

Introducing JBoss Web Server

Enterprise Web Server
Powered by Apache Tomcat

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Agenda

- Feature Overview
- Architecture Overview
- Performance Benchmarks
- Next Steps

JBoss Web Server 1.0 Enterprise Web Server

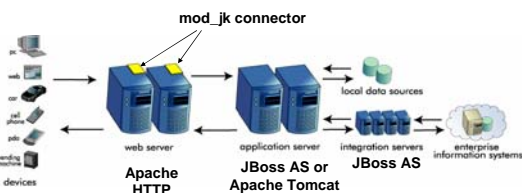
- Apache Tomcat meets Apache Portable Runtime
 - ✓ Integrates Apache Portable Runtime and Tomcat Native Layer
 - ✓ Handles high client load of 10,000+ concurrent clients
 - ✓ Provides performance equal/better than Apache HTTP Server
- Supports HTTP, HTTPS, AJP protocols
- OpenSSL for Secure Sockets Layer support
- On-the-fly URL rewriting
 - ✓ Flexible URL manipulation engine supports unlimited rules and rule conditions
- Supports both in- and out-of-process execution of CGI and PHP scripts and ASP.NET applications
 - ✓ Advanced application load balancer offers high availability and application segmentation out-of-process execution

Benefits

- Enhances the performance and scalability of JBoss AS and Apache Tomcat deployments
- Optimizes architectures that don't require full featured Web Server
 - ✓ Reduce component count and connector headaches
 - ✓ Lowers administration cost
 - ✓ Improves performance and scalability
- Supports existing applications
 - ✓ ASP.NET
 - ✓ PHP
 - ✓ CGI

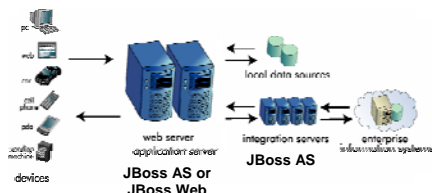
Typical Architecture

- Requests for dynamic information or interaction with back-end data sources go through web server to app server



Architecture with JBoss Web

- Requests for dynamic information or interaction with back-end data sources go directly to JBoss AS or JBoss Web



Overview

- High performance Web Server
- Used as Primary server
- Uses Apache Tomcat
 - ✓ Mature and stable
 - ✓ Reference Implementation
 - Servlets
 - JSP
- Handle high client load
 - ✓ +10,000 concurrent clients

Overview

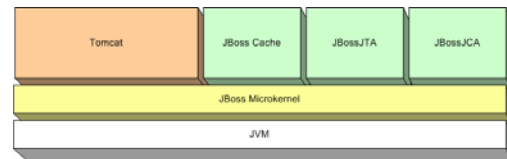
- Better integration with OS
 - ✓ Extensions to the JVM
- Effectively handle static content
 - ✓ Uses modern OS features for zero-copy
 - ✓ Decreases CPU load
- Uses OpenSSL for SSL support
 - ✓ Mature and stable
 - ✓ Hardware acceleration
 - Can give up to ten fold performance increase
- Can be run as Windows Service
 - ✓ **run.bat** is used for services as well.

Overview

- Embraces existing applications
 - ✓ CGI, PHP, ASP.NET
 - ✓ Removes the need for Native Web Server
 - ✓ Reduces component count
 - ✓ Lowers the administration cost

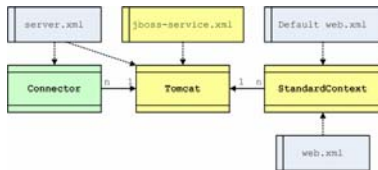
Architecture: Leverage Microkernel

- On top of JBoss Microkernel
- Simple transition to JBossAS
 - ✓ Application technology growth



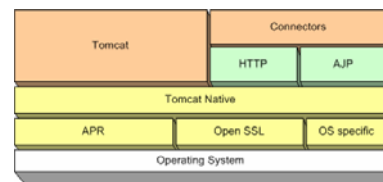
Architecture: Consistent Configuration

- Configuration layout
 - ✓ Follows JBoss AS configuration
 - ✓ No need for separate administration



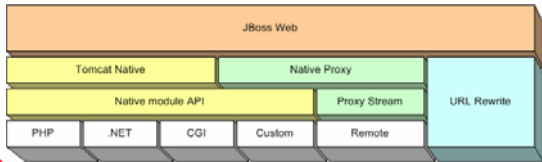
Architecture: Go Native!

