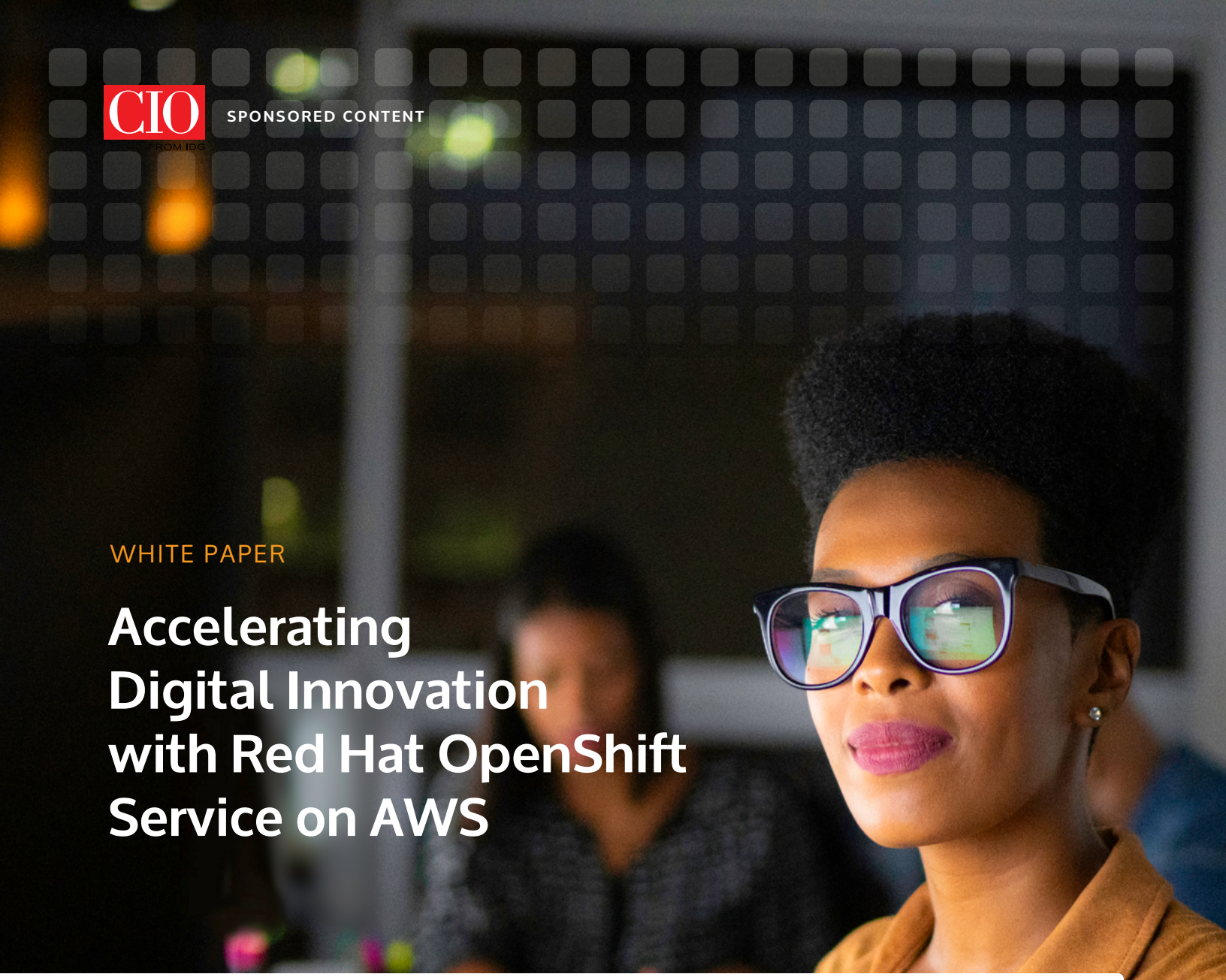

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WHITE PAPER

Accelerating Digital Innovation with Red Hat OpenShift Service on AWS

As organizations strive for greater innovation and productivity to fuel business transformation, they have increasingly adopted application containerization to simplify and accelerate application delivery cycles. Companies of all sizes are using Red Hat's OpenShift to make applications portable across environments, including on-premises and cloud.

