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OpenShift Container Platform

The leading enterprise Kubernetes application platform

Key benefit

- Integrated platform including container host, Kubernetes, and application life-cycle management using your choice of infrastructure

- Greater value for operations and development teams throughout the application life cycle

- Secure, validated container content and services from a wide partner ecosystem

- Faster application development cycles and more frequent software deployments

- Simple installations and upgrades, even in air-gapped environments

- Application portability with lower operational cost across hybrid cloud, multicloud, and edge footprints

Overview

Businesses differentiate by delivering extraordinary customer experiences through applications that quickly evolve to meet their needs. Once deployed, these applications must be portable, more secure, easy to scale, and simple to manage. Organizations are turning to containers and Kubernetes to meet these needs. To deliver new applications or containerize and migrate existing ones to the cloud, they need a trusted platform to build on.

Built by open source leaders, Red Hat® OpenShift® is the leading enterprise Kubernetes platform[1]: a security-focused, consistent foundation to deliver applications anywhere, with full-stack automated operations and streamlined developer workflows. With Red Hat OpenShift, innovators can focus on what matters, stay competitive, and outpace rising customer expectations.

Red Hat OpenShift Container Platform

Red Hat OpenShift includes what you need for hybrid cloud, edge, enterprise container, and Kubernetes development and deployments. It includes an enterprise-grade Linux® operating system, container runtime, networking, monitoring, container registry, authentication, and authorization solutions. These components are tested together for unified operations on a complete Kubernetes platform spanning every cloud.
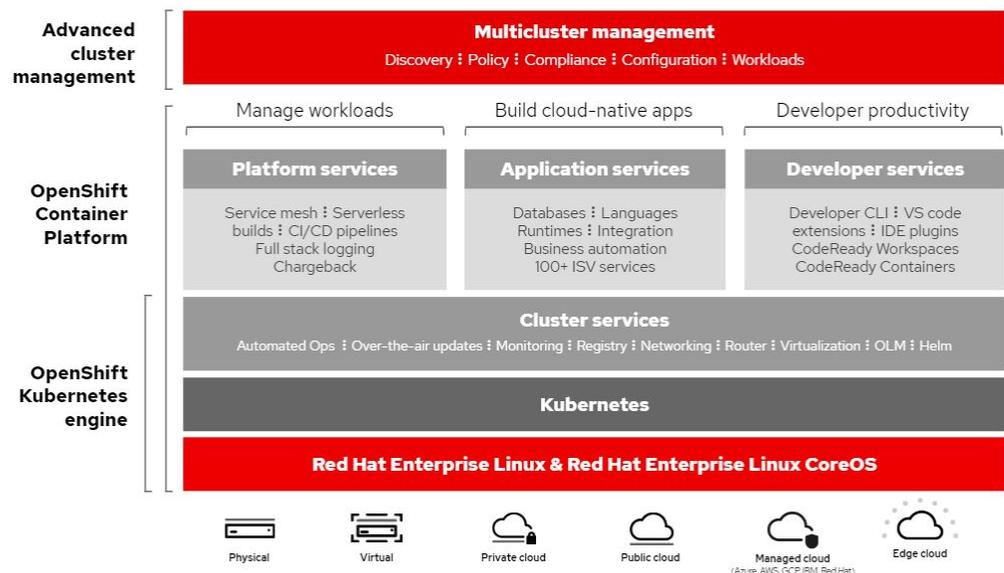
[1] Robuck, Mike. "Red Hat rules the roost for container software market revenue, for now - report." Fierce Telecom, 4 Sept. 2019.

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Red Hat OpenShift Dedicated

Fully managed OpenShift service on Amazon Web Services (AWS) or Google Cloud operated by Red Hat.

Microsoft Azure Red Hat OpenShift

Azure Red Hat OpenShift is a fully managed OpenShift offering on Azure jointly engineered, operated, and supported by Microsoft and Red Hat.

Red Hat OpenShift on IBM Cloud

A faster and more secure way to containerize and deploy enterprise workloads in Kubernetes clusters.