- Thin JNI wrappers
- Zero GC, No object creation, Low memory requirements



Architecture: Overview

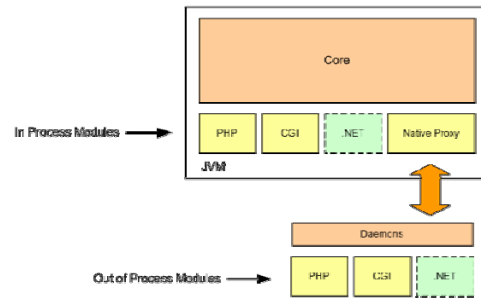
- URL Rewrite
 - ✓ Regular expression based
- Native Proxy
- Pluggable Application Modules



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Process Execution Separation

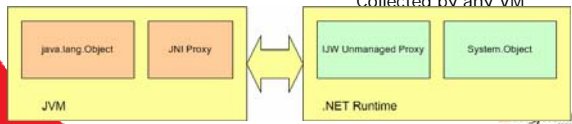


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JBoss.NET.Proxy: VM Interoperability

- Integrate Java and .NET
 - ✓ Java 1.4 or Java5
 - ✓ Microsoft .NET 2.0
- Target platforms
 - ✓ Java 1.4 or Java5
 - ✓ Microsoft .NET 2.0
- Separate Virtual machines
 - ✓ Java bytecode is running in JVM
 - ✓ MSIL is running in .NET Runtime
- Run both VM's in the same process
 - ✓ Initiating end loads the counterpart VM
 - ✓ JVM loads .NET Runtime
 - ✓ .NET loads JVM
- Parallel Garbage Collection
 - ✓ Object can be Garbage Collected by any VM



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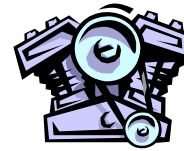


Enough Tire Kicking!

- How Does It Perform?!



- Can We Look Under The Hood?

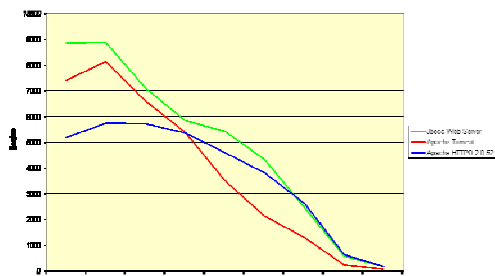


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Performance Analysis

- Concurrency level 50



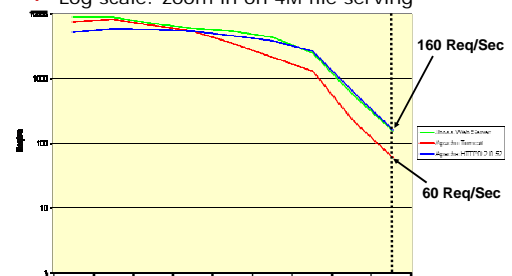
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Performance Analysis, Cont.

- Concurrency level 50

- Log scale: zoom in on 4M file serving

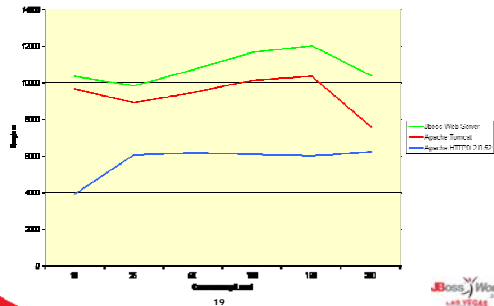


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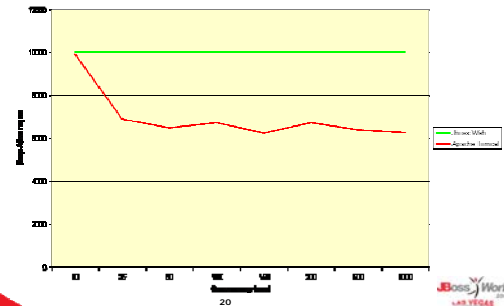
Performance Analysis, Cont.

