

# RED HAT JBOSS FUSE

An open source enterprise service bus

TECHNOLOGY OVERVIEW

*“Our main goal at Sabre is stability, scalability, and flexibility for our partners. When evaluating solutions, we recognized that [Red Hat JBoss] Fuse ESB is standards-based at its core and would allow for a pluggable architecture so that our partners could continue to use their preferred solutions.”*

ROBERT WISEMAN  
CTO, SABRE HOLDINGS

## INTRODUCTION

Business information dispersed across multiple enterprise systems needs to be connected for consistency, efficiency, and complete business processes. Red Hat® JBoss® Fuse is an open source enterprise service bus (ESB) that reduces the pain of connecting disparate applications, services, and devices for comprehensive and efficient solutions. JBoss Fuse includes the popular and versatile Apache Camel project, an implementation of the most commonly used enterprise integration patterns. With integration patterns and over 150 connectors ready to use, JBoss Fuse supports integration across the extended enterprise – including applications and services on premise, on mobile devices, or in the cloud. JBoss Fuse is complemented by Red Hat JBoss Developer Studio for easier development of integration solutions and Red Hat JBoss Operations Network for monitoring of deployed solutions.

Red Hat JBoss Fuse for xPaaS extends the same integration capabilities available on-premise to Red Hat’s Platform-as-a-Service (PaaS) solution, OpenShift by Red Hat, and enables integrated solutions to be seamlessly designed, developed, deployed, and managed in the cloud. Simplify cloud-to-cloud and cloud-to-on-premise integration.

## INTEGRATE EVERYTHING, EVERYWHERE

Some integration challenges require comprehensive integration capabilities, while others need lightweight, easy-to-manage integration platforms with small footprints – and some require both. Red Hat JBoss Fuse and Red Hat JBoss Fuse for xPaaS can be deployed and easily managed in any configuration, so you can have a different configuration for every endpoint. Deploy a network of configurations across your infrastructure – on premise, in the cloud, or in a hybrid configuration.

With this cost-effective, flexible, and cloud-ready integration platform, businesses can finally integrate everything and integrate everywhere.

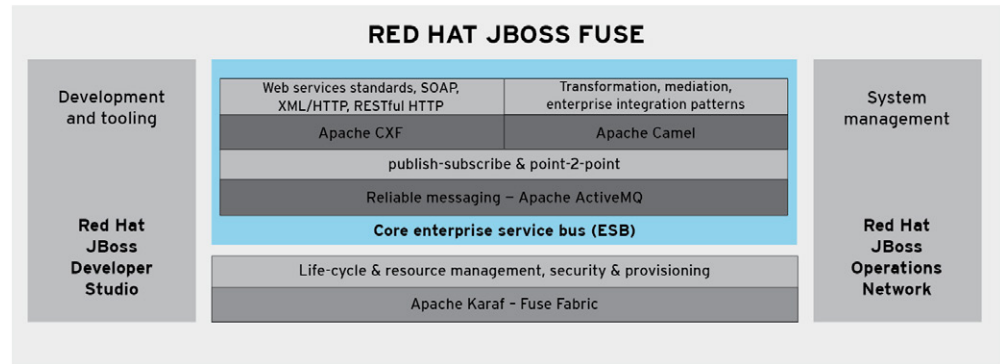


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## FUNCTIONAL COMPONENTS



JB0011-5

The functional components of Red Hat JBoss Fuse include:

- **Container:** The foundation of JBoss Fuse is a container. This layer is based on Apache Karaf and is enhanced by Fuse Fabric, which simplifies the management of large numbers of distributed containers.
- **Integration framework:** Use a standard method of notation and a high-level, domain-specific language to go from diagram to implementation with minimal coding. This layer is based on Apache Camel and includes over 150 connectors.
- **Web services framework:** Turn any application or system into a service for inclusion in your service-based architecture. Service enablement technology is based on Apache CXF.
- **Reliable messaging:** Red Hat JBoss A-MQ, fast, standards-based message broker based on Apache ActiveMQ, easily extends your datacenter to the Internet of Things.
- **Development and tooling:** Red Hat JBoss Developer Studio, with Fuse IDE, supports JBoss Fuse with tooling to help you with development.
- **Management and monitoring:** Production environments are supported by Fabric Management Console for management and Red Hat JBoss Operations Network for monitoring of your Red Hat JBoss Middleware infrastructure.

