprietary products can easily either delay the profitability gains of new software initiatives or simply prevent enterprises from attempting innovative ideas to drive new revenue streams.

Open-source projects have focused on innovative features demanded by the most recent applications, making the code easy to access, allowing many entities to leverage or contribute to the source code of the project, making it simple to use, and providing specific features such as presentation, speed, interoperability, etc. as needed by a specific project. They were traditionally either supported by small vendors who could not meet the mission-critical demands of the Fortune 500 enterprises or were created with inflexible pricing terms.

## Chapter 3

# Sun's Solution

Responding to the need for a comprehensive, open Web application platform packaged with flexible, subscription-based pricing, Sun offers the Sun GlassFish Portfolio, a complete application platform set of components developed in association with the leading open-source communities that have very broad adoption and an extensive eco-system of community members, ISV/SI partners, and customers. With the GlassFish Portfolio, Sun builds upon the work of open-source communities and offers enterprise functionality and reliability with variable service level agreements (SLAs) to support smaller, low-cost deployments as well as extensive mission-critical deployments — all at a simple, low, and predictable cost.

The Sun GlassFish Portfolio meets the needs of businesses of all sizes with unparalleled price leadership, flexibility, reliability and performance.

The Sun GlassFish Portfolio and MySQL™ Enterprise Server are available with identical pricing and support strategies, allowing enterprises to align their open-source application and database strategies.

Enterprises should look to Sun GlassFish Enterprise Server as the main application-tier Web container for developing Java™ EE and dynamic language applications.

The GlassFish Portfolio is available in both per-server pricing as well as Unlimited licensing. Smaller or initial business projects can benefit from the per-server pricing options, allowing installation and deployment flexibility with great cost savings. The Unlimited pricing option offers lower initial cost, more predictable future costs with zero requirements for accounting, and no restrictions for architectural layouts or scale. The GlassFish Portfolio's flexible pricing ensures all levels of enterprises, from large Fortune 500 enterprises to smaller or medium-size businesses and start-ups, can leverage the platform to meet their specific needs.

The GlassFish Portfolio and MySQL™ Enterprise Server, the most reliable, secure, and up-to-date version of the world's most popular open-source database, are available with identical pricing and support strategies, allowing enterprises to gain additional benefits by aligning their open-source application and database strategies.

The GlassFish Portfolio is based on the latest emerging standards and capabilities. Key products and features include:

**Sun GlassFish Enterprise Server:** The performance record-setting open-source and open-community platform for building and deploying next-generation applications and services, Sun GlassFish Enterprise Server is ideal for service-oriented architectures (including Web-oriented architectures) and rich Internet applications utilizing the Java EE platform, PHP, Server-side JavaScript and Ruby (plus .NET integration with Metro jointly developed with Microsoft). GlassFish Enterprise Server provides a focus on simple installation, development, and management of production environments with extreme scalability and reliability. It can be considered the main application-tier Web container for developing Java EE and dynamic language applications.

**Sun GlassFish Web Stack:** A complete LAMP cross-platform portfolio of Web-tier technologies developed by several open-source communities, Sun GlassFish Web Stack includes components compiled, pre-configured, and tested by Sun across multiple operating systems for optimal performance and compatibility. It allows you to use the technology you already know, including Apache HTTP, Lighttpd, Squid, PHP, Ruby, Python, MySQL, and more, with confidence. Enterprises can leverage the GlassFish Web Stack to standardize their existing LAMP strategies and to leverage within the Web tier for their enterprise proxy capabilities, load balancing, and Web-tier content and applications (image servers, DMZ applications, etc.).

Sun GlassFish Web Space Server simplifies the development of Web content and collaboration by enabling end users to define their own Web spaces for their social network.

**Sun GlassFish Web Space Server:** Providing a new class of portal functionality, Sun GlassFish Web Space Server enables users to create their own Web spaces and define the access and functionality within their enterprise and social networks. With built-in content and document management, human workflow development tools, enterprise identity integration, and social networking features, system administrators and application developers can deploy a platform that allows for rapid rollout of next-generation Web capabilities for their users. GlassFish Web Space Server simplifies collaboration and the development of Web content. by enabling end users to define their own Web spaces for their social network.

