Red Hat puts Docker, Kubernetes at the center of its OpenShift 3 PaaS

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The company has released an updated and enhanced OpenShift Enterprise 3 PaaS with a number of improvements, primarily around native support for Docker containers and Kubernetes container orchestration.

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Red Hat has updated its OpenShift Enterprise 3 PaaS with native support for Docker containers and Kubernetes orchestration, which, combined with its Red Hat Enterprise Linux 7 (RHEL 7) operating system, supports Web-scale and enterprise container applications from the OS to application runtimes. Having already wisely placed its bet on Docker containers, Red Hat is now somewhat boldly backing the Kubernetes container engine for orchestration, which vies with other software such as Docker Swarm and Apache Mesos among users, based on our research. Red Hat rolled out some high-profile OpenShift Enterprise 3 PaaS users at its recent summit, highlighting use cases in faster DevOps releases and greater efficiency for developers, hardware and software. With its support for OpenStack, Cloud Forms multi-cloud management software and OpenShift PaaS, Red Hat offers its Red Hat Cloud Suite for Applications, recently referenced as a source of traction on the company's quarterly earnings call.

THE 451 TAKE

Along with support for enterprise use of containers in its flagship Red Hat Enterprise Linux operating system and Cloud Forms cloud management software, Red Hat deepens its support for Docker and containers with its OpenShift PaaS in both online and enterprise versions. The company's participation in the Open Container Project further illustrates Red Hat's investment in and commitment to containers. While Red Hat may have been somewhat late to previous trends including cloud computing and mobile, it is among the early players with Docker and containers, particularly for enterprise production use. Its OpenShift PaaS is just now beginning to gain traction with enterprises, so we expect to see solid growth for Red Hat here. In addition to intense competition in containers, PaaS and cloud, Red Hat is also facing new hurdles. First, its previously proprietary rivals such as Microsoft and VMware are now fully involved with open source software communities, projects and strategy. Second, Red Hat must respond to customers and fight perceptions of vendor lock-in by deeply supporting competitors' technology throughout the software stack. Efforts to support Microsoft technology and its participation in the Open Container Project will help Red Hat in facing these challenges.

CONTEXT

Red Hat identifies four transformations occurring in IT that are fairly consistent with our research on top enterprise needs and use cases. First is the transformation from traditional and waterfall software development to more agile DevOps approaches. Another significant shift is the transformation from monolithic architectures to distributed architectures and microservices. We, and Red Hat, also see the impact of Docker and containers as they affect and replace virtual machines the way VMs replaced physical servers. Finally, in addition to datacenters, we see hosted and cloud infrastructure playing a larger role in application development and deployment, as does Red Hat.

Growth for Red Hat's PaaS has come from its OpenShift Online community and its OpenShift Enterprise customers. For OpenShift Online, Red Hat reports more than 2.3 million applications created to date (up from just more than 1.5 million at the end of 2013), as well as more than 200 add-ons and Quickstarts, and 100% year-over-year growth of users and applications. For OpenShift Enterprise, Red Hat reports continued growth of large enterprise customers, including companies in financial services, telecommunications, aerospace and design, technology, academic and government organizations.

Red Hat recently highlighted OpenShift as one of the emergent technologies driving growth in cross-product deals on the company's quarterly earnings call. We see a growing PaaS market as well, one that is worth nearly $3 billion in 2015, $3.8 billion in 2016 and $4.7 billion in 2017, according to Market Monitor, a service of 451 Research.

At the same time Red Hat has put Docker containers and Kubernetes orchestration front and center in its Open-Shift Enterprise 3 PaaS, it is among nearly 20 key vendors that recently announced the Open Container Format and Open Container Project, which federates and formalizes collaboration on application container format and runtime standards.

PRODUCTS

OpenShift Enterprise pulls together automation tools, languages, middleware, databases and other services and container orchestration and management with container API and container host. Key supported application components include Hadoop and Spark 'big data' software; a variety of languages including Java, Node.js, Ruby, Perl, PHP and Python; MongoDB, MySQL, PostgreSQL and Redis databases; and other add-ons from Red Hat, its ISV partners and the community. OpenShift also features JBoss middleware services for application containers, application integration, business process and rules management and mobile applications.