Red Hat JBoss Fuse includes the same enterprise service bus capabilities (Apache Camel, Apache ActiveMQ and Apache CXF) found in Apache ServiceMix and expands those capabilities with Fuse Fabric and JBoss Operations Network for simplified management and monitoring of different deployment architectures.

## KEY FEATURES AND BENEFITS

### RED HAT JBOSS FUSE CONTAINER LAYER

FEATURE	BENEFIT
<p><b>Dynamic configuration</b> Make changes while the container is running</p>	<p><b>Increased system availability</b> Easy configuration changes at an endpoint with no need to stop and restart the ESB</p>
<p><b>Hot deployment</b> Deploy or update services in while the ESB is running</p>	<p><b>Increased system availability</b> The ability to make changes to the integration route without affecting other services or endpoints.</p>
<p><b>Custom deployers</b> Deploy Plain-Old Java Objects (POJOs) as dynamic services (Blueprint, Spring DM)</p>	<p><b>Reduced development time</b> Faster and easier development of services without the complexity of creating OSGi bundles</p>
<p><b>Centralized logging backend</b> Multiple common logging APIs: Simple Logging Facade for Java (SLF4J), Job Control Language (JCL), Avalon, Tomcat, and OSGi</p>	<p><b>Lower development and maintenance costs</b> Reduced need to refactor services written for a particular logging API when deploying in the ESB</p>
<p><b>Extensible shell console</b> Manages runtime and control services' life cycles and can be dynamically extended to control custom features or functions of a deployed service</p>	<p><b>Better control over services</b> Interactive control of deployed services and features; shell extensions provide additional control options, eliminating the need to write a custom console</p>
<p><b>Remote access</b> Secure access to the ESB runtime console from any Secure Shell (SSH) client</p>	<p><b>Simplified administration of large applications</b> Location-independent management of the ESB</p>
<p><b>Clustering and failover</b> Load sharing across brokers and containers in a cluster; failover supported through multiple master-slave configuration options</p>	<p><b>Increased system availability</b> Deployments scalable to support large numbers of messages, users, and applications, with high performance and high availability</p>

RED HAT JBOSS FUSE INTEGRATION LAYER

FEATURE	BENEFIT
<p><b>Enterprise integration router</b>                      Apache Camel's full-featured, easy-to-use, and intuitive framework for integration, using familiar enterprise integration patterns (EIPs)</p>	<p><b>Go from diagram to deployment</b>                      Increased productivity with rapid prototyping and testing using EIPs in a fluent Java DSL, or through IoC using Spring-based deployments</p>
<p><b>Over 150 connectors</b>                      Ready to use for systems like SAP, salesforce.com, Twitter, and Facebook</p>	<p><b>Integrate more and deploy faster</b>                      Drag-and-drop components into your integration framework.</p>
<p><b>Web services</b>                      Easy-to-use and intuitive JAX-WS compliant web services stack</p>	<p><b>Reduces development time</b>                      WSDL-first or Java-first creation of web services</p>
<p><b>RESTful services</b>                      Easy-to-use and intuitive JAX-RS front end</p>	<p><b>Reduces development time</b>                      Simple java-first development of RESTful services</p>
<p><b>JMS service</b>                      Full-featured JMS 1.1 compliant broker and client infrastructure</p>	<p><b>Integrates with existing IT infrastructure</b>                      Supports asynchronous communication between services within the ESB or from outside the ESB</p>

