

JBoss ENTERPRISE APPLICATION PLATFORM MIGRATION GUIDELINES

This document is intended to provide insight into the considerations and processes required to move an enterprise application from a JavaEE-based application server, such as BEA WebLogic, Oracle Application Server, or IBM WebSphere, to the JBoss Enterprise Application Platform.



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EXECUTIVE SUMMARY

IT organizations are constantly faced with the challenge to produce high-quality solutions with a lower total cost of ownership. With the growing recognition that open source software provides quality, stable solutions, migrations of existing enterprise applications to products such as JBoss Enterprise Application Platform have become increasingly popular.

JBoss Enterprise Application Platform has grown from being merely an application server to providing a holistic solution that includes solutions for such business challenges as business process management, enterprise application integration and service-oriented architectures, enterprise portals, and data services solutions.

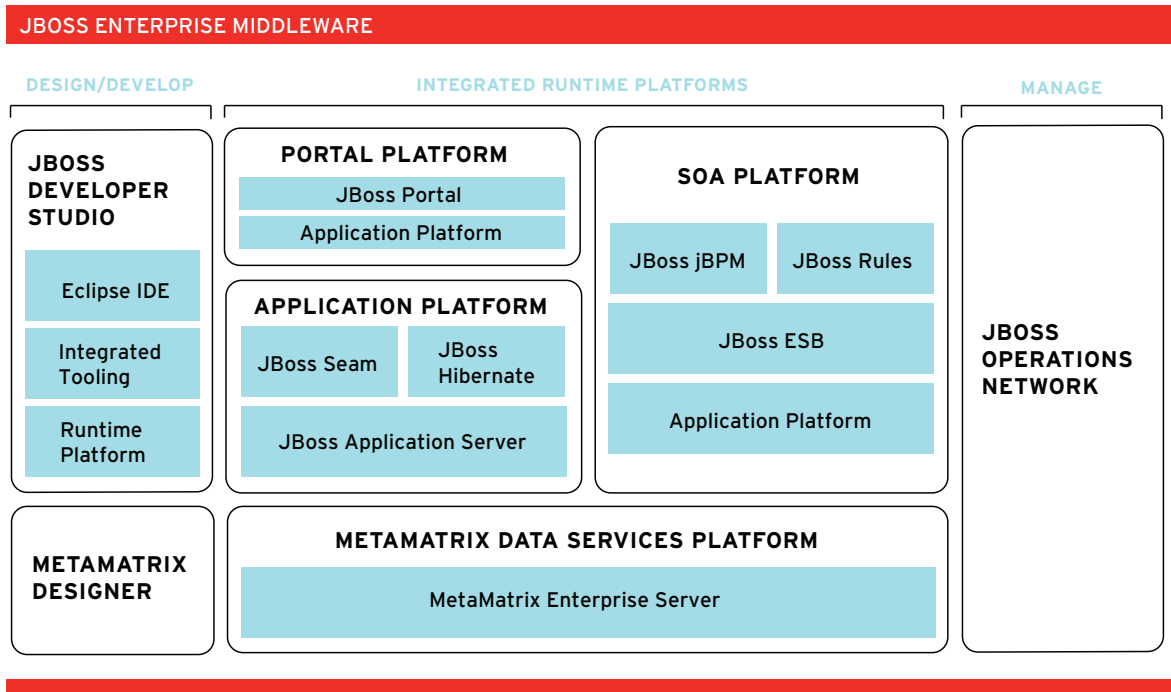
This document is intended to provide insight into the considerations and process required to move an enterprise application from a JavaEE-based application server, such as BEA WebLogic, Oracle Application Server or IBM WebSphere, to the JBoss Enterprise Application Platform. Planning for such a migration is just as important as the implementation itself. The following sections detail the planning steps that should be taken when preparing for a migration to JBoss and the common implementation and training processes that should be followed.



WHY JBOSS ENTERPRISE MIDDLEWARE?

JBoss Enterprise Middleware is widely recognized as one of the leading middleware platforms in the market. In addition to its acknowledged leadership, JBoss Enterprise Middleware is the most cost effective portfolio of middleware platforms and frameworks available today. IT organizations have a number of reasons to support a move away from higher priced proprietary middleware portfolios, such as BEA WebLogic and AquaLogic, Oracle Fusion, and IBM WebSphere. JBoss Enterprise Middleware offers an open source solution that is more flexible and better performing than its competitors. And JBoss Enterprise Middleware offers this superior solution at a significantly lower cost to the IT organization.

