

Maximizing development with OpenShift Virtualization

Challenging IT demands and economic conditions require a consolidated approach to supporting applications and services. Businesses cannot always afford dedicated hardware and IT teams for development programs. Instead, the current trend is to encompass multiple workload types and deployment methodologies to increase developer performance.

This includes solutions that combine containerized workloads with virtual machines. A platform that supports both container orchestration and virtualization can be a powerful solution to consolidate services and support. It also has a role in the software development and automation process known as DevOps. Since the goal is to improve performance using containers, many companies may want to start with a container platform and gradually add support for virtual machines. This type of platform is able to transition from legacy virtual machine workloads to modern containerized services, while using the same hardware and support team.

The deployment of Red Hat® OpenShift® Virtualization helps IT teams iteratively deliver development services in less time. Red Hat has worked with customers across several vertical industries, including banking, telecommunications, public sector, and energy sectors.

Defining containers and virtual machines

Red Hat addresses the needs of development teams that have adopted, or want to adopt, platforms running workloads with virtualized workloads that cannot be easily containerized.

What is a containerized environment?

Containers are small, executable units of software in which code is packaged, along with its libraries and dependencies, to run from the desktop, traditional infrastructure, or a cloud environment. These bare-metal systems consist of just the hardware assembly, structure, and components installed with the firmware or basic input/output system software utility, or no software at all. These systems automate the deployment, management, scaling, and networking of containers. Expanded across multiple racks, developers only pay for the resources they use.

What is a virtual machine?

A virtual machine (VM) is an environment that functions as a virtual computer system with its own CPU, memory, network interface, and storage, created on a physical hardware system. Each VM is logically isolated from one another, with its own operating system kernel, and offers the benefits of a completely separate operating system. Virtualization supports key workloads including resource-intensive and critical applications on a stable foundation.

VMs have access to all the artifacts that pods do, including being able to access and be accessed using service endpoints. Once the VM is running, it is possible to extend the functionality of each application into the containerized environment.

Red Hat OpenShift has full-stack automated operations, a consistent experience, and standards-based provisioning to let teams work together more efficiently to move ideas from development to production.

Features and benefits

Hosted control planes

Using this solution, developers can take advantage of hosted control planes, previously known as HyperShift. In hybrid environments, hosted control planes speed up development projects by letting IT teams dynamically create smaller, more manageable clusters. This allows administrators to use finer, multitenant control over multiple, team-specific Red Hat OpenShift clusters for more robust isolation between projects.

Application teams can take advantage of their own work areas with a lower footprint and management overhead. Benefits include:

- ▶ Environments that are more agile and flexible to meet a variety of needs.
- ▶ The number of Kubernetes pods available within each container is unlimited.
- ▶ Developers can take advantage of more isolated shifts to provide more services.
- ▶ Cluster admin privileges may be activated within each of the virtual clusters.
- ▶ Teams have access to better datacenter density.
- ▶ Teams can use and manage environments with the same tools and processes as the existing pods.

Cost savings

Running multiple virtual environments from one piece of infrastructure significantly reduces the physical infrastructure footprint. This boosts the bottom line, lowers the number of servers needed, and achieves OpEx savings on maintenance costs and electricity.

Speed of deployment

In many environments, developers are able to use Red Hat products to accelerate their work. For example, the typical length of time to get code into final production can take several months to a year.

Scalability

VMs also allow developers to scale each application by adding more virtual servers or pods to distribute the workload. This increases the availability and performance of the apps.

Storage types

OpenShift Virtualization is designed to take advantage of all storage types available, including shared files, high performance or dedicated storage, and direct access to object storage.

Maintainability

Existing environments are more easily restored to fully operational status after experiencing a fault, as virtual machines provide the ability to rebuild to maintain environment hygiene.

Testing

In a testing use case, a developer working to integrate a third-party application may deploy it on a VM within the container platform. After testing is complete, the developer can quickly and easily dispose of the environment, redeploy it, and return the same resource back to a known state.

Cost-efficient use of IT teams

IT administrators can save on personnel costs by using the same hardware and support team for the transition from VM to containerized services. For example, a large, monolithic application may be planned for containerization in the future. In the interim, it can be deployed on a VM on the container platform. From there, the same IT team—already familiar with the application—can start containerizing replacement services until the entire application is refactored into separate functionalities.

Red Hat OpenShift Virtualization for DevOps

Red Hat OpenShift Virtualization is a natural supporter of DevOps, the development process and culture that supports delivery of higher quality software by automating and integrating development and IT operations. These two practices are traditionally separate from each other. However, in the Red Hat solution, these two functions can work side by side, with results such as more frequent deployments, a shorter lead time to change, lower change failure rates, and a faster mean time to recovery (MTTR).




Working with Red Hat Consulting

Red Hat Consulting takes an integrated approach to connecting people, process, and technology to address the unique needs of each organization based on a retainer or project-driven model and helps to standardize across environments, develop cloud-native applications, and integrate, automate, secure, and manage complex systems with award-winning support, training, and consulting services. Red Hat Consulting engages with organizations to suit its requirements and meet its current and future needs.



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Red Hat helps customers standardize across environments, develop cloud-native applications, and integrate, automate, secure, and manage complex environments with [award-winning](#) support, training, and consulting services.

 facebook.com/redhatinc
 @RedHat
 linkedin.com/company/red-hat

North America
 1 888 REDHAT1
 www.redhat.com

**Europe, Middle East,
and Africa**
 00800 7334 2835
 europe@redhat.com

Asia Pacific
 +65 6490 4200
 apac@redhat.com

Latin America
 +54 11 4329 7300
 info-latam@redhat.com