

Organizations are looking to move off their virtualization platforms and strategically expand their container infrastructure for AI application development, and modern virtualization helps with both.

# Modern Virtualization Paves the Path to Unified Application Management

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## Introduction

Faced with rising virtualization software costs and the demand to update legacy applications to cloud-native architecture, many organizations are finding modern virtualization a way to address both.

Modern virtualization refers to the running of VM-based applications in Kubernetes clusters, which KubeVirt, an open source, CNCF-sponsored Kubernetes add-on, enables by allowing the creation and management of VMs within Kubernetes.

This is especially advantageous for organizations going through application modernization because they no longer have to manage applications running on separate platforms. All applications are consolidated on Kubernetes, regardless of whether they are VM based or containerized.

In addition, this addresses the more immediate challenge of rising virtualization software costs. By migrating applications to Kubernetes, organizations can reduce or eliminate their virtualization software dependency.

## Accelerating the migration timetable

Organizations are under pressure to optimize their infrastructure to reduce licensing costs, and in many cases, this involves migrating applications off virtualization platforms. One option is to migrate to alternative hypervisors or cloud-based virtualization platforms; however, this also has its challenges. Organizations would still have to put effort into migration, such as making minor changes to applications or finding suitable replacements to maintain feature parity between the new platform and the previous one, all for what is essentially a lateral move.

Modern virtualization allows for migrating applications to a Kubernetes platform instead of an alternative hypervisor. For applications that were slated for containerization, migrating to Kubernetes was already an eventuality, and modern virtualization enables that migration to occur sooner.

## AT A GLANCE

### KEY TAKEAWAYS

- » Modern virtualization provides organizations with a way to run VM-based applications in Kubernetes without refactoring them.
- » AI application development will increase container and Kubernetes adoption.
- » As organizations' container and Kubernetes infrastructure grow, maintaining separate platforms for Kubernetes and VMs will become a pain point.

### **Refactoring without worry**

Refactoring VM-based applications for Kubernetes lets the applications take advantage of Kubernetes features such as dynamic scaling, built-in redundancy, and microservices architecture. This takes time and must be carried out cautiously to ensure that the process does not alter application functions.

Modern virtualization doesn't accelerate the refactoring process, but it does ease the pressure around it. VM-based applications can run in Kubernetes despite being structured for VMs, so engineering teams are free to refactor these applications at their own pace to ensure quality and thorough testing.

Critical legacy applications, monolithic applications that need to be restructured for microservices architecture, and applications with highly fluctuating resource demands are prime candidates for containerization. Modern virtualization allows these applications to run on the same platform as containerized applications while refactoring efforts are underway. This allows for unified application management without any barriers between legacy and modern systems.

However, even applications that will never be refactored for Kubernetes can be migrated to and run on Kubernetes platforms, directly addressing the need to move away from virtualization platforms. This is important because it means that organizations don't have to maintain separate management planes for VM-based and Kubernetes-based applications.

Last, modern AI applications are built on containers, with Kubernetes as the container platform of choice. Organizations with plans to develop and deploy AI will need to move to Kubernetes, making consolidation under Kubernetes a crucial goal.

### **Benefits**

Modern virtualization addresses the challenges detailed previously and has many benefits:

- » **Consolidated application platform:** By using the same management plane for Kubernetes-based and VM-based applications, organizations gain streamlined management, unified visibility, lowered complexity, and standardized storage and data management across all applications.
- » **A midway point for containerization:** Previously, VM-based applications had to be refactored before they could run in Kubernetes. Modern virtualization allows applications to be migrated to Kubernetes first and function as normal before finishing the containerization journey.
- » **Unification for all applications:** VM-based applications that will never be refactored for Kubernetes aren't left behind. They can run on Kubernetes clusters alongside refactored applications.
- » **Greater scalability:** The unified management and control that modern virtualization provides make it easier for organizations to add more applications or accommodate the growth of existing ones.
- » **Best option for growing container estate:** IDC research found that 47% of organizations have containerized more than half of their applications in production. This continues to grow, driven by more applications being refactored and the deployment of AI applications. Maintaining separate platforms for managing Kubernetes and VMs becomes a more pressing concern as container applications become a larger portion of the total infrastructure.

