



Fulfilling the Lean Software Promise

Building and Running Spring Applications
on VMware vFabric tc Server™

A Business Perspective

WHITE PAPER

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1. Summary

Commercial Java Platform Enterprise Edition (JEE) application servers have grown so large, complex, and overloaded as to slow application development, complicate deployment, and impose expensive licensing burdens for bundled features IT doesn't need. Equally important, their heavy footprints make them ill-suited for today's virtualized data centers. In response, Java developers by the millions have discarded bloated JEE containers in favor of lean software platforms. The choice of a large majority of Java developers today, these lightweight frameworks and application servers harmonize development with IT operations—delivering streamlined application development, huge savings of time and expense, simplicity of deployment, built-in performance management, and the small footprint required for virtualized and cloud environments.

2. Bloated Application Servers & Tools: Where the Industry Has Been

Over the past ten years, JEE application servers have mushroomed into unwieldy, heavyweight leviathans driven by an ever more complex JEE specification and other contributing factors:

A perfect storm of feature creep

In the unending quest to grow market share and fight commoditization, software vendors have continually added subsystems and modules to their flagship products. Mergers and acquisitions have caused even greater feature overlay, through vendor attempts to weave acquired systems into their core platforms. These kinds of integrations are notoriously difficult to achieve; in general, they've added little but further layers of complexity.

Owing to this “everything for everyone” approach, today's JEE application servers are overloaded with special-purpose functions and subsystems that most IT organizations rarely if ever need.

3. The Drawbacks of Heavyweight JEE Platforms:

- Tedious development processes, especially for testing and debugging
- Inordinate complexity (EJBs in particular) without redeeming benefits
- Glacial development cycles with results that frequently fall short of business requirements
- Cumbersome transitions from development to production
- Needless weight and complexity owing to superfluous features
- Exorbitant licensing costs
- Large footprints that complicate deployment in today's virtualized datacenters and the cloud

Voting with their feet

Starting in about 2005, leading Java developers began searching for an alternative to the needless cost and complexity of traditional JEE platforms. They found it in lean software frameworks and servers emerging from open source initiatives. As these lightweight platforms began proving their worth, they drew more and more supporters. In a comparatively short time, the trickle of migrations became a flow and finally a flood.

Today, lean software frameworks like Spring, together with the Tomcat application server and its commercially supported vFabric tc Server version, are the build/run platforms of choice for millions of Java developers.

This dramatic change is noteworthy for not having been dictated or driven “top-down” by a single powerful vendor. Instead, it arose and flourished through a continuous surge of support from developer and business-side communities across numerous enterprises.

4. Lean Software: Where the Industry Has Arrived

Lean software is quite simply the antidote for bloated, convoluted platforms. Forrester defines it as:

An approach to building, delivering, and running software that values fit-to-purpose, simplicity, and time to results above all. Lean approaches minimize complexity, startup time, and resource usage and avoid features and methods not essential to fulfilling the application's business purpose. Developers can easily combine lean software components with others when large systems require more features.¹

5. The Benefits of Lean:

- Dramatic cost savings over conventional JEE servers
- Easier, more flexible development processes
- Rapid and simplified production tuning and debugging
- Seamless application deployment in half the time
- Small footprint for easy, streamlined deployment in virtualized datacenters and cloud environments

These advantages make it clear why developers and IT operations professionals alike have embraced lean, lightweight Java platforms.

6. Adoption Proof

The Spring Framework. Today's productivity engine for enterprise Java development

The open source Spring Framework was introduced in 2002 to boost Java developer productivity during design, coding, testing, and support. Having demonstrated dramatic advantages during every phase of the Java application lifecycle, Spring has become the de facto standard programming model for enterprise Java applications.

Spring is currently in use by over 3 million developers and 83 percent of large IT organizations. According to Evans Data, Spring now accounts for more than 50 percent of all applications running on IBM WebSphere, Oracle WebLogic, and Apache Tomcat. Moreover, Spring tallies the highest growth among development options tracked by Forrester. Notably, both J2EE and .NET show no significant current growth.²

Also noteworthy is the fact that key Spring architectural concepts have been incorporated into the Java specification, replacing many of the time-consuming and overly complex constructs of EJB2.

MASSIVE SPRING ADOPTION**Downloads of Spring have surpassed 5 million****Spring is used by:**

- More than 66% of all Java developers
- 9 of the top 10 banks
- 50% of the Fortune 500
- 47% of all IT organizations
- 83% of IT organizations with 500 or more developers

73% of all IT organizations plan to use Spring within 2 years, for:

- Higher developer productivity (82%)
- Faster project completion and application quality (60%)

Productivity gains reported from replacing EJBs with Spring:

- 25%-plus (for 61% of Spring users)
- 50%-plus (for 35% of Spring users)

Tomcat. The de-facto choice of Java developers

Tomcat is far and away the most popular Java web application server, utilized in over 64 percent of all corporate enterprises. Developers use it on their desktops to write Spring applications, thanks to its simplicity, performance, and productivity. Tomcat takes minutes to install vs. hours for commercial JEE servers.