JBoss Enterprise Middleware Portfolio



JBoss Features and Components

This section describes the various features and components provided by the JBoss Enterprise Middleware platform and lists the competing middleware from the main commercial stacks provided by Microsoft, BEA, IBM, and Oracle. Certain market leaders that are pure-play vendors are also featured.



JBoss Enterprise Middleware Platform

COMPONENT	DESCRIPTION	COMPETITORS
JBoss Developer Studio	Eclipse-based Web 2.0 and rich application development tool. The JBoss Enterprise Application Platform is pre-configured with and included in the JBoss Developer Studio distribution.	BEA WebLogic Workshop
JBoss Enterprise Application Platform	A Java Enterprise Edition (JEE) container that provides hosting capabilities for large scale Java application deployment, including Clustering, JBoss Messaging and JBoss Cache. The JBoss Hibernate and Seam Frameworks are integrated with the application server in a single distribution.	BEA WebLogic IBM WebSphere Oracle AS
JBoss Enterprise SOA Platform	An Enterprise Service Bus (ESB)-based platform that enables message delivery, transformation, content based routing, orchestration, service registration. The JBoss jBPM and Rules Frameworks are integrated with the ESB in a single distribution.	Oracle SOA Suite IBM WebSphere ESB BEA AquaLogic
MetaMatrix Enterprise Data Services Platform	MetaMatrix Enterprise Data Services Platform is a powerful data services management system that enables rapid creation, deployment, and management of data services.	Composite Software
JBoss Enterprise Portal Platform	An enterprise portal that allows for resource management and simple application integration.	Oracle Portal BEA Portal BEA AquaLogic UI IBM WebSphere Portal
JBoss Hibernate Framework	The leading object relational mapping framework on the market today.	Oracle TopLink Oracle/BEA Kodo
JBoss Seam Framework	A powerful new application framework for building next generation Web 2.0 applications by unifying and integrating technologies such as Asynchronous JavaScript and XML (AJAX), Java Server Faces (JSF), Enterprise Java Beans (EJB3), Java Portlets, and Business Process Management (BPM).	Spring (although Seam can also work with Spring)
JBoss jBPM Framework	JBoss jBPM Framework provides the ability to create business processes that coordinate people, applications, and services. Designed for SMB and large enterprise applications alike, JBoss jBPM brings process automation to a wide set of business problems.	Microsoft BizTalk IBM Business Process Management Oracle Business Process Management Lombardi TIBCO



COMPONENT	DESCRIPTION	COMPETITORS
JBoss Rules Framework	The JBoss Rules Framework is a rules engine that provides an optimized algorithm and an intuitive interface to manage Business Rules.	Fair Isaac Blaze BizTalk Rules Engine Oracle Business Rules iLOG JRules
JBoss Operations Network	The JBoss Operations Network allows an Enterprise to monitor and manage enterprise server deployments through a centralized interface.	JBoss Operations Network does not compete with traditional operations tools such as HP OpenView or IBM Tivoli. Rather, it focuses on the JBoss environment exclusively, integrating with traditional operations tools.

MIGRATION TO JBoss ENTERPRISE APPLICATION PLATFORM

After realizing the value that JBoss provides and making the decision to migrate one or more Java Enterprise Edition applications to the JBoss Enterprise Application Platform, the next step to lowering the total cost of ownership within an IT organization is to take the proper planning steps. While the detailed steps involved in an application migration to JBoss vary from one application to the next, the evaluation process and high-level migration strategy is a very repeatable process. Being familiar with this process can save significant time, effort, and money during the migration effort.

The following sections detail the various planning steps and migration factors to consider throughout the migration effort.

MIGRATION PLANNING

The first step to a successful JBoss migration is to plan the migration. To begin the planning effort, it is necessary to take a complete inventory of the current systems to understand the application environment, its dependencies, and all baseline requirements that must be replicated to the new environment. Having an inventory of the current system and architecture will ensure the proper components are incorporated into the new platform and that hardware is procured to support the application with optimal performance where necessary. In general, JBoss Enterprise Application Platform will perform as well or better than competing application platforms on identical hardware, making hardware sizing decisions related to a migration a matter of scaling to future needs rather than current requirements.

The following planning steps create a solid foundation for understanding the full scope of the migration effort. These steps promote proper transparency and allow proper expectations to be set with the business and IT stakeholders. As a side benefit, this exercise will lay the foundation for a comprehensive governance model and plan that is a requirement of any proper SOA or BPM architecture.