Red Hat highlights OpenShift capabilities such as support for self-service implementations, support for multiple languages, automation, collaboration and DevOps. The company says its PaaS software can speed time to release and time to market, boost efficiency and enable more agile, DevOps processes – consistent with our findings on the main drivers of DevOps. Other key OpenShift capabilities for developers include the ability to deploy environments on demand, choice of interfaces and integration with existing tools, automation of deployments, software builds and source-to-image builds. For IT operations, OpenShift provides a secure, container-based application infrastructure, increased infrastructure and operational efficiency, advanced scheduling and automated placement per regions and zones for high-availability, declarative management of application services and integration with user management and authentication systems. Red Hat's focus on supporting both big-data technologies and IaaS management highlight the company's response to top demands of PaaS customers, according to our research.

Among the most significant features of OpenShift Enterprise 3 is the native support for Docker containers and native Kubernetes container orchestration. Combined with its RHEL operating system, Red Hat says the PaaS software serves as a container-based application infrastructure for the development, deployment and management of applications and services. OpenShift users also get access to certified, packaged application components via Red Hat's Container Certification Program. With support for Kubernetes, OpenShift also supports orchestration of multiple containers and multiple hosts.

OpenShift also features additional tools and services for developers, including Web, command line or integrated developer environment (IDE) interfaces. Code can be pushed directly from Git with automated build using OpenShift source-to-build capabilities. Developers can also manage deployments and rollbacks with existing development and continuous integration (CI) tools, such as Jenkins CI server.

Red Hat is also offering a new beta, OpenShift Dedicated, which is a public cloud service based on OpenShift 3. Building on the OpenShift Online public PaaS, OpenShift Dedicated is intended to support businesses using a dedicated instance of OpenShift in a public cloud managed by the OpenShift operations team. In addition, there are new enterprise consulting and training services for OpenShift Enterprise 3, including a developer course and PaaS certification.

CUSTOMERS

Consistent with other vendors and end users, Red Hat says many OpenShift customers are moving more applications to the public cloud or using a hybrid cloud model that leverages public cloud, primarily Amazon Web Services. Customers are increasingly interested in more agile DevOps practices and process, as well as microservices, the company says. Red Hat highlighted some key customer uses of OpenShift at its recent summit, including travel industry giant Amadeus, which handles 1.6 billion data requests per day. Amadeus built on OpenShift 3 to support thousands of application servers and an average of 145,000 queries per second.

Another OpenShift 3 user is systems management software vendor CA Technologies, which says the PaaS software and containers provided better utilization of hardware and horizontal scaling, speeded developer team time on building, deploying and updating applications and allowed its teams to experiment and more rapidly move applications from concept to production. Another OpenShift 3 customer is financial analytics software provider FICO, which also reported benefits of faster time to deployment and to value, as well as automated provisioning and systems management and an embedded option for on-premises delivery. Cisco, another OpenShift 3 user, said the software has allowed it to automate provisioning for new developers, offer standardized stacks for different languages such as Java and Node.js, and leverage containers for more efficient infrastructure utilization and IT operations.

COMPETITION

Red Hat's OpenShift competes primarily with other enterprise-focused PaaS vendors, such as Apprenda, ActiveState with Stackato, IBM with Bluemix, Microsoft Azure and Pivotal. Container-focused PaaS players, such as Amazon Elastic Beanstalk, Engine Yard, Google App Engine, Jelastic, Joyent and WaveMaker, represent increasing competitive pressure for OpenShift. Additional OpenShift PaaS rivals include Apigee, CenturyLink, CollabNet, Mendix, MuleSoft, NetSuite, Progress Software, salesforce.com with Force.com and Heroku, SAP, SnapLogic, Software AG and WSO2. There is also competition for Red Hat's OpenShift from continuous integration and continuous deployment or DevOps providers, including 2nd Watch, Automic, BMC, BitRock, C3DNA, Cliqr Technologies, ElasticBox, Electric Cloud, fluid Operations, HP, JumpCloud, OutSystems, Plutora, QualiSystems, Ravello Systems, ScriptRock, Skytap, Stackify, StackIQ, UShareSoft and XebiaLabs.

SWOT ANALYSIS

STRENGTHS
Red Hat has applied its usual open source software expertise and participation to play a prominent role in the growing markets around cloud computing, DevOps and Docker and containers.

WEAKNESSES
Despite a strong technology and community, Red Hat's OpenShift PaaS has been slow to grow its brand awareness compared with some PaaS rivals.

OPPORTUNITIES
By providing performance, stability, security and other advantages, Red Hat may be able to grow its portion of enterprise and service provider cloud spending via more deals and cross-product selling.

THREATS
Rivals have become much more adept at similarly leveraging open source software and communities. Red Hat faces an onslaught of new competition in the Docker and containers space.