RED HAT JBOSS xPaaS SERVICES FOR OPENSHIFT

TECHNOLOGY OVERVIEW

RED HAT JBOSS xPaaS SERVICES FOR OPENSHIFT BRING INTEGRATION, BUSINESS PROCESS AUTOMATION, AND MOBILE APPLICATION SERVICES TO ENTERPRISE PaaS.

INTEGRATION, AUTOMATION AND MOBILE FOR ENTERPRISE PaaS

The PaaS market is maturing beyond basic application container services. Emerging PaaS offerings provide specialized, higher-level services. While these new entrants offer more of what enterprise applications need, the fragmentation and complexity of the PaaS space sometimes deters enterprise adoption.

Many business-critical enterprise applications are distributed across disparate infrastructures, requiring the integration of complex processes and multiple data sources. PaaS offerings to date have not adequately addressed the needs of such composite applications, because they have not provided the right higher-level services, have focused too narrowly on a single service, or have not supported hybrid cloud deployments.

Red Hat JBoss xPaaS services for OpenShift are the industry's first unified offerings that brings a comprehensive set of enterprise services into a single PaaS environment, accelerating development and simplifying the operation of composite enterprise applications. JBoss xPaaS services can be run in either a public cloud or private or on-premise cloud using either OpenShift Online by Red Hat or OpenShift Enterprise by Red Hat.

The first xPaaS services augment core container functionality with integration, business process management (BPM), and mobile capabilities. Integration PaaS (iPaaS) simplifies connections, messages, route definitions, and data transformations. BPM PaaS (bpmPaaS) supports both process modeling and a cloud-based process engine, simplifying definition and evolution of business processes. Mobile PaaS (mPaaS) simplifies push notifications, data synchronization, and back-end integration.

Only Red Hat can provide the combination of enterprise-grade middleware, hybrid cloud infrastructure, and the full range of capabilities needed to create a complete platform for an enterprise's modern application needs.

This paper outlines the business needs, the JBoss xPaaS vision, the initial xPaaS offerings, and the Red Hat JBoss xPaaS services for OpenShift roadmap. Several xPaaS capabilities are available now, and others will come online over the next few months. The status of xPaaS features and solutions can be reviewed at http://red.ht/xpaas.

THE ENTERPRISE REQUIRES A NEW-GENERATION PaaS

Early PaaS solutions focused on basic application server and container capabilities. These offerings provided simple application development environments used to develop and deploy focused applications or services quickly. Most early examples of PaaS adoption are either Web 2.0 services such as Groupon and Badgeville or small marketing projects funded by line-of-business (LOB) managers who bypassed corporate IT in favor of boutique development shops.

While important to the users of these solutions, these applications have very different requirements from typical composite enterprise applications. These early PaaS applications were simple to integrate and run in pure public cloud environments. Such composite applications often comprise many different components distributed across hybrid environments, as depicted in Figure 1.

