



Customer Case Study: Wazap!
Japan's largest online gaming portal
http://jp.wazap.com

"We made the transition from Tomcat 4.0.x to Resin 3.0.4 in January 2004. Since then, traffic has constantly kept growing to over 120 million page views per month."

- Markus Ken Baron
Director for Global IT Relations and Research, Wazap AG
Co-Founder of Wazap!

**Summary**

Wazap! is Japan's largest online gaming portal and the only vertical search engine for the gaming market in Europe. The site is also experiencing rapid growth in China and Europe.

Wazap! Japan has 120,000 members and is the most popular gaming networking service in Japan. In August 2006, page views reached 120 million with an additional 55 million generated through access with mobile phones. Unique visitors have grown to 550,000 daily. The amount of user-generated content hosted by Wazap!, like questions and answers for more than 15,000 games, has climbed to over 1 million.

Caucho Technology provides Wazap! with a high performance and cost-effective application server that is scalable for their rapid growth requirements. The engineers of Wazap! have collaborated with Caucho to take advantage of the features of Resin Professional® including open source, early adoption of Java specifications, JNI performance enhancements and JDBC.

## Background

Development of Wazap! began in early 2001. It started as a project to build a central platform for gamers in Japan where they could gather, exchange information and retrieve the latest gaming related news. Since then, the project evolved and now Wazap! is present in China, Japan and Europe with more countries to follow.

Wazap! went online in Japan in late 2001. It was deployed on Tomcat 3 with Apache on one standalone box. Tomcat was free, the de facto standard of application servers and had a big community supporting it. This fact played an important role on the decision to use Tomcat because Wazap! did not have much experience with Java application servers and felt the need to have a large developer community to whom it could send questions.

Wazap! was not concerned about scalability in 2001 and deployed their applications using Tomcat 3 with the expectation that Tomcat 4 would address scalability and performance issues.

## Evaluation Process

Wazap! grew substantially in 2003 and reached about one million page views. During this time period, Wazap! migrated to Tomcat 4 for Servlet API 2.3 support and because of the instability of Tomcat 3. Furthermore, the multibyte language support of Tomcat 3 was far from optimal and Wazap! had to work with String.getBytes() too often which was unacceptable as traffic increased.

With increased load Tomcat 4 started to crash more and more often. It actually got so bad that Tomcat stayed up no more than 12-24 hours at a time.

Wazap! tweaked the garbage collection parameters, tried a dozen of 3rd party VM's and purchased new hardware. None of these efforts assisted in avoiding crashes.

Additionally, there was a performance problem – the web site became critically slow. Wazap! discovered that the cause of the latency was database connection pooling. The connections would get pooled and reused, but apparently in such an inefficient way that the pool filled up quickly.

Wazap! considered upgrading from Tomcat 4.0.x to 4.1.x. But 4.1.x was still using the Jakarta DBCP implementation of connection pooling, which was the actual bottleneck in 4.0.x, so Wazap! wasn't too optimistic about the newer version. After testing Tomcat 4.1.x, the pooling performance did not improve at all, so upgrading would not solve the problems. Tomcat 5.0.x was in beta, so switching to it was not an option.

At this point, Wazap! began to evaluate several products, read comparisons and benchmarks and very soon focused on one application server – Resin. Wazap! engineers had read in several reports that Resin 2.x had excellent performance under heavy load and was rock solid.

Markus Ken Baron, Director for Global IT Relations and Research of Wazap AG, Co-Founder of Wazap!, said "Evaluation started and the first thing we loved was Resin's ease of configuration. It was much clearer than Tomcat and reduced the size of our configuration files by about 30%." Baron added, "When checking if Resin solved one of the major problems – connection pooling – we became excited! The connection pool of Tomcat always used around 120-150 connections while Resin was using only 20 connections and functioning perfectly."

With its huge success in Japan and constant growth rates in site traffic, developers at Wazap! paid careful attention to the scalability of the application server during evaluation. Resin offered the ability to cluster out of the box with several options for distributing sessions (database-backed and cluster-backed). This could be accomplished by either utilizing Resin as the load balancer, or by configuring Apache as the front end connected to the mod_caucho plugin. With these options, the requirement of scalability was also fulfilled.

Caucho Technology's reputation for excellent in engineering design and early adoption of the latest Java specifications were significant reasons for Wazap!'s selection of Resin as their application server of choice.

"Wazap! migrated from Apache Tomcat to Resin since Tomcat could not handle the load of our site anymore. We chose Resin because internal testing had shown that not only the overall performance was excellent, but also small yet vital parts of Resin like database connection pooling and fast JSTL boosted the throughput of our site."

"Resin adheres to Java standards and supports multibyte languages like Japanese without a glitch which was not the case for a lot of other Java products. The high performance of Resin helps really keeping the number of servers low."

- Manri Offermann
Development Director, Eastbeam Co., Ltd.
Co-Founder of Wazap!

**Open Source**

Wazap! takes full advantage of Caucho's open source licensing model. The earlier versions of Resin (before 3.0.14) had some bugs which affected applications related to XSLT. For smaller bugs, instead of waiting for them to get fixed, Wazap! developers were able to access Resin's code, fix the bugs and send a report to the Caucho support team while using the current version patched with modified source. Caucho then implemented the bug fixes into their next release.

