



Cost Savings with Tcat Server

A quantitative TCO comparison study

Abstract: Many web applications currently do not require a full JEE application server and will run fine on a light-weight, agile application server such as Tcat Server, an enterprise Tomcat Server. Using Tcat Server is a wise choice not only for reducing the footprint, complexity; it also helps organizations to dramatically simplify their capital and operational expenses for web application infrastructure. Organizations that run Apache Tomcat need enterprise class support and can purchase it at a substantially lower cost than taking on an expense of a JEE app server. In this paper, we will illustrate the sample savings that can be achieved by using MuleSoft Tcat Server subscription service that is backed by leading Tomcat experts on staff with MuleSoft.

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1 Overview

The past few years have seen a clear and accelerating shift away from the Java EE (JEE) stack. JEE application servers have become notorious for being complex, large, and expensive. Part of the blame lies with the JEE standard itself, which has grown over the years and has become an unmanageable standard. Applications that relied on EJBs in the initial days have paid a heavy price in terms of scalability and maintenance costs. Many developers have abandoned these complex and often unnecessary technologies prescribed by a JEE stack. Instead, developers have stayed with servlets, JSPs, and lightweight frameworks.

With this freedom from JEE, IT organizations now have the option of choosing much lighter-weight and lower-cost alternatives to the traditional JEE application servers. For example, most development organizations have stopped using JEE application servers during development and are using Apache Tomcat instead. This provides them with faster restarts, easier debugging, and proven technology. However, as applications move into production, operations organizations continue to rely on the proprietary and heavyweight JEE offerings, due to their requirements around server and configuration management, performance monitoring and diagnostics, and application provisioning and automation.

To reduce friction between development and IT operations, many organizations are looking at standardizing on Tomcat as their application server. New Tomcat-based offerings, such as MuleSoft Tcat Server, allow IT organizations to accomplish this, giving Tomcat the enterprise functionality that they need, but without the unnecessary complexity and bloat of the legacy JEE offerings.

By moving to an enterprise-class Tomcat offering, IT teams can realize dramatic savings in total cost of ownership (TCO) over JEE alternatives. In this paper, we will look at the cost advantage of using Tomcat instead of traditional JEE application servers.

First, we will look at the hard costs associated with licensing and support agreements. Second, we will discuss the hardware and operational expenses associated with using that application server. Third, we will consider the softer costs in terms of developer and operational personnel productivity.

2 Software License and Maintenance Costs

2.1 Baseline License Costs

Below are some baselines for licensing and maintenance costs of each application server, based on the most recent and publicly available list prices.

Oracle WebLogic

Oracle WebLogic is a proprietary JEE application server. The WebLogic license fee starts at \$10,000 per CPU. The annual maintenance contract is an additional \$2,200 per CPU per year.

IBM WebSphere

IBM WebSphere is a proprietary JEE application server. IBM's pricing model is complex, making it harder to calculate a list price. The pricing is based on Processor Value Units (PVUs), which vary based on the type of the hardware used to deploy the software. For example, a quad-core (Intel) CPU translates to approximately 70 PVUs. At \$46.25 per PVU, license fees for WebSphere would be \$12,950 per CPU. Maintenance, at 20% of the list price, would work out to be an additional \$2590 per CPU.

RedHat JBoss Application Server

JBoss is an open source JEE application server. There is no licensing fee, but it requires an annual subscription to get support for the application server. The JBoss application server subscription price is \$6750 for 1-4 CPUs.

Sun GlassFish

GlassFish is an open source JEE application server. There is no licensing fee, but it requires an annual subscription to get support for the application server. The subscription price starts at \$4500 for 1-4 CPUs.

MuleSoft Tcat Server

MuleSoft Tcat Server is an enterprise Apache Tomcat, based on the official binary build from Apache Software Foundation. Tcat Server is free to use in development and pre-production, and production subscriptions start at \$595 per CPU.

2.2 Calculating Cost Savings

Based on the license and support costs articulated above, we built a model to estimate and compare the multi-year license and maintenance costs associated with each application server. We built two scenarios – a small (16 CPU) application environment over a three-year period, as well as a large (48 CPU) environment over a ten-year period.

In each scenario, Tcat Server shows a dramatic savings over the alternatives, ranging from 47% to over 90%, and up to \$1.7M savings over 10 years, or \$170k per year on average.