## Trends

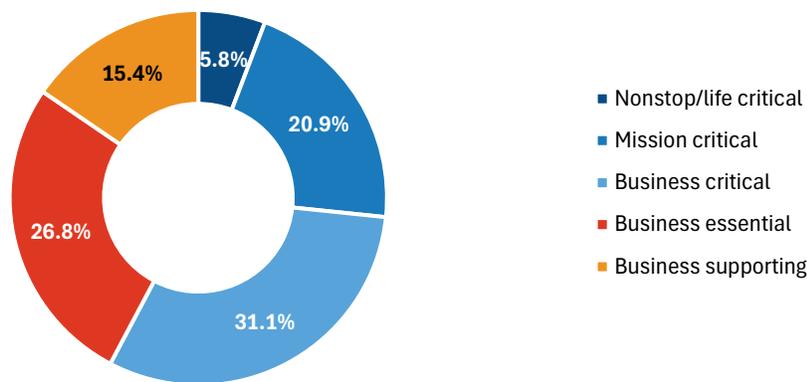
IDC research found that an average of about 58% of applications running in containers are business critical, mission critical, or nonstop/life critical (see Figure 1). The study surveyed 850 respondents across Argentina, Australia/New Zealand, Brazil, Canada, France, Germany, India, Mexico, the United Kingdom, and the United States. All companies had more than 50 employees, except for U.S. participants, which had over 100 employees.

The results indicate that containers and Kubernetes are no longer new and are instead a part of organizations' critical infrastructure. Enterprises are increasingly recognizing the benefits of Kubernetes, such as application portability and automatic resource scaling.

FIGURE 1: **Most container applications are critical**

*On average, 58% of applications running in containers are considered critical.*

**Q What percentage of your applications running in containers are considered nonstop/life critical, mission critical, business critical, business essential, and business supporting?**



*n = 850*

*Base = respondents indicated applications running in production are containerized*

*Notes: Data is weighted by IT spending by country.*

*Use caution when interpreting small sample sizes.*

*Source: IDC's Cloud Data Logistics and Protection Survey, August 2025*

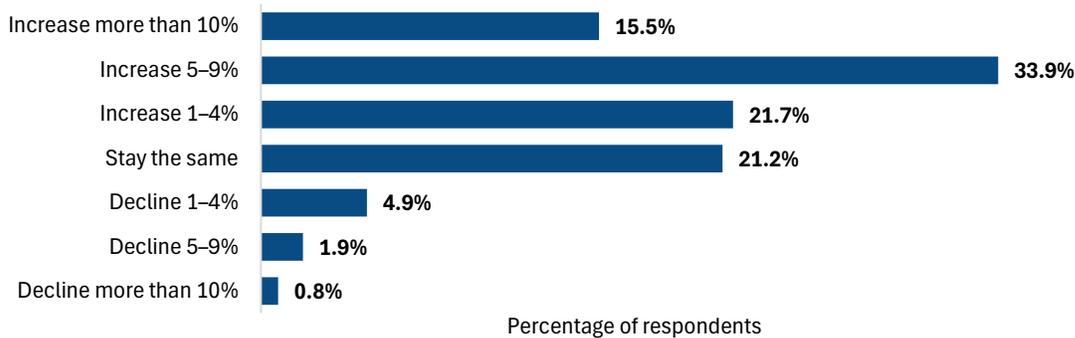
In the same IDC study, most respondents noted that they will be increasing IT spend on container technology (see Figure 2). This indicates deep confidence in the technology and further supports the notion that organizations' container estates will continue to grow. While previous studies have attributed this growth to more applications being refactored, AI application deployment is also a driving factor.

This makes modern virtualization especially relevant because organizations must consider how they handle their virtualized infrastructure and their containerized infrastructure. Consolidating VMs onto Kubernetes would be simpler than maintaining both separately, and this will be especially appealing for organizations that are under pressure to move off hypervisors.

## FIGURE 2: *IT spending on containers will grow*

72% of organizations will increase their investment in container technology over the next 12 months.

### Q How will your organization's investment in container technology change in the next 12 months?



*n* = 850

Base = respondents indicated applications running in production are containerized

Notes: Data is weighted by IT spending by country.

Use caution when interpreting small sample sizes.

Source: IDC's Cloud Data and Production Survey, August 2025

## Considering SUSE and Portworx

SUSE Virtualization, alongside Portworx by Pure Storage, offers a consistent data management platform for containers and VMs running on Kubernetes, providing a solid modern virtualization solution.

SUSE Virtualization, formerly Harvester, is a virtualization platform based on KVM. It is designed for running VM-based applications, but its back-end infrastructure is Kubernetes. It is included with SUSE Rancher Prime, which is SUSE's container management platform. Other capabilities of SUSE Rancher Prime include the automatic detection and addressing of node failure to maintain application uptime, support for all CNCF-certified Kubernetes distributions, observability for all cloud-native applications, and multiple layers of security features.