Red Hat OpenShift is an enterprise-ready Kubernetes container platform with full-stack automated operations to manage hybrid cloud and edge deployments. Red Hat and Amazon Web Services (AWS) are collaborating on a fully managed and jointly supported offering—Red Hat OpenShift Service on AWS (ROSA)—that can be consumed on-demand from the AWS console. ROSA complements other AWS cloud-native services, reduces operational complexity, leverages cloud scalability, and simplifies budgeting with hourly or annual billing on a single invoice.

aws | Red Hat

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Optimizing digital innovation

Organizations are adopting containerized applications and Kubernetes orchestration to build, deploy, and operate applications faster and with higher security. Red Hat OpenShift includes components of the Kubernetes container management project but adds productivity and security features out of the box that are important to large-scale companies.

Red Hat OpenShift was designed for an open hybrid cloud strategy, providing flexibility to run applications across diverse environments (on-premises, cloud, or edge) across a variety of options including bare metal servers and virtual machines—without having to rebuild those applications, retrain people, or maintain disparate environments. It can aid in the adoption of a devops culture by automating routine operational tasks and standardizing environments across an application's life cycle.

Containerization speeds up development and deployment of cloud-native applications. Red Hat OpenShift's full-stack automated operations, consistent experience—across all environments—and self-service provisioning for developers lets teams work together to move ideas more efficiently from development to production.

Solving a new set of challenges

However, containers introduce a new set of issues for IT to master, including managing storage, failover, workload scaling and scheduling, and monitoring across microservices. Kubernetes orchestrations solve some of those issues, but deployment can be complicated. Even with a container orchestration and automation platform, IT complexity can make it difficult for some organizations to effectively build, launch, and manage container-based applications consistently across hybrid environments.

"Managing Kubernetes is hard, and many organizations are starting to realize they can better focus on other, as-yet unsolved engineering problems if they hand off a big chunk of their container orchestration responsibilities to managed service providers," writes Scott Carey for *InfoWorld*.

While many organizations are successful in running Red Hat OpenShift on a self-managed basis, this approach requires investing in specialized skill sets and incurs administrative overhead. Many organizations would prefer to use these resources to build and deploy value-add applications versus learning how to manage and maintain the container platform.

As new cloud services become available via the AWS Console, ROSA makes it simpler to procure, provision, and manage containerized applications on AWS. IT teams can leave the day 1 and day 2 maintenance and administration of Red Hat OpenShift to the Red Hat experts, and instead focus all their efforts on innovative application development.

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Managed cloud services ease self-managed resource constraints

Organizations of all sizes and types have migrated to cloud to take advantage of managed services that allow them to shift precious resources to business-critical tasks. Many want to reduce the effort required to run their third-party solutions in cloud environments.

Self-managing requires expertise in each environment—as well as related tools—on which applications will run. Even when that expertise is available, finding the resources to install, configure, maintain, and manage that infrastructure can be difficult and frustrating.

Cloud services provide an easier, flexible consumption model for key development and deployment platforms. As a fully managed cloud service, ROSA reduces undifferentiated heavy lifting for Red Hat OpenShift clusters. That allows organizations to free up resources that can be better utilized for innovation and competitive purposes. Just as they turned to cloud to avoid constantly maintaining and upgrading infrastructure, many can benefit by leaving cloud platform management to service provider experts dedicated to the task, and instead consume platform services on a pay-as-you-go basis.

With ROSA, organizations lose the headache of "owning" the platform and all responsibility for configuration, maintenance, and updates. ROSA allows customers to pay only for what they actually consume as they scale up or down.