- File size 1k



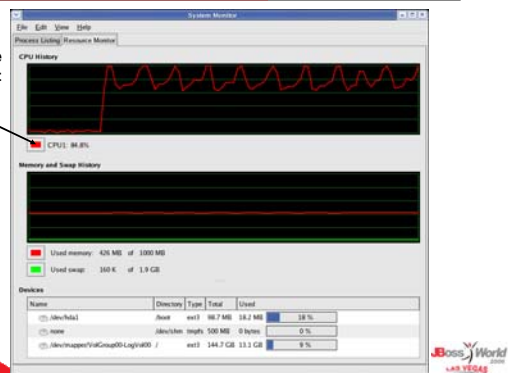
Performance Analysis, Cont.

- File size 1k/maxThreads="20"



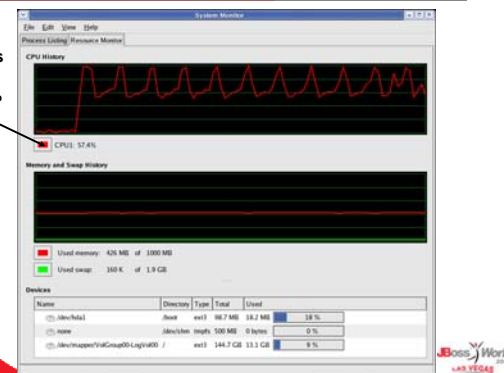
CPU Usage: Apache Tomcat

Apache Tomcat 84.8%



CPU Usage: JBoss Web

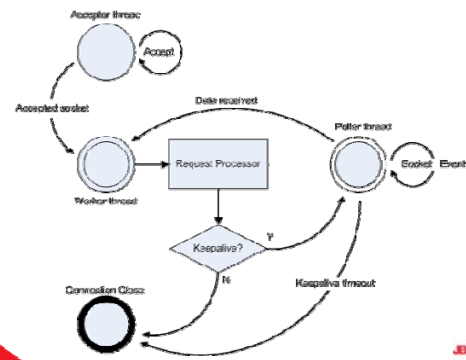
JBoss Web 57.4%



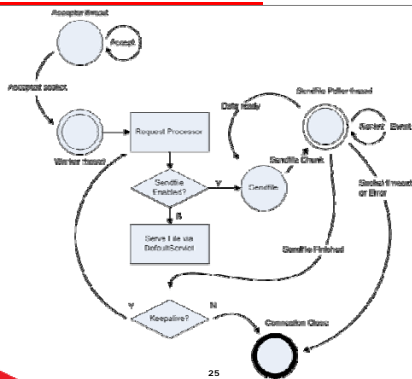
New Technology Being Used

- Apache Portable Runtime (APR)
 - ✓ OS Abstraction layer
 - ✓ Ported on more platforms than Java
 - ✓ Core of the Apache HTTPD 2.x
- Hybrid connection model
 - ✓ Thread per request
 - ✓ Effectively handle KeepAlive
 - ✓ Sendfile support

Hybrid Connection Model



Sendfile Support



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To NIO or not to NIO?

- Nonblocking IO
 - ✓ Great in theory
 - ✓ Fails for Web applications
- Problems with NIO
 - ✓ Request is larger then network packet
 - Multiple events for reading single request
 - Excessive Thread context switching
 - ✓ JVM Technology
 - Select based
 - Lacks epoll, kqueue

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Summary of Project Goals

- Web Server features for Apache Tomcat & JBoss AS
- Handle high client load (10K connections)
- Exceed native web server performance
- Simplify deployment architecture
- Remove need for mod_jk connector
- Support URL rewriting and proxy
- Support popular application environments
 - ✓ ASP.NET, PHP, CGI
- Use OpenSSL for SSL support

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What, Where, When?

- Product page on JBoss.com
 - ✓ <http://www.jboss.com/products/jbossweb>
 - Click on Getting Started
- Project page on JBoss.org
 - ✓ <http://labs.jboss.com/jbossweb>
 - Download, Documentation
 - ✓ JBoss Web Forum
 - <http://jboss.com/index.html?module=bb&op=viewforum&f=229>
- Roadmap
 - ✓ Final Release – Now
 - ✓ .NET Module – August 2006

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Q & A



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