Scenario 1: Small Environment, Short Term

Assumptions: 16 CPUs over three years

Three-year Tcat Server Subscription Costs: \$28,560

Application Server	Total Cost	% savings with Tcat Server
GlassFish	\$54,000	47.11 %
JBoss	\$81,000	64.74 %
WebLogic	\$265,600	89.25%
WebSphere	\$290,080	90.15%

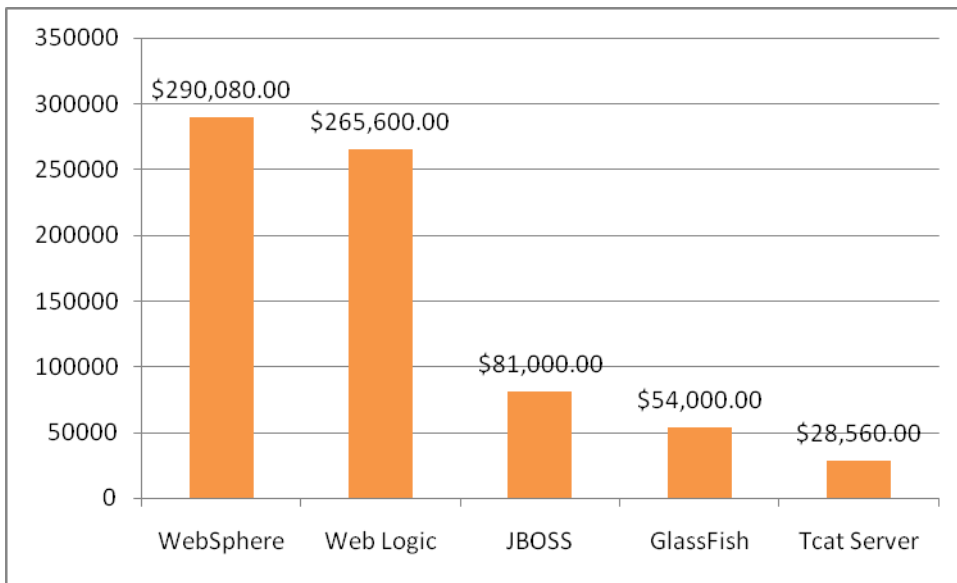


Figure 1 - Small environment, short term: 16 CPUs for next three years

Scenario 2: Large Environment, Long Term

Assumptions: 48 CPUs over 10 years

10-year Tcat Server Subscription Cost: \$285,600

Application Server	Total Cost	% savings with Tcat Server
GlassFish	\$540,000	47.11 %
JBoss	\$810,000	64.74 %
WebLogic	\$1,536,000	81.41 %
WebSphere	\$1,740,480	83.59 %

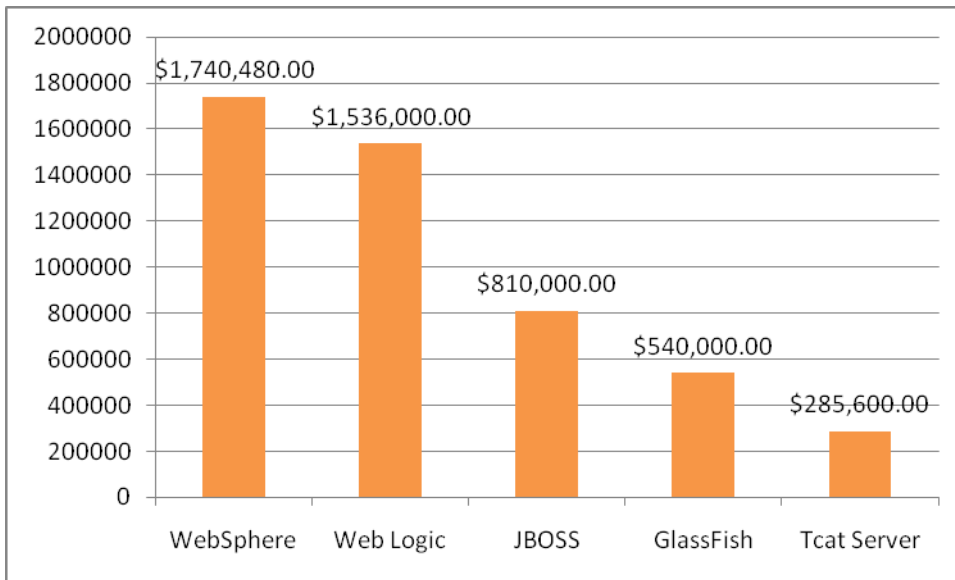


Figure 2 - Large environment: 48 CPUs for a 10-year period

3 Savings from Hardware and Operating Costs

JEE app servers today have grown in complexity and are often a massive, monolithic piece of software that requires enormous amounts of hardware to run. Increased hardware requirements put a strain on data center space, power, and cooling. Data center managers report energy consumption along with limited space available as one of the top issues that prevent them from meeting increased business need. In a recent [IDC report](#), they report that the energy costs in the data center are 30% to 40% of an organization's operational costs.

Let's take the comparable costs between WebLogic and Tomcat as an example (source: Enterprise Software Trends).