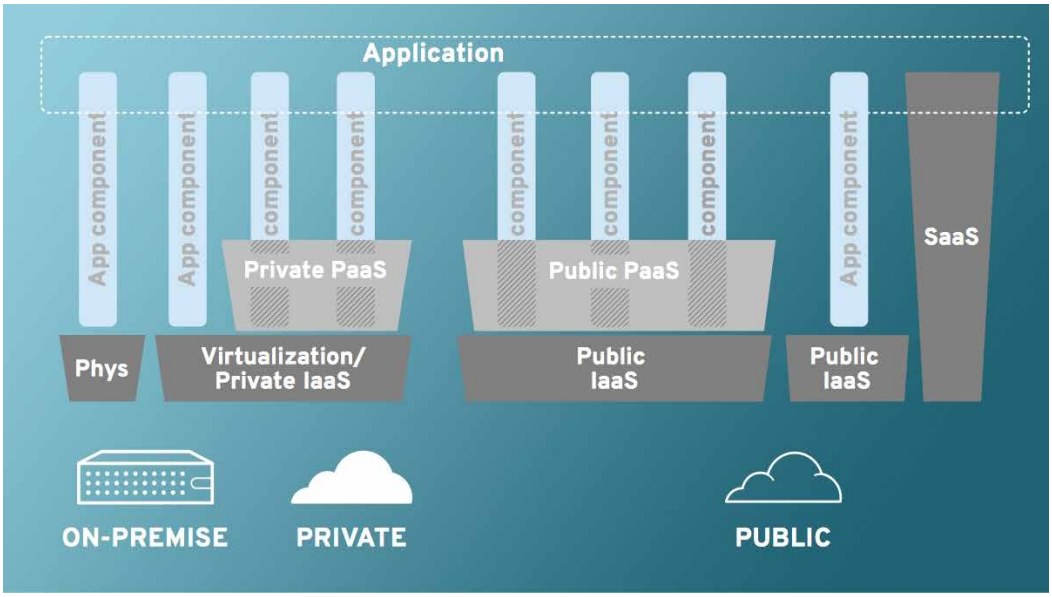


Figure 1. Enterprise applications comprise many components distributed across hybrid infrastructures.

As enterprise developers began experimenting with these early PaaS offerings, they were attracted by the promise of high productivity and fast deployment. However, they quickly discovered that the effort required to get enterprise-grade application servers installed and configured, get higher-level components such as service buses and BPM engines set up, and to connect all these across firewall boundaries far outweighed the deceptive simplicity of initial PaaS experiences.

Nevertheless, progress has been made. It has become much easier to set up an enterprise-grade application server on a PaaS, exemplified by the Red Hat JBoss Enterprise Application Platform cartridge on Red Hat's OpenShift offering. Point solution vendors in segments such as BPM have begun providing their solutions in "as-a-Service" offerings.

Gartner's October, 2012 report, "Market Trends: Platform as a Service," identifies 11 subsegments of the PaaS market, with iPaaS and bpmPaaS each accounting for more than 11% market share.

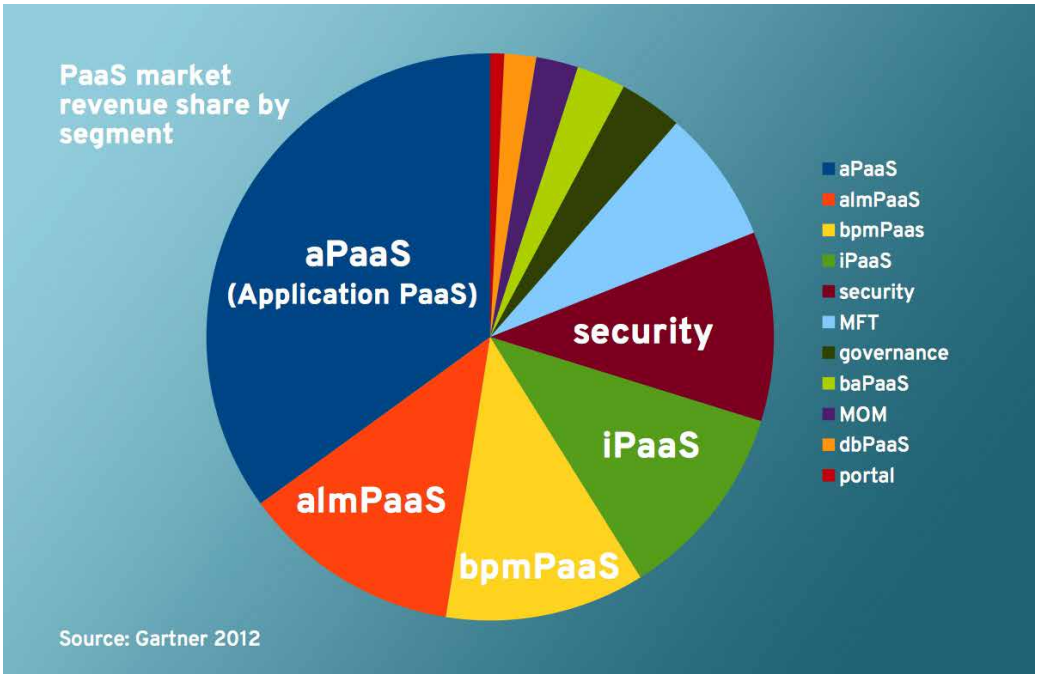


Figure 2. PaaS market revenue share by segment shows emerging specialization.

