Transform your organization with containers

Digital business requires modern infrastructure

As technology advances, customer demand for digital services grows. To meet these expectations, many organizations are modernizing their IT environments with cloud-native infrastructure and approaches. Using emerging technologies and cultural innovation, organizations can deliver dynamic, personalized digital customer experiences while improving internal business practices.

Successful modernization requires evolution in applications, processes, and infrastructure. New application architectures enable fast, flexible delivery of new features to accelerate business value. Agile business processes improve operational efficiency and speed response to changing market conditions. Cloud-based infrastructure allows organizations to better control costs and take advantage of emerging innovation. Containers are a key technology for IT modernization and optimization.

What are containers?

Linux® containers are technologies that allow you to package and isolate applications with their entire runtime environment—all of the files necessary to run. This makes it easy to move the contained application between environments while retaining full functionality. The host operating system provides containers with resource management, abstraction, and security capabilities while enforcing container resource quotas and isolation. Figure 1 shows a comparison of traditional, virtual, and container software stacks.
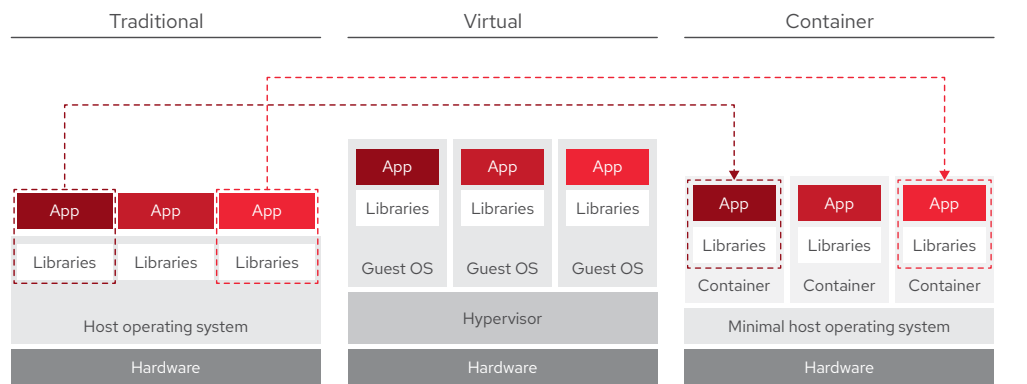

Figure 1. Comparison of traditional, virtual, and container software stacks

1 Gartner press release. *"Gartner Forecasts Strong Revenue Growth for Global Container Management Software and Services Through 2024,"* 25 June 2020.

Modernize your applications, processes, and infrastructure

IT modernization initiatives can use containers—integrated with a container platform that provides development and deployment capabilities—to fundamentally change applications, processes, and infrastructure. Application life-cycle management, build automation, and continuous integration/continuous deployment (CI/CD) capabilities make containers an ideal development foundation. Plus, automated deployment, scaling, and management functionality allows containers to operate across hybrid environments alongside existing applications and IT investments.

Applications

Using containers and microservices, you can rapidly develop cloud-native applications, speeding time to market for new products and features. The building blocks of modern applications, microservices are minimal, complete, and composable services with limited dependencies. Containerized microservices can be deployed and updated quickly and independently. Container orchestration platforms manage microservice deployments at scale and provide integrated service discovery.

Processes

Containers also help you adopt agile development processes that increase efficiency and collaboration between development and operations teams. By packaging applications and dependencies into containers, developers can provide operations with a consistent management process for all applications. Immutable application packages can easily be moved between development, test, and production environments without rebuilding the application. As a result, development and operations can use a single, shared container platform that addresses both teams' core requirements.

Infrastructure

Containerized applications and services scale easily across hybrid environments—including physical, virtual, and private, public, and edge cloud infrastructure—giving you choice and flexibility for enterprise workloads. Containers provide a standard and portable package that can be deployed consistently and rapidly across physical and virtual machines in any on-site or cloud environment.

Adopt containers with Red Hat and Microsoft

Red Hat and Microsoft provide a production-ready, containerized environment with a hybrid cloud foundation. Shown in Figure 2, Red Hat® OpenShift® Container Platform is an enterprise-ready Kubernetes container platform with full-stack automated operations to manage hybrid cloud and multicloud deployments. It is optimized to improve developer productivity and promote innovation. Self-service capabilities let you develop, deploy, and manage traditional and container-based applications seamlessly across physical, virtual, and cloud infrastructures. Advanced security features help protect your containerized environment by preventing tenants from compromising other containers or the underlying host.