Although ROSA is new as a service, it provides the same production-ready Red Hat OpenShift that many enterprises already use on-premises today. Because ROSA is a fully managed service, customers can easily deploy fully operational and fully managed Red Hat OpenShift clusters faster, while leveraging the full breadth and depth of AWS, particularly scalability and security. Large service providers such as Infosys have adopted ROSA as a preferred Kubernetes platform to build their modernization offerings.

Red Hat site reliability engineering teams manage the platform, proactively solve problems, and automate operations tasks to provide optimal performance and 99.95% uptime. Internal teams no longer must take care of tasks such as system monitoring, upgrades, patch management, backup, and problem resolution. And developers can take advantage of familiar application programming interfaces (APIs) and existing Red Hat OpenShift tools for deployment in AWS.

ROSA was designed to accommodate most common use cases. However, some organizations with highly unique use cases, specific requirements, or those that need a high level of customization may prefer to continue or start using self-managed Red Hat OpenShift Container Platform. Enterprises have the flexibility to choose the best approach—managed or self-managed—to fit their needs.

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Greater flexibility for high performance

Combining Red Hat OpenShift and the AWS Cloud as a cloud services solution speeds adoption of a flexible, high-performance application environment that supports modern, digital operations.

Red Hat and AWS have collaborated since 2008, making it easy to run Red Hat Enterprise Linux on AWS. In subsequent years organizations have been able to run Red Hat OpenShift Container Platform and Red Hat OpenShift Dedicated on AWS. ROSA extends the collaboration with a fully managed, self-service experience for cluster creation and operations, deeper integrations with AWS services, on-demand (hourly) billing, a single invoice through AWS, and the ability to contact Red Hat or AWS for support.

In the past, organizations deploying application workloads within Red Hat OpenShift on AWS had to deal with two providers and two separate bills. This could result in the customer going back and forth between Red Hat and AWS specialists to gain understanding of the underlying components of their OpenShift on AWS implementation, including the number and sizing of EC2 instances, and how those relate to application workloads.

With Red Hat specialists handling the Red Hat OpenShift platform management in the background, development and operations teams can commit their time and efforts to building and deploying containerized applications that provide the most value to their business.

ROSA subscriptions can be purchased directly from within the AWS Management Console. The process is very simple: Enable ROSA in the AWS account with a single button click, which subscribes the AWS account to the ROSA subscription. Customers can get up and running within minutes with self-service deployment using a simple API and command line interface to create fully managed Red Hat OpenShift clusters.

In the AWS Management Console, users can find Red Hat OpenShift Service on AWS as an additional container services option along with Amazon Elastic Kubernetes service and Amazon Elastic Container Service. On the ROSA landing page, clicking on the 'enable OpenShift' button enables the use of ROSA within the user's AWS account. From then on, any use of Red Hat OpenShift Service on AWS within that account will automatically bill for any OpenShift subscriptions, and users will be able to view the cost for the underlying AWS resources such as EC2 instances.

AWS License Manager can be used to create rules that span various AWS accounts within an organization. Once the ROSA service is enabled in a main payer account, it can then be enabled across the entire organization. This allows teams in non-payer accounts to enable the ROSA service even if they are not able to sign up for AWS marketplace solutions. A flexible pay-as-you-go pricing model offers a choice of an on-demand hourly or annual billing model for discounted costs.

These subscription and provisioning processes provide ready access to a wide range of robust AWS services such as compute, database, analytics, machine learning, networking, mobile, and other services that complement application workloads that are running as Red Hat OpenShift containers.

Development and operations teams can take advantage of on-demand availability, elasticity, and agility, to run modern and existing applications that the business wants to get up and running quickly, using a familiar management interface. Organizations can

Subscription and provisioning processes provide ready access to a wide range of robust AWS services such as compute, database, analytics, machine learning, networking, mobile, and other services that complement application workloads that are running as Red Hat OpenShift containers.

utilize familiar Red Hat OpenShift APIs and existing tools, with integration to AWS APIs to support cluster creation and access to other native AWS services.