The challenge in these subsegments is that no solution provides a comprehensive suite of the services needed by typical composite enterprise applications. Thus, any attempt to build and run such an application on a purely-or mostly-PaaS foundation required tying together disparate services from disparate providers.

Most enterprises are trying PaaS for its simplicity. When integration work is required to connect services, that simplicity is lost. There has been no one-stop provider with a comprehensive enough offering to make composite application development on PaaS compelling. Until now.

RED HAT JBOSS xPaaS SERVICES FOR OPENSHIFT

Red Hat JBoss xPaaS services for OpenShift are the industry's first unified offerings with a comprehensive set of enterprise services in a single PaaS environment that spans public and private clouds.

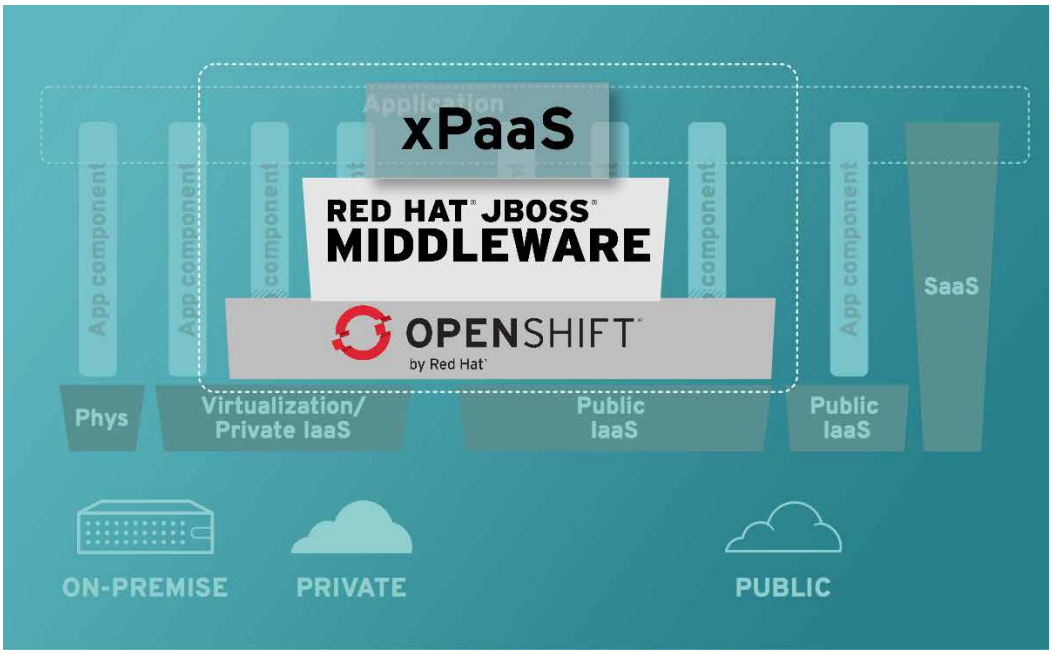


Figure 3. Red Hat JBoss xPaaS services for OpenShift are a comprehensive set of enterprise services supporting hybrid environments.

Based on deep knowledge of how enterprise developers use middleware to simplify application development and operation, combined with insight gained from numerous customer cloud deployments, Red Hat has laid out a vision and roadmap that take enterprise PaaS to the next level. With more than two years of cloud experience as a leading PaaS provider and more than seven years as the leading provider of open source enterprise middleware, Red Hat uniquely understands both cloud and enterprise software.