**Sun GlassFish ESB:** A Java technology-compliant, Web services-based, pluggable integration platform, Sun GlassFish ESB incorporates the Java Business Integration (JBI) standard to allow loosely coupled components to communicate with each other through standards-based messaging. It provides core integration, including comprehensive application connectivity, guaranteed messaging, and robust transformation capabilities as well as a unified environment for integration development, deployment, monitoring, business process flow (BPEL), and management. Enterprises can leverage GlassFish ESB to develop Web content and applications with integration to the back-end Web or legacy data and when developing enterprise ESB architectures.

**Message Queue:** Enabling loosely-coupled applications to reliably exchange messages and cost-effectively scale, Message Queue allows applications to produce and consume messages at different rates without causing data traffic jams or system grid-lock. It easily scales to meet your needs now and as your application needs grow. Message Queue can be used within GlassFish Enterprise Server or as a standalone application. Message Queue can also reduce costs for existing messaging infrastructures and can be used for highly scalable, mission-critical applications that require message exchange.

**Update Center:** Enabling enterprises to easily download, install, patch, and manage multiple implementations of the GlassFish Portfolio components, Update Center also provides notification, access, and installation of available patch updates. Update Center is a sophisticated method to manage deployed applications.

**Enterprise Manager:** Providing an additional value-add to the application monitoring and management available within the Administration Console, Enterprise Manager delivers tools for performance monitoring and tuning as well as support for SNMP monitoring. Enterprise Manager reduces the risk of production problems by monitoring common causes of downtime and performance degradation. It proactively sends alert notifications when key thresholds are exceeded, enabling IT Operations to address potential problems *before* they occur.

The GlassFish Portfolio addresses the need for enterprises to build more with less, leveraging IT to grow revenue and profits at a lower total cost of ownership and lower initial cost of development. Enterprises developing Web applications can reduce total costs by more than 90% and improve application price/performance 7 times over alternative offerings. The Portfolio also simplifies and enhances the development and deployment of Web applications — from small, departmental applications to mission-critical applications.

## Chapter 4

# Top 10 Reasons To Use the Sun GlassFish Portfolio

### Top Reasons To Deploy:

1. Initial cost
2. Long-term costs
3. Industry/Emerging Standards
4. Open Source Partner
5. LAMP/Java EE
6. Developer Productivity
7. Centralized Mgmt
8. Price Performance
9. Rich Functionality
10. Simplicity

The Sun GlassFish Portfolio allows enterprises the unique pricing of 1+1+1=1, where the entire platform is available for the same price as any one component.

1. **Cost of initial deployment.** The GlassFish Portfolio provides lower cost, per-server pricing — often 5 to 10 times less expensive than proprietary application servers or application platforms. Additionally, enterprises are free to deploy on any server type regardless of the number of CPUs, CPU cores, and processor type (i.e., newer Sun CMT and x64 hardware does not make the software more expensive compared to other hardware vendors). Developers can download the open-source GlassFish software to learn, develop, test, and QA without any costs.
2. **Long-term cost predictability.** The GlassFish Portfolio ensures that the cost of deployments is predictable regardless of pressures to scale. As enterprises expand their use of the GlassFish Portfolio components, the 1+1+1=1 pricing strategy allows them to implement the combination of components that are required. Additionally, the Sun GlassFish Portfolio is available with Unlimited pricing, which eliminates the need for accounting and provides greater value for environments that require extreme scalability.
3. **Industry and emerging standards support.** Proprietary vendors have focused on ensuring support for industry standards (e.g., the Java EE platform), but they have often done so with extensions that ultimately lock enterprises into their solutions. Sun's approach is to support industry standards without extensions and to support defacto standards that are being developed in open-source communities. The GlassFish Portfolio supports Java EE 5 and early access to Java EE 6 features. Sun also provides point-and-click interoperability with Microsoft .NET using Metro Web Services stack, a key benefit over alternative solutions. Finally, Sun is providing access to open-source innovations with products like GlassFish Web Space Server (built in partnership with Liferay Portal), allowing a mixture of Java, PHP, JRuby, Groovy, etc. within a single deployment.
4. **Open-Source Platform Partner.** The GlassFish Portfolio is an entire application platform built in open source. This allows enterprises to standardize on a single vendor as their open-source platform. Enterprises can have strategies for hiring, training, QA verification, and ISV/SI partnering based on a single-vendor platform, they gain open-source advantages in a format that is consistent with enterprise support requirements, and they don't have to deal with different strategies for each of the open-source solutions within their enterprise.