In the event of issues or questions, organizations can contact support from either Red Hat or AWS to begin troubleshooting or get answers. Red Hat and AWS support members will jointly triage any problems to determine the cause and appropriate resolution.

Frictionless implementation

Ease of use and scalability are the hallmarks of ROSA. An administrative user can add and remove users and projects, manage project quotas, view cluster usage statistics, and change the default project template. Admins can also scale a cluster up or down or delete an existing cluster.

Red Hat OpenShift clusters are visible within the Red Hat OpenShift Cluster manager via console.redhat.com. This shows all Red Hat OpenShift clusters, including self-managed OpenShift Container Platform clusters running on-premises or on AWS, and fully managed ROSA clusters running on AWS.

When logging in to a cluster via either the command line interface or the AWS Management console, users find a consistent experience with any other flavor of Red Hat OpenShift. Developers can create projects, deploy applications, and make use of templates or operators via the operator hub. Clusters can be configured to be automatically upgraded during a customer-defined maintenance window to the latest release, or users can select to manually upgrade on their own schedule—although if a cluster falls too far behind the latest release it will be subject to automatic upgrading.

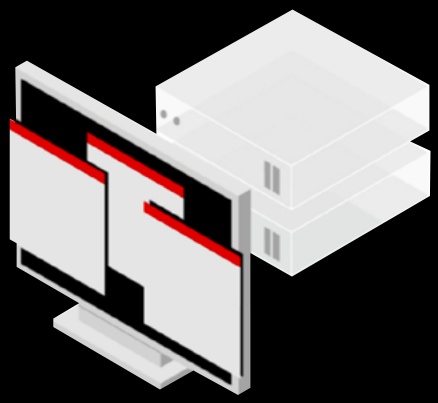
Organizations can deploy clusters across multiple Availability Zones in supported regions to maximize availability. Auto-scaling and auto-healing of worker or compute nodes has been available for some time now via machine sets. ROSA supports machine pools, which expands the concept of a machine set to multi-Availability Zones so users can define a single machine pool that spans more than one Availability Zone.

For simplicity's sake

For most organizations, Red Hat OpenShift is the means to an end: more efficiently managing, running, and scaling their applications, versus expending resources on administrative aspects of achieving that state. ROSA makes it even easier for organizations to focus on deploying applications and accelerating innovation by moving cluster life cycle management to Red Hat and AWS. With many organizations already running Red Hat OpenShift on-premises, ROSA simplifies the process of shifting workloads to the AWS public cloud as business needs change. With ROSA, Infosys was able to migrate their Infosys Cloud Native Development Platform, originally developed on top of Red Hat Openshift, to AWS with the same tooling and skill set.

Infosys Cloud Native Development Platform supports both Red Hat OpenShift and ROSA and allows customers to develop modern applications across on-premises and cloud.

Fully managed and jointly supported by Red Hat and AWS, ROSA combines the power of Red Hat OpenShift and the AWS cloud so that development teams can focus on better serving their businesses and establishing a more cost-effective and reliable IT platform for their applications.



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For more information, visit aws.amazon.com/rosa

OpenShift: The Enterprise-ready Container Application Platform

Red Hat OpenShift has become the leading enterprise container application platform, providing organizations with greater flexibility across on-premises and cloud infrastructure. According to one report, Red Hat accounted for almost 48% of all container software revenue in 2020.

Red Hat OpenShift incorporates Kubernetes and adds a secure, enterprise-grade Linux operating system, container runtime, networking, monitoring, registry, and authentication and authorization solutions to provide a comprehensive enterprise application platform.