The roadmap for Red Hat JBoss xPaaS services for OpenShift begins with four areas:

- Core application services or application PaaS (aPaaS)
- Integration (iPaaS)
- BPM (bpmPaaS)
- Mobile (mPaaS)

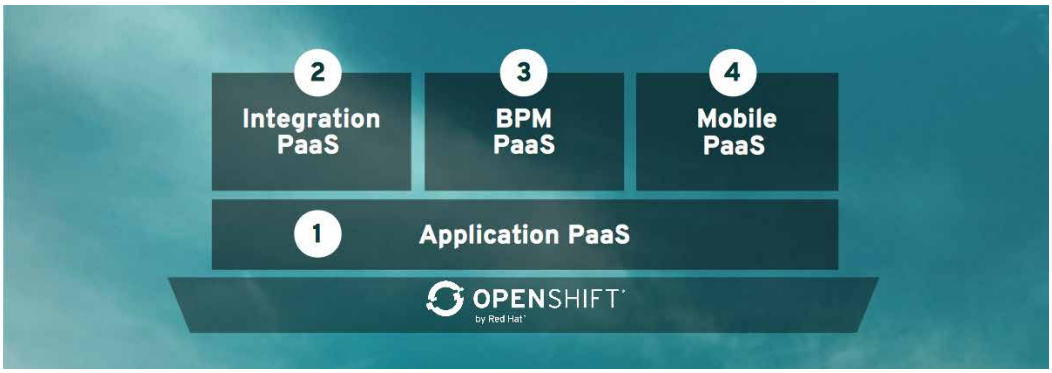


Figure 4. Red Hat JBoss xPaaS for OpenShift begins with four types of service.

aPaaS: BEYOND OLD-STYLE APPLICATION DEVELOPMENT

Red Hat JBoss Enterprise Application Platform (EAP) is a cloud-ready, market-leading enterprise platform for next-generation, highly transactional enterprise Java applications. Red Hat JBoss EAP transcends location and deployment model for more productive and faster application development, deployment, and management across physical systems, private clouds, public clouds, and hybrid clouds.

Red Hat JBoss EAP 6 was created with the cloud in mind. Based on a service-oriented set of components, JBoss EAP 6 simplifies how applications are deployed into different environments. With JBoss EAP 6, your enterprise can programmatically manage applications, automate build processes, and integrate with your own management tools.

Red Hat JBoss EAP 6 has also been optimized to work with multicore, virtualized, and cloud environments with an extremely low memory footprint and fast startup times. With improved resource usage and port management, JBoss EAP 6 reduces the effort needed to deploy to the cloud. Common APIs across all environments mean that IT can develop applications in one environment and then test and deploy to on-premise and public cloud environments.

Red Hat JBoss EAP 6 has been bundled into an OpenShift cartridge. Cartridges are the main packaging mechanism in OpenShift, making configuration and instantiation of components simple and robust. The JBoss EAP 6 cartridge forms the foundation of Red Hat JBoss xPaaS services for OpenShift and is available today.

iPaaS: INTEGRATE ACROSS COMPLEX, HYBRID ENVIRONMENTS

Integration of multiple applications, components, services, and data sources is key to enterprise software solutions—arguably as important as the algorithms, performance, and reliability of the individual components themselves. More than a decade ago, enterprise development evolved beyond primitive integration techniques like shared files and remote procedure calls to more sophisticated messaging technologies including service buses and message brokers.

The concept of iPaaS expands on pre-cloud messaging-based integration to include cloud-based configuration, brokers, and services. Key benefits of the iPaaS experience—compared with traditional approaches—include faster set up for developers and integrations that are modifiable using services already running in the cloud. These integrations can also more easily span hybrid on-premise and cloud environments.

JBoss iPaaS is based on Red Hat JBoss Fuse. The solution includes a cloud-based interface for configuring integration routes and transformations, a choice of containers for both both cloud and non-cloud endpoints, and reliable messaging based on the Red Hat JBoss A-MQ broker hosted in the cloud or on-premise. Fuse Fabric technology ties the solution together with a highly available runtime registry and the ability to deploy integration containers remotely.

bpmPaaS: ORCHESTRATE ACROSS COMPLEX, HYBRID ENVIRONMENTS

JBoss bpmPaaS is based on Red Hat JBoss BRMS and forthcoming BPM technology from Red Hat's acquisition of Polymita. JBoss BRMS combines business rules management (BRM), business process management (BPM), and complex event processing (CEP) in one solution.

Polymita capabilities will appear soon in a new Red Hat JBoss Middleware offering and as part of this bpmPaaS offering. These capabilities include:

- Process modeling.
- Business activity monitoring (BAM).
- Process simulation.
- The ability to dynamically configure automation and data without changing code.