Support for industry and emerging standards  
— bringing the best of enterprise and open  
source communities together.

5. **Unified support for Open-Source Proliferation (LAMP/Tomcat).** Many enterprises have implemented LAMP and Tomcat extensively throughout their organization. GlassFish Web Stack, included in the GlassFish Portfolio, allows an enterprise to have a single vendor providing package and patch support for all deployments, increasing the reliability of these deployments and reducing their complexity and randomness enterprise-wide. GlassFish Web Stack includes Tomcat, but enterprises can choose to use GlassFish Enterprise Server (which was built by the same team that built Tomcat) for their LAMP implementations, increasing the ability to support highly scalable and mission-critical applications. Enterprises can additionally use GlassFish Web Stack within the Web tier, providing image service, proxy, etc., to GlassFish Enterprise Server in the application tier.
6. **Developer productivity.** The GlassFish Portfolio is a feature-rich Web application development platform that offers developers an intuitive GUI administration console, multiple developer tool options (Eclipse and Netbeans™ IDE), support for emerging defacto and industry standards, and simplified, rapid code development. Additionally, it includes rich functions for developers like edit/save/refresh; multiple scripting language support in GlassFish Enterprise Server; widget and social graph capabilities in GlassFish Web Space Server; and integration/composite development capabilities in GlassFish ESB. The open source and open communities associated with the GlassFish Portfolio offer developers a range of benefits, including:
  - Vibrant communities to tap for answers to tough technical questions
  - Opportunities to become involved in future feature planning or coding of modules
  - Broader eco-systems with more rapid innovations
  - A significantly lower total cost of ownership
  - Software that is often easier to use, yet is as reliable and as feature-rich as proprietary, standard applications
7. **Centralized Management, Monitoring, Scaling.** The Administration Console enables centralized management and configuration of application server clusters and standalone instances deployed across multiple servers. GlassFish Enterprise Server vastly simplifies cluster setup, allowing developers and administrators to download, install, and set up a cluster in less than 10 minutes. This simplicity adds to the total system reliability by reducing complexity and human error. Additionally, Enterprise Manager provides enterprises with improved management of and visibility into production deployments with SNMP support, performance monitoring, tuning, and alerts.

8. **Price-Performance:** The GlassFish Portfolio delivers price-performance leadership with a complete enterprise offering. GlassFish Enterprise Server, in combination with the OpenSolaris™ Operating System and MySQL, has delivered outstanding SPECjAppServer 2004 results on commodity x64-based hardware; enterprises can achieve industry-leading price-performance throughout their organization with the combination of the GlassFish Portfolio and MySQL Enterprise Server.
9. **Rich Functionality:** The GlassFish Portfolio contains a complete application platform ready for mission-critical applications as well as support for leading innovations from open source. It provides a Java EE 5 application platform as well as a LAMP stack plus additional components for portals, ESB, Web tier and messaging middle-ware. Because the GlassFish Portfolio enables enterprises to avoid vendor lock-in and provides support for multiple programming languages (Java, PHP, Ruby, etc.), plus integration to Microsoft .NET, it is an extensively rich and flexible platform.
10. **Simplicity:** With easy access to product code, (open source and production are the same bits), a focus on ease-of-use, and the ability to set up and configure a cluster in less than 10 minutes, the GlassFish Portfolio simplifies Web application development, deployment and support. It offers support for multiple programming languages and operating systems and provides developer tools and easy migration. For example, Tomcat applications can run unmodified on GlassFish Enterprise Server. Additionally, the GlassFish Portfolio includes a powerful UI- and CLI-based administration console with superb user experience for efficiency and reliability.