Kubernetes is an open source project that relies on community support. Red Hat OpenShift is also based on OKD, an open source and community-supported distribution of Kubernetes, but a subscription comes with paid enterprise-level support for its full technology stack. It provides an enhanced UI and stronger security policies to meet enterprise requirements. Red Hat OpenShift includes hundreds of fixes to defect, security, and performance issues for upstream Kubernetes in every release.

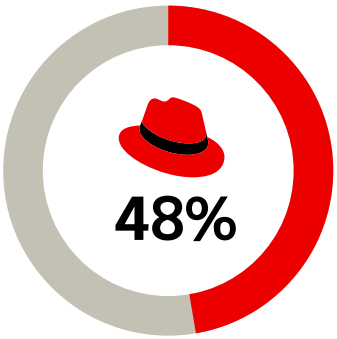
Red Hat OpenShift is optimized to improve developer productivity and promote innovation. It provides full-stack automated operations to manage hybrid cloud and edge deployments, including software-defined networking. It also validates additional common networking solutions as well as numerous storage and third-party plugins for every release.

Organizations can deploy Red Hat OpenShift as a fully managed service on their preferred cloud provider for a seamless experience. Or they can choose a self-managed deployment of Red Hat OpenShift Container Platform in the environment of their choice.

Red Hat OpenShift delivers a complete application platform for both traditional and cloud-native applications, allowing them to run anywhere. Through a common abstraction layer across any infrastructure, Red Hat OpenShift provides both developers and operations teams with commonality in how applications are packaged, deployed, and managed. Organizations can run applications where it makes the most sense, without creating different operational models because of the host environment.

Red Hat OpenShift provides diverse application modernization and migration capabilities to fit specific enterprise needs. Modernization tools can drive legacy applications to new, microservices-based architectures. Organizations can drive management consistency across all applications for operational efficiency without slowing innovation.

2020 Container Software Revenue



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Infosys®
Navigate your next

The Infosys Cloud Native Development Platform, a part of Infosys Cobalt, is a turnkey solution that addresses the technology, commercial, and support requirements of digital transformation initiatives. It runs on the powerful Red Hat® OpenShift®; both on-premises and on cloud managed services e.g. Red Hat® OpenShift® Service on AWS (ROSA) and integrates with other leading open source technologies to accelerate end-to-end application development lifecycle.

The Infosys Cloud Native Development Platform automates the non-functional aspects of cloud-native development and enables the developers to focus on the business logic, significantly enhancing the developer productivity. It helps the developers lay a solid foundation by helping select the best-fit architecture, automates provisioning of environments and helps start the development of new microservices and batch jobs within minutes. A developer can quickly create rich UI with the help of drag-&-drop controls and a rich component repository. The inbuilt DevSecOps pipelines and observability tools are auto-provisioned and fully integrated into the Openshift environment. The entire process is secure by design including RBAC, code scanning and container security.

The architecture-first approach of the Infosys Cloud Native Development Platform greatly simplifies the development and deployment of container-based modern applications on industry-standard Kubernetes infrastructure, whether on-premise or on the cloud. The platform combines the native capabilities of Kubernetes with Infosys experience, best practices and tools to accelerate cloud native development. It helps the developers start a project within minutes instead of months, reduces development effort by up to 40%, and greatly reduces the complexity of cloud native development projects.

Infosys Cobalt

Infosys Cobalt is a set of services, solutions, and platforms that acts as a force multiplier for cloud-powered enterprise transformation. Infosys Cobalt helps businesses redesign the enterprise, from the core, and also build new cloud-first capabilities to create seamless experiences in public, private and hybrid cloud, across PaaS, SaaS, and IaaS landscapes. With Infosys Cobalt's community leverage, enterprises can rapidly launch solutions and create business models to meet changing market needs while complying with the most stringent global, regional and industry regulatory and security standards.

Learn more about Infosys Cobalt and Infosys Cloud Native Development Platform

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For more information, visit aws.amazon.com/rosa