Several questions arose for Wazap! engineers while working on complex session objects ("complex" in the way that they were referring to Spring-managed singletons) which had to be distributable, including "When does Resin with configuration x actually persist / load objects"? The answer could be looked up in Resin's source code. A quick scan through the code answered Wazap!'s questions and their developers were able to build a sophisticated framework for distributing complex objects in a short amount of time. The source lookup speeded up development and avoided trial-and-error sessions.

This pattern applied to a lot of cases where Wazap! developers could view the source in order to get their questions answered. Caucho's open source model allowed this to take place in an effective and efficient way.

## JDBC

Markus Ken Baron said, “One of the nicest hidden treasures of Resin is database connection pooling. It is clean, efficient and invisible. If the database server goes down, Resin automatically refreshes the pool by trying to reconnect. And the pool uses internally a least-recently-used policy to purge the connections, so no unnecessary connections will be kept open.”

## Configuration Files

Wazap! takes advantage of the way Resin uses configuration files. Since a developer is able to use expression language and /or define their own variables in the config files, and build ‘if-else’ blocks or even include other configuration files, flexibility is high and actual configuration code can be kept to a minimum. This really shows its value once more than one server has to be configured – in a cluster you can have one configuration file which is shared by all servers of the cluster and load specific server dependent settings, should they be necessary, via an include.

## Clustering

Wazap! is clustered with several Resin servers. The cluster was set up in order to spread the incoming load onto several servers and also to provide fault tolerance. On Wazap! Japan, a user logs into the community; each such user holds their own session, which resides on the server on which it was generated. Should one server crash, or be taken down for maintenance, the sessions residing on that machine must be kept available on the remaining machines. Resin does a very good job here, with distributed sessions, while utilizing a minimum number of server resources in the process. The sessions are automatically replicated on just the right number of other servers in the cluster and act anytime as a backup. Wazap! started to use this feature at the end of 2005. With two options for session distribution - database backed and cluster backed - Wazap! finally decided to use the cluster backed version. This option removes a single point of failure (the database) and minimizes the systems involved in the process.

## JSTL

Custom implementation of JSTL (fast JSTL) is also a very nice feature. Due to the fact that it is implemented in Resin, the JSP generation can be optimized to take advantage of JSTL and return more efficient JSPs.

## Licensing

Markus Ken Baron observed, “Resin licensing is friendly for startups, not requiring a large budget. Resin Open Source is already a complete and high performance product. Wazap! chose to use Resin Professional for benefits including JNI enhancements and cluster support.”

Baron added, “Another factor that positively influenced us from the start was Caucho Technology’s licensing scheme. Cost was not a factor given the simple $500 per CPU licensing model of Resin, especially compared to other application servers that cost substantially more.”

"The open source model of Resin allows one to look at the code should it be necessary. The professional team behind Resin offers excellent support, actually listening to the customer's needs. The cost-performance ratio is outstanding once you consider what kind of high quality J2EE product you get compared to other solutions. And this comes with high performance and stability. We strongly feel that Resin is not just a business product, but more of a piece of art built by an IT company taking pride in its work."

- Markus Ken Baron
Director for Global IT Relations and Research, Wazap AG
Co-Founder of Wazap!

**Plans for the Future**

Markus Ken Baron said, “We are watching the development of Azul Compute Appliances. We met the people from Azul Japan at the JavaOne conference in Tokyo. In our conversation, we asked them if they could tell us about Resin support of Azul. For us unexpectedly, they showed us the case study of Pegasus Solutions (http://www.azulsystems.com/press/081705_pegasus.htm) which was using Resin and successfully transferred their application to the Azul Platform, deployed on Resin. It was encouraging to get such a clear answer.”

Baron added, “We are very satisfied with the Caucho sales and technical support team. Caucho Sales has responded quickly and friendly on our licensing needs. The same can be said regarding technical support which consists of competent engineers who know the inner workings and actual source code of Resin. We are impressed that Caucho’s co-founder and Chief Architect, Scott Ferguson, participates on the mailing lists and responds to our questions. Building on our excellent experiences, Wazap! will continue to deploy their global services using Resin.”

**About Caucho Technology, Inc.**

Caucho Technology, Inc. (www.caucho.com) was founded in 1998 and is based in La Jolla, California. Caucho produces Resin, a globally recognized leader in open source Java-PHP server technology that delivers fast and stable performance. Resin is the application server of choice for over 6,000 organizations including Fortune 500 companies, innovative startups, government and educational institutions. Caucho Technology is a Sun Microsystems Java licensee.

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**About Wazap!**

Wazap! Japan is Japan's biggest online gaming community portal and has been powering the Japanese gaming community since 2001. Wazap! Japan is hosted by Eastbeam Co., Ltd. located in Tokyo. Eastbeam Co., Ltd. is a subsidiary of Berlin based Wazap AG, which is further represented in China and the USA. Globally, Wazap! offers Europe's and China's first and only vertical search engine for the gaming market and is the leader in gaming-related content retrieval.
For more information, please visit http://www.eastbeam.co.jp

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