Enterprise Kubernetes

Downloading and installing an upstream Kubernetes package is not sufficient for most users running business-critical applications. Additional services can accompany Kubernetes and will help you build and manage a more robust and feature-rich environment to deploy containers. Red Hat works with customers and partners to develop new features and functionalities to enhance Kubernetes, integrating those features with additional surrounding services and stabilizing those features before release.

Managing a Kubernetes environment is more difficult when it lacks consistent deployment practices and has many variants of application instances, especially when it includes an edge architecture that can include hundreds to thousands of sites and clusters. Kubernetes Operators facilitate management of stateful applications that require persistence and predictability like databases, caches, and monitoring systems. They codify and package applications with management best practices and use standard Kubernetes tooling to automate tasks such as updates, backups, and node scaling.

Using Kubernetes Operators, Red Hat OpenShift offers automated installation, upgrades, and life-cycle management for every part of your container stack—the operating system, Kubernetes and cluster services, applications, and persistent data storage. The result is a more secure, up-to-date Kubernetes application platform without the headaches of manual and serial upgrades or downtime. Red Hat OpenShift uses Operators to support scaling applications while reducing overhead in maintaining operational consistency.

- Operators are built into OpenShift so Kubernetes and cluster services are always up-to-date.

- Embedded OperatorHub provides a discovery marketplace for independent software vendor (ISV) Operators, validated to run on OpenShift.

- The Kubernetes Operators framework is not proprietary to OpenShift and can be deployed on any Kubernetes platform.

Built for the hybrid cloud

Red Hat OpenShift Container Platform runs on-site and in public cloud infrastructures, providing a hybrid approach to deploying applications as a self-managed solution. Red Hat OpenShift Dedicated is a service hosted and managed by Red Hat that offers clusters in a virtual private cloud as a hosted offering on Amazon Web Services (AWS) and Google Cloud. Microsoft Azure Red Hat OpenShift is a fully managed service of Red Hat OpenShift on Azure, jointly engineered, operated, and supported by both Microsoft and Red Hat. All OpenShift platform variants are available to help accelerate developer productivity and deliver application portability on a consistent foundation across the hybrid cloud.

Red Hat OpenShift provides:

- Choice of consumption models, self-managed or managed by Red Hat.

- A single management and visibility console through cloud.openshift.com.

- Integrated metering and chargeback capabilities.

Increased developer productivity

Red Hat OpenShift advances what containers and Kubernetes can do for developers while driving innovation for stateful applications, serverless or event-driven applications, and machine learning. The platform integrates tightly with Jenkins and other standard continuous integration/continuous delivery (CI/CD) tools for security-focused application builds.

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Red Hat OpenShift helps you create with speed, agility, confidence, and choice so that developers can get back to doing work that matters. It provides:

- Automated workflows including source-to-image (S2I) processes to get source code into ready-to-run container images.

- Streamlined developer perspective that removes the need for familiarity with Kubernetes concepts and shows the information and configurations developers need.

- A connection to services from public cloud providers such as AWS, Microsoft Azure, and Google Cloud Platform through the OpenShift Service Catalog.

Advanced capabilities

As applications evolve into collections of decentralized services, managing communications and security between those services becomes more difficult. **Red Hat OpenShift Service Mesh** provides a uniform way to connect, manage, and observe microservices-based applications.

Using the **Red Hat OpenShift Serverless** model, an application can use compute resources and automatically scale up or down based on use. OpenShift Serverless removes the overhead of server provisioning and maintenance from developers, allowing them to focus on application development. OpenShift Serverless helps developers deploy and run serverless applications that will scale up or to zero on demand.

With **Red Hat OpenShift Pipelines**, developers can take control of their delivery pipelines, plug-ins, and access control with no central CI/CD server to manage. OpenShift Pipelines runs each step of the CI/CD pipeline in its own container, allowing each step to scale independently to meet the demands of the pipeline. This provides a streamlined user experience through the OpenShift console developer perspective, command-line interfaces (CLIs), and integrated development environments (IDEs).

Red Hat OpenShift Virtualization brings virtual machines to OpenShift so developers and operations can develop, manage, and deploy virtual machines, containers, and serverless systems in one platform using the same tools and frameworks, accelerating their ability to modernize and deliver differentiated applications and services.

Trusted host. Trusted content. Trusted platform.