3.1 WebLogic

Server Cost to run one instance of WebLogic: \$2500 and up

Utilities (Power and Cooling): \$1,900 and up

Total Cost for one WebLogic instance: \$4400

3.2 Tomcat

Server Cost to run one instance of Tomcat: \$900

Utilities (Power and Cooling): \$625

Total Cost for one Tomcat instance: \$1,525

For each instance, the savings are: \$2,875. Therefore, if you have 100 instances, your **operating cost savings with Tomcat are \$287,500.**

Additionally, softer operational costs, such as time spent waiting for a JEE app server to start and time it takes to diagnose problems, add up quickly to make JEE application servers an unattractive option to enterprises today.

4 Savings from Developer Time

During development, developers often repeatedly start and stop application servers, which consumes valuable developer time. In the recent survey [Survey Results: The Java EE Container Redeploy & Restart Report – Measuring Turnaround Time](#) by ZERO TURNAROUND, the following restart times (minutes per hour) were observed:

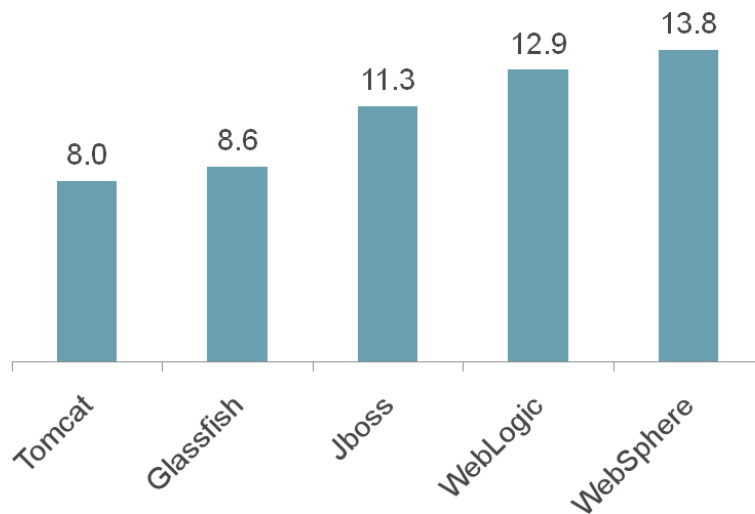


Figure 3 - Minutes spent per hour on app server restarts

On average, this translates to a savings of 5.8 minutes per hour for Tomcat when compared to WebSphere. How much does that add up to? Assuming a 40-hour work week for 48 weeks a year (we're not counting the two weeks of vacation and two weeks of holidays when developers are not working), we are looking at an additional 232 minutes per work week spent just on waiting for an app server to restart. That translates to 11,136 minutes or 24 work days out of the year. Taking an average fully loaded expense of \$200k per full-time developer who is paid for 2080 hours a year (40 hours per week for the full 52 weeks), that is approximately \$17,845 per developer. Therefore, on a team of 10 developers using WebSphere, your developers are spending \$178,845 more per year just waiting for the application server to restart than if they were using Tomcat. Using the same assumptions, you would waste \$150,762 per year using WebLogic instead of Tomcat.

While this is just an example, and there are other factors involved in improving developer productivity, it is clear that using an application server such as Tomcat can help dramatically improve developer productivity and free them for higher-value activities.

5 Putting it all Together

As we have demonstrated in this whitepaper, using a JEE application server for web applications that do not require a full JEE stack results in excessive spend that organizations need to avoid. By using a lightweight and lower-cost application server such as MuleSoft Tcat Server, which is simply 100% Apache Tomcat with the additional enterprise support and features needed for production deployment, you can achieve dramatic cost savings.

By taking even our modest 16-CPU example and combining the support/subscription, operational, and developer productivity savings from this paper, a typical group using Oracle WebLogic could save nearly \$570,000 (470,286 in productivity savings on 10 development machines + 77,040 in maintenance costs on four production servers each with four CPUs + 34,500 in server costs) **over 3 years**, by migrating to Tcat Server.

If you are currently using a commercial JEE application server, please see the white paper [Migrating Applications from Oracle WebLogic to Tomcat](#) for information on how to migrate to Tomcat.

For information on Tcat Server, please see [Tcat Server – Enterprise Tomcat Made Simple](#).

About MuleSoft

MuleSoft is the Web Middleware Company, providing enterprise-class software, support and services for the world's most popular open source application infrastructure products, Mule ESB and Apache Tomcat. With Mule ESB, Tcat Server and iBeans, MuleSoft brings an ideal combination of simplicity and power to today's web applications. Its products boast more than 1.5 million downloads and over 2,000 production deployments by leading organizations such as Walmart.com, Nestlé, Honeywell and DHL, as well as 5 of the world's top 10 banks. MuleSoft is headquartered in San Francisco with offices worldwide.

For more information on Tcat Server: <http://www.mulesoft.com/tcat> or email info@mulesoft.com

To download Tcat Server: <http://www.mulesoft.com/download-tcat-server-enterprise-tomcat>

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