Cloud-based process modeling helps business analysts start new process automation projects more quickly and with lower startup costs. JBoss bpmPaaS eliminates the hassle of traditional on-premise installations and deployments. Analysts can design business dashboards in the cloud to monitor business processes with web-based drag-and-drop customization.

Red Hat JBoss BRMS' business rules platform enables business analysts and IT developers to collaborate, configure, and deploy business rules in the cloud directly. This important aspect of bpmPaaS brings advanced capabilities of JBoss BRMS to business and IT people, letting them change the behavior of applications without having to write new code or redeploy applications. Applications and e-commerce web sites built with JBoss bpmPaaS can be updated with new decision logic, products, or behavior in a few hours or days, instead of the traditional weeks it takes to write new code, update applications, and redeploy.

mPaaS: TAKE ADVANTAGE OF THE CLOUD FOR BYOD

By many measures, mobile devices have outstripped traditional desktop computers as the client platform of choice for employees and customers interacting with an enterprise's applications. Bring-your-own-device (BYOD) policies and support have become important for many senior IT leaders. Much enterprise application development employs a "mobile first" philosophy where the primary client is assumed to be mobile, with desktop support assuming secondary priority.

One of the most important capabilities needed for effective support of mobile clients is push notification. Push notification entails sending short alerts or messages that must be handled by the mobile app, even if that app is not active or the device itself is on standby. For an enterprise application, push notification represents a new way to send messages to users or groups, as these messages must be received and addressed immediately.

The challenge with sending push notification is that each mobile platform—including iOS, Android, Windows, and more—has a different way to send a message. Each platform has different programming requirements.

The push capability in mPaaS allows a developer to send a message to a single API and rely on the push server to take the message, format it for the appropriate push network, and send the message appropriately. The push server stores users and their devices so that it can determine which message format to employ for which users.

Push notification is the first step in Red Hat's mPaaS rollout. Upcoming mPaaS technologies will include:

- **Data encryption** for simplifying the securing of data communicated between devices and backend.
- **Data synchronization** for simplifying support for offline application use on devices.

ROADMAP

The foundation for Red Hat JBoss xPaaS services for OpenShift is our aPaaS offering, in the form of the Red Hat JBoss EAP 6 cartridge. The JBoss EAP 6 cartridge is available in developer preview on OpenShift today. The first mPaaS offering, mobile push notification, is also available today in developer preview.

The next wave of xPaaS offerings will include cloud-based process modeling (bpmPaaS) as well as OpenShift cartridges for Red Hat JBoss Fuse and Red Hat JBoss Data Services (iPaaS). JBoss mPaaS for OpenShift will be expanded to support data encryption and data synchronization. These offerings are targeted for developer preview in the next several months.

For 2014, the xPaaS roadmap includes:

- JBoss Data Grid cartridge, to expand the aPaaS foundation.
- Additional messaging capabilities in iPaaS.
- Shared process models in bpmPaaS.
- Expanded back-end integration capabilities in mPaaS.

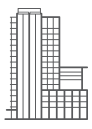
We anticipate active engagement with the developer community as these offerings are brought to market in developer preview, and we will incorporate feedback and further refine and expand Red Hat JBoss xPaaS services for OpenShift.

GET STARTED TODAY

With the announcement of Red Hat JBoss xPaaS services for OpenShift, Red Hat has laid out a vision, strategy, and roadmap that takes PaaS to a compelling new level for enterprise development. Red Hat is able to offer the most comprehensive set of cloud services needed for the composite applications typical of modern enterprises.

You can begin using JBoss xPaaS services today. The Red Hat JBoss EAP 6 cartridge and mobile push notification services are available in developer preview on OpenShift. You can also begin xPaaS development using Red Hat JBoss Fuse, Red Hat JBoss BRMS and other Red Hat JBoss Middleware technology.

As more technologies are brought to market as xPaaS services over the coming months, you will be able to easily move your applications, integrations, and process components into the JBoss xPaaS environment. Find everything you need to get started at http://red.ht/xpaas.



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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