Red Hat is a community leader in building Kubernetes and container projects, using open source expertise to drive innovation in upstream efforts. Red Hat OpenShift adds more comprehensive, more continuous security to upstream Kubernetes from the operating system to the application, and throughout the software life cycle.

For government organizations handling sensitive data and workloads, OpenShift will run in Federal Information Processing Standards (FIPS) mode and will call into the Red Hat Enterprise Linux FIPS validated cryptographic libraries. Customers also have the option to encrypt sensitive data stored in etcd, which can better defend against malicious access to data such as secrets and configuration maps stored in ectd. OpenShift customers can also deploy clusters to customer-managed, pre-existing virtual private network/virtual private cloud (VPN/VPC) connections and use private-facing load balancer endpoints.

Drive your journey with Red Hat OpenShift

Red Hat supports customers' journeys to the cloud, with Red Hat OpenShift serving as a consistent, hybrid cloud foundation for building and running containerized applications for long-term innovation. Power business transformation and unite your teams on a cost-effective, single platform to deliver the exceptional experiences your customers expect quickly, no matter where they are.

Customers have a choice in Kubernetes solutions, including do-it-yourself (DIY) platforms built on upstream projects, managed services on public clouds, and other self-hosted platforms. Red Hat OpenShift meets IT teams' and application developers' needs and stands out as a leading choice for customers who want a more secure, supported Kubernetes platform.

Features and benefits

FEATURE	BENEFIT
Platform	
Scalability	Applications running on OpenShift Container Platform can scale to thousands of instances across hundreds of nodes in seconds.
Multicluster federation	Consolidated views of clusters and the use of Kubernetes technologies offer a consistent management layer across on-site and public clouds.
Persistent storage	Red Hat OpenShift Container Storage allows users to run stateful applications and cloud-native stateless applications.
Open source standards	OpenShift Container Platform incorporates Open Containers Initiative (OCI)/docker-formatted containers and Cloud Native Computing Foundation (CNCF)-certified Kubernetes for container orchestration, in addition to other open source technologies.
Container portability	Container images built on the OCI industry standard ensure portability between developer workstations and production OpenShift Container Platform environments.
3-node clusters	Access all of the capabilities of a full Kubernetes platform in a smaller footprint—perfect for edge sites that are often smaller and require a lower-cost footprint without compromising features.
Developer Productivity	
Self-service provisioning	Developers can quickly and easily create applications on demand from the tools they use most, while operations retains full control over the entire environment.
Multi-language support	Developers can use various languages, frameworks, and databases on the same platform.
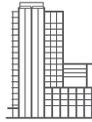
About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers integrate new and existing IT applications, develop cloud-native applications, standardize on our industry leading operating system, and automate, secure, and manage complex environments. Award winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500. As a strategic partner to cloud providers, system integrators, application vendors, customers, and open source communities, Red Hat can help organizations prepare for the digital future.

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FEATURE	BENEFIT
Integrated CI/CD pipelines	OpenShift Container Platform lets developers reduce manual deployment work to deploy higher quality software for continuous integration and automated tests.
User interfaces	Developers have direct access to a rich set of command-line tools, a multidevice web console, and Eclipse-based IDEs.
Source-to-image deployment	OpenShift Container Platform provides a toolkit and workflow for producing ready-to-run images by injecting source code into a container and letting the container prepare that source code for execution.
Enterprise operations	
Automated installation and upgrades	Automated installation and over-the-air platform upgrades are supported in the cloud with Amazon Web Services, Google Cloud Platform, IBM Cloud, and Azure, and on-premises using vSphere, OpenStack®, Red Hat Virtualization, or bare metal. Services consumed from the OperatorHub can be deployed fully configured and upgradable with a single operation.
Automation	Streamlined and automated container and application builds, deployments, scaling, health management, and more are standard with OpenShift Container Platform.
Virtualization	Modernize existing applications and services and allow for development and delivery of new and existing applications that consist of virtual machines, containers, and serverless, managed together in a Kubernetes-native architecture.
Robust ecosystem	An expanding ecosystem of partners provides a wide variety of integrations. Third parties deliver additional storage and network providers, IDE and CI integrations, ISV solutions, and more for use with OpenShift Container Platform.