MIGRATION PLANNING



1
Identify
Hardware
& OS Specs



2
Identify
Software
Specs



3
Thorough
Application
Review



4
Build &
Deployment
Review

DESCRIPTION

1	Identify the current hardware and operating system specifications including: <ul style="list-style-type: none"> • Operating system and version • Number and type of processors • Memory capacity • Size and type of physical disks/storage
2	Identify the current application software specifications including: <ul style="list-style-type: none"> • Application server and version • Additional application server components such as portal, ESB, or business process mapping tools • Third party, vendor-specific, and open source components or libraries • JVM and JRE versions • Integrated applications • Clustering configurations
3	Perform a thorough application review to identify any code or configuration incompatibilities that will require code or configuration modifications during the migration.
4	Perform a review of all build and deployment processes to identify any that have direct coupling to the current application server environment.
5	Perform a review of all monitoring and administration procedures and tools in place to identify any that may need modification or replacement to work with the JBoss Enterprise Application Platform.
6	Identify and evaluate any existing unit, system, regression, user, and load testing procedures in place as well as related tools utilized.
7	Gather information about the operations staff's current skill sets and future capability needs.



Once the landscape has been identified and documented, the final planning steps involving resources, timelines, and risk factors can be performed. It is important to identify the resources that will be needed at the various stages of the migration and what the roles and responsibilities of each will be. During this process it is imperative to identify key resources that could be project impacting and other risk factors that may come into play. Knowing where the project may be delayed will help ensure that contingency plans are in place so the project can be completed on time and on budget. Resources that are typically involved migration efforts include:

- Business analysts
- Operations and network administrators
- Database administrators
- Application developers
- QA and testing resources
- Business users for User Acceptance Testing

At the conclusion of the Migration Planning phase, the roles, resources and total cost of the project will be clearly identified. This detailed level of planning will ensure the execution of the migration is completed seamlessly.

MIGRATION EXECUTION

With the Migration Plan fully documented and communicated successfully to stakeholders, the migration of the environment can begin. Based on the results of the analysis of the current implementation, the execution process timeline and path can vary widely. However, while each migration is unique, the migration of the core system will typically follow a standard approach. This section of the document will identify these common core tasks that will be performed in nearly every migration effort, as well as some of the variances that will be encountered and how to work them into the overall migration plan.

Standard JBoss Migration Tasks

With a solid migration plan in place, the execution of migrating the core environment becomes more predictable. The following process is very standard and typically consumes a very small portion of the project timeline.

- Configuration changes
 - JDBC pooling and configurations
 - JMS Queues, Topics, and Persistence
 - JNDI port configuration
 - Deployment descriptor changes
 - Logging

- Library upgrades
- Build process and/or directory structures changes
- Deployment changes
- Monitoring/instrumentation changes
- Testing changes

Additional Migration Factors

In addition to the typical tasks associated with migrating from BEA WebLogic or IBM WebSphere to JBoss Enterprise Application Platform, many additional factors can add to the scope of the migration. These uncertainties are why it is paramount to perform a thorough evaluation of the application and all of the components, frameworks, and interfacing systems.

- Non-standard Object-Relational Mapping (ORM) framework
- Proprietary component of the application server needs to be converted (see table in Section 2.2)
- Clustering and Caching mechanisms, such as session replication, handling of SFSB, and the use of proprietary caching APIs
- Connections to third party systems (e.g., integration adapters to SAP, Siebel, PeopleSoft, etc)

Enhancements

Many times, going through the process of migrating an application to JBoss that was developed years ago on another platform presents the perfect opportunity to do a necessary house cleaning on the application. Upgrading components or libraries to more recent versions, updating the build process to be more streamlined and manageable, making an architectural change such as incorporating Hibernate to perform data access, and many other such modifications can be addressed as part of the upgrade process. Amentra specializes in all facets of this process and is available to help identify the advantages of enhancement opportunities and help the client evaluate the total cost of ownership of the complete migration effort.

Examples of enhancements that can be made during a migration include:

- Upgrade the build process to use newer build utilities such as Maven.
- Incorporate leading open source frameworks such as Spring, JBoss Hibernate, JBoss Seam, JSF, JBoss Rules, and many others.
- Evaluate the overall application architecture for performance, maintainability, scalability, and usability improvements.
- Incorporate additional JBoss components such as ESB, jBPM, MetaMatrix, or Portal.
- Introduce Clustering into the application.



Migration Testing

The final step to complete a successful migration to JBoss Enterprise Application Platform is to perform thorough testing on the new environment. During the planning phase, a review of the existing testing process will be performed with recommendations on any changes or additions to the process being made. The following levels of testing will be migrated to the JBoss platform, or these testing processes can be added if they do not already exist.