A process called “bouncing the server” provides another striking efficiency contrast: performed dozens of times a day during the development process, the procedure takes 5-7 seconds with Tomcat vs. 5-10 minutes for JEE servers. This Tomcat advantage alone saves developers 3 to 5 hours per day.

“In years of conducting research, it is rare that a single enterprise-class application technology has near fifty percent penetration, and then soars to near three-quarters adoption in such a short time. The research clearly demonstrates significant adoption of Spring, based on clear, concise and measurable benefits.”

—John Andrews, President and CEO, Evans Data Corp.

7. An Obstacle to Universal Adoption

Unsupported, standard Tomcat has operational limitations

Despite Tomcat’s advantages over JEE in terms of productivity, cost, and footprint, many operations professionals balk at deploying Tomcat at runtime because it lacks the administrative, management, and monitoring capabilities that JEE servers provide. This creates a paradoxical dilemma: while developers enjoy the speed and simplicity of Spring and Tomcat, IT operations gets saddled with the cost, weight, complexity, and virtualization mismatch of deploying finished applications on a traditional JEE server.

8. vFabric tc Server: The Best Place to Build and Run Spring Applications

SpringSource, the company behind commercially-supported Spring, has resolved the problem by introducing vFabric tc Server, a fully supported, 100 percent compatible drop-in replacement for Tomcat—enhanced with application and server management plus fine-grained monitoring.

vFabric tc Server's administrative capabilities are on par with those of the best JEE application servers. Moreover, they are delivered in an efficient, lightweight, and modular form, at a fraction of JEE cost. With the arrival of vFabric tc Server, IT organizations can now build and run Java applications on one lightweight technology, eliminating the complexity and expense of having to switch to a different platform for production. This is equally true for existing Tomcat-built custom and commercial applications, which can now be seamlessly redeployed on vFabric tc Server.

In effect, vFabric tc Server removes the one remaining barrier to universal adoption of lean software.

The Lean, Lightweight Server You Want...

Used in combination with the Spring Framework, vFabric tc Server provides both development organizations and IT operations with a number of important advantages. Chief among them:

- Develop and deploy up to 50 percent faster at a fraction of the cost. vFabric tc Server's lean, cost-effective runtime infrastructure speeds and streamlines both application development and deployment: IT gets all the Java services it needs without the weight of the 70 percent to 90 percent of JEE features it doesn't.
- Tune and debug in a fraction of the time. Built-in Spring instrumentation simplifies and accelerates development with a dashboard view of real-time Spring application performance metrics. Right from their desktops and without altering any code, developers can quickly detect, analyze, and diagnose application performance issues inside the actual production environment.
- Seamless transition from development to production. By standardizing on a common technology across development, test, and production, users can eliminate the complexity and cost of having to change configurations between environments.
- A platform optimized for virtual and cloud deployment. vFabric tc Server's minimal 10 MB footprint makes it ideal for either physical or virtual hosts. Template-driven server instance creation speeds and simplifies deployment.

... Together with the Management and Support You Need

Server management. A single vFabric tc Server Administrative Console provides insight into all management parameters—including application provisioning, start, stop, restart, and much more—for one or many related server instances.

Spring-specific application management. In contrast with JEE management consoles, vFabric tc Server provides management capabilities specific to Spring-based applications. This elevates vFabric tc Server to a class by itself in terms of administrative value for Spring deployments.

Extended monitoring. Another advantage over JEE application servers is that vFabric tc Server's Administrative Console can be extended to manage other components of the server infrastructure, and other IT infrastructures as well—such as OS, DBMS, messaging, mail, network devices, application platforms, and more—to provide the fullest insight into the overall application environment.

Mission-critical support. SpringSource's world-class service and support team is led by the Java and Web innovators behind Spring, Tomcat, and other open source communities. Our vFabric tc Server subscriptions provide access to all patches, updates, and security fixes. Plan options span three service levels ranging from developer support to business-critical 24x7 production support.

9. Conclusion: Join the Evolution to Lean Software

Lean software platforms are now widely adopted and their considerable benefits have been demonstrated beyond question. The consensus among leading IT analysts, operations executives, and developers alike is that lean development and deployment should figure prominently in every organization's IT strategy. The growing pervasiveness of virtual and cloud environments makes the need even more urgent.

With the arrival of vFabric tc Server, the full promise of lean software can now be realized: both development and operations can enjoy and harmonize the advantages of a single lightweight, efficient platform. As more and more enterprises deploy vFabric tc Server, they will achieve dramatic reductions in cost, complexity, and time to value vs. traditional JEE application servers such as IBM WebSphere, Oracle Weblogic, and JBoss.

1 "Lean Software Is Agile, Fit-To-Purpose, & Efficient," Forrester report, December 2008

2 Ibid.