## Chapter 5

# Industry Scenarios

### The GlassFish Portfolio in Government

In the last ten years, there has been a change in how local, state and federal government organizations operate. Not only is there a drive to make information more readily accessible through Web-based applications that provide information to constituents, there is also an increased need for interoperability across applications that may span multiple departments or agencies. In recent years, there is also a heightened awareness regarding the need to ensure that systems are secure and that private information is protected. Under any circumstances, these changes would present significant obstacles, but the challenges are further compounded by continual budget reductions.

The Sun GlassFish Portfolio provides core features and functionality to address government requirements, such as improved collaboration with GlassFish Web Space Server, which includes support for simplified Web sites, widgets, social networking, portals, communities, wikis, blogs, and content/document management. These functions combined with the ability for end users to define their own Web spaces and how those spaces interact with their social network significantly enable government agencies to push information over the Internet, facilitate communications between and among agencies and constituents, conduct transactions, and expedite governance — all at a greatly reduced cost and level of complexity.

To address the increased need for interoperability across applications that may span multiple departments or agencies, the GlassFish Portfolio is based on open standards and also supports the best defacto standards in open source. Sun merges the two dynamics together with support for broad interoperability and heterogeneous environments, and also provides point-and-click interoperability with Microsoft .NET.

### The GlassFish Portfolio in Telecommunications

Communication service providers (CSPs) are rushing to transform their networks and systems to address fixed-mobile convergence and to deliver quad-play services. These new and existing communications services need to be delivered at lower costs and with higher agility than ever before. Survival depends on the ability to generate new revenue streams and increase average revenue per user (ARPU), and at the same time deliver improvements in operational efficiency.

The GlassFish Portfolio enables CSPs to deliver new services faster through improved developer productivity, a vibrant community, strong IDE support, and high-impact, low-complexity enterprise features. With flexible pricing models, the Portfolio enables CSPs to deliver new services at a fraction of the price of proprietary platforms. Add-on products such as GlassFish Communications Server enable service providers to extend the cost savings realized with the GlassFish Portfolio to create applications for consumer and business users or to add converged communications.

### **The GlassFish Portfolio in Healthcare**

The GlassFish Portfolio has advantages for the scale and mission-critical requirements of the healthcare industry. Specifically, GlassFish ESB addresses the interoperability challenges facing healthcare providers, such as the HL7 adapters and database adapters that provide the interchange of data across disparate systems. Additionally, the GlassFish Portfolio can be extended to include master data management (MDM); the data management solution can be customized for healthcare by creating the patient data model for healthcare providers, providing them with a single view of patient data.

## Chapter 6

# Conclusion

The GlassFish Portfolio is the leading open Web application platform.

The GlassFish Portfolio is the leading open Web application platform for enterprises seeking a more open, flexible, rich, and cost-effective way to develop and deploy their Web application infrastructures. It provides superior price-performance leadership and the most complete platform built on open-source software, allowing enterprises to develop highly scalable, extremely reliable, and affordable enterprise Web applications.

Sun's leadership in industry standards ensures that the GlassFish Portfolio meets current standards (Java EE 5), and Sun's leadership in open source ensures that the portfolio provides developers and administrators access to the latest innovative standards and capabilities. The GlassFish Portfolio offers tremendous value to enterprises looking to leverage the benefits of open source by pre-integrating the best components, ensuring mission critical capabilities, and bundling production support and service level agreements (SLAs).

With variable SLA's, the GlassFish Portfolio can support smaller, low-cost deployments as well as extensive mission-critical deployments — all at a simple, low, and predictable cost.

### Learn more

For more information about the Sun GlassFish Portfolio, visit [sun.com/glassfish](http://sun.com/glassfish).