- Unit Testing Framework (JUnit)
- QA Test Plan and testing scripts
- Performance testing using any existing tools (Mercury Load Runner, The Grinder, etc.)

SERVICES AVAILABLE

Amentra has extensive experience with application architecture, design, and development on BEA's WebLogic, IBM's WebSphere, and Oracle Application Server (OAS), among others and understands the nuances of each platform. Having the in-depth knowledge of each of the platforms being migrated from ensures a seamless conversion of the environment-specific components of the application.

Amentra provides a wide range of services involving migration to a JBoss platform, including performing simple and complex migration assessments, executing on the migration, and performing thorough application and architecture reviews and recommendations. Each project is unique, so Amentra will always work with the client to understand its current environment and the most appropriate process to successfully migrate to JBoss Enterprise Application Platform and maintain and enhance it moving forward.

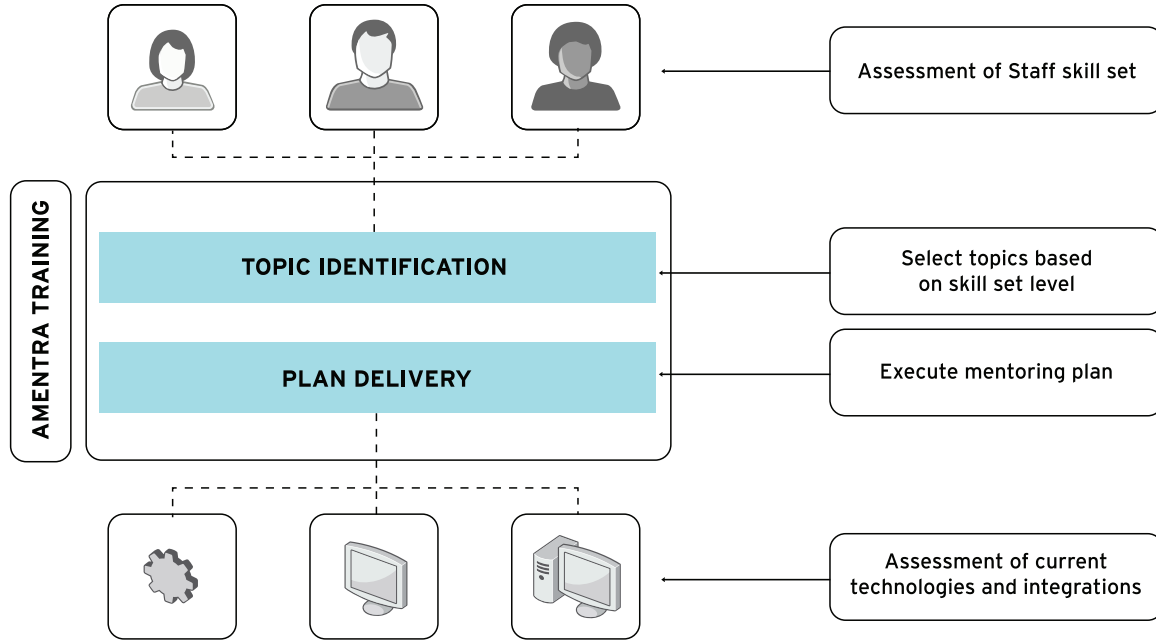
MENTORING

Regardless of specific services requested, Amentra takes a mentoring approach with all of its engagements. In addition to performing the migration, Amentra will work with the client's resources throughout the migration to ensure that they understand the JBoss platform and the migration steps being taken. Amentra's mentoring approach gets the client involved in the project during the initial project planning phase of the engagement. This allows the client to witness and learn the questions being asked and the process being taken to formulate the overall plan for the migration effort.

As the project moves into the review of the technical architecture, Amentra continues its mentoring by providing overall architectural recommendations as well as insight into the advantages being gained by moving to the JBoss Enterprise Application Platform.

The mentoring approach that Amentra takes during the application migration is completely customizable based on the availability and skill set of the client's resources. The mentoring can range from an informal approach, usually involving technical discussions and presentations, to being the focus of the engagement, including classroom sessions, practice assignments, and consistent skill evaluations. The following diagram depicts a high level view of Amentra's mentoring model for engagements.

AMENTRA'S MENTORING MODEL



FOR MORE INFORMATION

For more information on JBoss Enterprise Application Platform or any part of the broad JBoss Enterprise Middleware portfolio, visit www.jboss.com.

For more information on JBoss migration, application architecture or SOA services, or Amentra's unique mentoring approach, visit www.amentra.com.



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