As a hypervisor with a Kubernetes back end, SUSE Virtualization has many features that support modern virtualization. By virtue of its KVM foundation, it supports hosting VMs and containers on bare metal as a deployment option. As a unified management platform, SUSE Virtualization allows for the sharing of GPU resources across VM and Kubernetes workloads. Finally, the product comes with cost and impact analysis tools specifically for organizations migrating applications off VMware.

SUSE Virtualization's other features include built-in role-based access control (RBAC) and preconfigured CSI drivers on the hypervisor. The platform is built entirely on open source technologies, including Kubernetes, KVM, and KubeVirt, but SUSE periodically releases new features and makes them accessible to customers.

While SUSE Virtualization enables application management, Portworx serves as the storage and data management layer for those applications. Portworx's storage capabilities include granular I/O tuning to optimize application performance, storage scaling, and automatic resizing, so applications always have resources to run and built-in RBAC and volume

encryption. Portworx also includes a wide range of availability and disaster recovery options through synchronous and asynchronous replication.

Portworx has certain features designed specifically for organizations pursuing modern virtualization or migrating to another hypervisor. Portworx uses a live migration feature, Enhanced Storage Migration, to replicate and move VM disks to different storage pools within the same cluster without interrupting the VM. In addition, synchronous DR allows replication between clusters, even if the source and target nodes are on different hypervisors. Migration can be achieved by synchronizing the data between the two data stores before cutting over.

Portworx has tight integration with SUSE Rancher Prime and SUSE Virtualization. Storage clusters under Portworx management are visible in SUSE Rancher Prime's interface. From there, users have a complete, consolidated view of the storage resources being consumed by both Kubernetes applications and VM-based applications running in Kubernetes via SUSE Virtualization.

### Challenges

It's important to note that modern virtualization, as expected with any large-scale application migration, can take months or longer. Organizations that are deeply embedded in their hypervisors will find modern virtualization to be a daunting endeavor, especially if their containerization projects aren't yet fully developed.

It is therefore important for vendors in this market to recognize that some organizations will take other, quicker options to migrate off their current virtualization platforms, such as to an alternative hypervisor, rather than choosing modern virtualization. SUSE Virtualization can help with hypervisor-to-hypervisor migration, and Portworx plans to introduce features to make running VMs in Kubernetes familiar to VMware administrators. Acknowledging modern virtualization can be a heavy lift and helping organizations move toward it gradually rather than immediately may be the best way to address this challenge.

Another challenge is the potential clash between VM administrators and platform engineering teams. While modern virtualization unifies application management architecturally, IT organizations must also foster unification from a staff perspective. This will include helping staff to overcome the learning curve from VM administration to Kubernetes administration and to divide responsibilities appropriately for VM-based apps that are running within Kubernetes clusters.

### Conclusion

Modern virtualization addresses two major infrastructure challenges organizations are facing today: the pressure to migrate off virtualization platforms and to run more applications on Kubernetes infrastructure. Running VMs in Kubernetes allows organizations to simplify application management by consolidating to a Kubernetes platform rather than using separate platforms for VM-based and Kubernetes-based applications.

Migrating applications to Kubernetes isn't the only way for organizations to lower virtualization costs. However, organizations that are already planning to refactor significant amounts of their VM-based applications for Kubernetes or are investing in AI

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application development will often find it a better long-term option than migrating to the cloud or an alternative hypervisor.

Last, modern virtualization enables organizations to adopt a "migrate now, refactor later, or perhaps never" strategy with their applications. IDC research found that refactored legacy applications make up the majority of containerized applications, and organizations have historically been under pressure to containerize more of their applications ever since container technology became widely adopted among enterprises. Modern virtualization relieves some of that pressure by allowing organizations to refactor at their own pace while running all their applications in Kubernetes.

## About the analyst



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Johnny Yu is research manager within IDC's worldwide infrastructure research organization and part of the infrastructure software platforms practice. His coverage includes storage software, data replication, protection and archiving software, storage device management, and container data management. Johnny focuses on cost optimization, storage, data security, and service quality as companies bridge their infrastructure between on premises and cloud.

## MESSAGE FROM THE SPONSOR

To learn more about how Portworx and SUSE deliver enterprise-grade resilience and manageability at scale for modern virtualization, watch our on-demand webinar, <https://portworx.com/webinar/virtualization-is-cloud-native/>



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