## RED HAT JBOSS A-MQ MESSAGE BROKER

FEATURE	BENEFIT
<p><b>Standards-based</b></p> <p>Support for Java™ Message Service (JMS) 1.1, Transmission Control Protocol (TCP), Secure Sockets Layer (SSL), User Datagram Protocol (UDP), Streaming Text Oriented Messaging Protocol (STOMP), network management systems (NMS), MQ Telemetry Transport (MQTT), Advanced Message Queuing Protocol (AMQP), multicast transport protocols, and other standards</p>	<p><b>Near universal connectivity</b></p> <p>Wire-level compatibility that allows a mix of brokers and clients to connect, allowing nearly anything to seamlessly interact</p>
<p><b>Cross-language clients</b></p> <p>Connectivity from client programs written in languages other than Java</p>	<p><b>Supports many development environments</b></p> <p>Allows native connectivity from applications written in non-Java languages like C or C++</p>
<p><b>Pluggable transports</b></p> <p>Multiple transport protocols for exchanging data between the broker and client or between multiple brokers</p>	<p><b>Supports many networking environments</b></p> <p>Flexibility to meet the demands of different networking environments and use cases</p>
<p><b>Flexible persistence</b></p> <p>Supports a variety of persistence options including no persistence, file system persistence, using a database via Java Database Connectivity (JDBC), and using embedded LevelDB</p>	<p><b>Balances reliability and performance</b></p> <p>Allows superior reliability and performance with flexible persistence and high availability options and maximum performance with shared-nothing high availability (preview only)</p>
<p><b>REST API</b></p> <p>A technology-neutral, web-based API to the message broker service</p>	<p><b>Simplified integration</b></p> <p>Easy integration with RESTful web services</p>
<p><b>Ajax support</b></p> <p>Support for streaming to web browsers using pure DHTML</p>	<p><b>Increased integration options</b></p> <p>Allows web developers to use the browser as a messaging client</p>
<p><b>JMS streams for very large messages</b></p> <p>Eliminates the bottleneck that would occur as the JMS client tries to keep an entire 1GB+ message in memory</p>	<p><b>Supports application scalability</b></p> <p>Allows the messaging platform to deliver truly massive files (many GBs) across the network in a reliable manner</p>
<p><b>GZIP message compression</b></p> <p>Allows highly verbose messages to be compressed</p>	<p><b>Supports application scalability</b></p> <p>Efficient transporting of large amounts of data encapsulated in SOAP and other XML formats</p>

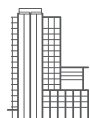
## RED HAT JBOSS FUSE MANAGEMENT

FEATURE	BENEFIT
<p><b>Available as Red Hat OpenShift cartridge</b></p> <p>Allows for provisioning, managing, and monitoring in the OpenShift PaaS environment</p>	<p><b>Deployment in the cloud</b></p> <p>Simplify deployment, hosting, and scaling of integration infrastructure and solutions</p>
<p><b>Integration service management</b></p> <p>Unified console, which uses Fuse Fabric, can start, stop, measure, trace, and debug all Red Hat JBoss Fuse and JBoss A-MQ integration routes on-premise or in the cloud</p>	<p><b>Unified management</b></p> <p>Management of all services – regardless of deployment location – through a single interface</p>
<p><b>Cluster configuration manager</b></p> <p>Provisioning and configuration of ESB nodes of ESB in a cluster of ESB's</p>	<p><b>Simplifies management of multiple nodes</b></p> <p>Centralized configuration and management of ESB cluster nodes</p>
<p><b>Configuration profiles</b></p> <p>Method of defining the configuration of a specific broker type, which can then be replicated across multiple brokers</p>	<p><b>Simplifies management of uniquely configured nodes</b></p> <p>Guaranteed consistency between identically configured nodes and simplified maintenance</p>
<p><b>Security framework</b></p> <p>Access control to the broker through JAAS, SSL encryption, and plug-in points to support custom and third-party authentication providers, firewalls, proxy servers, HTTP(S) tunneling, and DMZ products</p>	<p><b>Simplified security administration</b></p> <p>Can use a single security framework</p>

Red Hat JBoss xPaaS services for OpenShift enable middleware capabilities in the OpenShift PaaS solution, for a unified experience across development, deployment, management, monitoring, flexibility and scalability.

With Red Hat JBoss Fuse for xPaaS, you'll have:

- **Rapid integration:** Seamlessly create integration solutions using pattern-based integration framework, ubiquitous connectivity, and alignment with the DevOps and continuous integration practices.
- **Quick prototyping:** Prototype integration solutions without worrying about the right environment. Develop quickly, test, learn, and innovate to get solutions to market faster.



#### ABOUT RED HAT

Red Hat is the world's leading provider of open source solutions, using a community-powered approach to provide reliable and high-performing cloud, virtualization, storage, Linux, and middleware technologies. Red Hat also offers award-winning support, training, and consulting services. Red Hat is an S&P company with more than 70 offices spanning the globe, empowering its customers' businesses.



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