Spanning more than 60 regions, Microsoft Azure is a global network of some of the world's largest datacenters. It integrates seamlessly with your on-site datacenter and provides a comprehensive set of cloud services for building, deploying, and managing container-based applications. More than 70 compliance offerings help you keep resources in alignment with regulations and policies. Additionally, Microsoft Azure Security Center supplies a central view of your Azure resources to aid in threat detection and mitigation. Azure Active Directory provides identity governance and access management that work seamlessly with Red Hat OpenShift Container Platform.
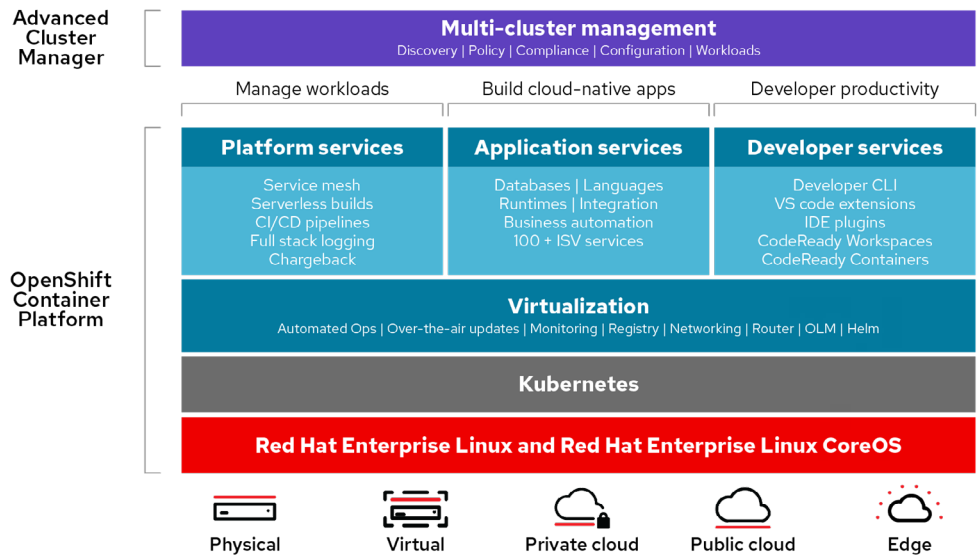
Figure 2. Red Hat OpenShift Container Platform architecture

Together, the native high-availability features of Microsoft Azure and the advanced application management capabilities of Red Hat OpenShift Container Platform create a reliable, stable container-ready environment. The Red Hat OpenShift Container Platform interface lets you easily create and deploy applications on Microsoft Azure using Linux-based microservices. Migrating on-site development and test environments to a container-ready environment can also improve performance, flexibility, and control.
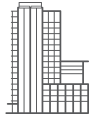
Red Hat and Microsoft offer two deployment options for running Red Hat OpenShift on Microsoft Azure. Organizations with container experience or strict control requirements can build and manage their installation themselves. Organizations that lack the time, resources, or experience to build their own environment can take advantage of Azure Red Hat OpenShift, a jointly engineered and fully managed deployment of Red Hat OpenShift on Microsoft Azure.

Finally, Red Hat and Microsoft deliver the resources needed for IT modernization, including an integrated, enterprise-grade support system for Red Hat solutions running on Microsoft Azure. You gain access to support staff from both Red Hat and Microsoft, an integrated ticketing system, powerful portal integration, and a seamless, coordinated escalation and resolution process. And you can customize your IT environment through a large ecosystem of certified partner solutions and extensive community of partners and experts.

Speed application development and launch

Organizations are actively developing production-grade, microservice-based applications to rapidly deliver new services and features to customers. In fact, 62% of organizations say that applications are essential for their business, and a further 36% say applications provide a competitive advantage.[2]

Deploy containers more quickly and easily

Azure Red Hat OpenShift is a fully managed, cloud-based container environment that lets you adopt an enterprise Kubernetes platform more quickly and easily. Microsoft and Red Hat manage and operate the underlying infrastructure and bill you through your Microsoft Azure subscription, so you can get started seamlessly and immediately.

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2 F5 Networks. *"2020 State of Application Services Report," 2020.*

Red Hat and Microsoft provide the tools you need to build and deploy modern, microservice-based applications. Quickly create container images using automated workflows. Build stateful and state-less applications with attached, persistent storage. Deploy and manage microservices and applica-tions quickly and easily through load-balancing, autoscaling, and orchestration capabilities.

Adapt rapidly to changing conditions

Agile development processes can help you improve operational efficiency and respond faster to dynamic market conditions. Accordingly, organizations that most effectively adopt DevOps approaches can deploy code 208 times more frequently.[3]

Red Hat OpenShift Container Platform and Microsoft Azure supply tools and capabilities to help you adopt agile development processes and develop and update applications faster. Rapidly enact changes for container-based applications using policy-based control and automation. Dynamically scale to meet changing demand with flexible, cloud-based resources.

Improve flexibility and reduce costs

A scalable, manageable hybrid cloud environment can help you control costs while taking advantage of emerging technology. As a result, 87% of enterprises have a hybrid cloud strategy in place.[4]

Red Hat and Microsoft deliver the expertise and support you need to build cost-effective hybrid cloud environments. Adopt a seamless, consistent deployment process across on-site and cloud resources. Place applications where it makes the most sense now and move them as requirements evolve. Dynamically scale applications and resources in line with changing demand. Pay only for the resources you use with flexible, pay-as-you-go pricing options for Microsoft Azure. Further reduce costs by taking advantage of the Red Hat Cloud Access program to move your Red Hat product subscriptions to Microsoft Azure.

Learn more

To compete in a digital world, organizations across industries are adopting new approaches to applications, processes, and infrastructure. Red Hat and Microsoft offer an enterprise-grade, container-ready hybrid cloud environment that lets you use agile development processes to quickly build and deploy the modern, microservice-based applications your customers demand.

Learn more about Red Hat and Microsoft container solutions:

- Self-managed Red Hat OpenShift on Microsoft Azure

- Microsoft Azure Red Hat OpenShift managed service

- Architecture and technical documentation

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3 DevOps Research and Assessment (DORA) and Google Cloud. *"Accelerate: State of DevOps 2019,"* August 2019.

4 Flexera. *"2020 Flexera State of the Cloud Report,"* April 2020.

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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