

SEPTEMBER 2024

Evolving Enterprise Virtualization Strategies by Utilizing the Dell APEX Cloud Platform for Red Hat OpenShift

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Abstract: With a fast-changing virtualization supplier and technology landscape, many IT organizations are rethinking their plans at both a tactical and strategic level. The rapid emergence of new applications, including AI apps—many running on modern container-based technologies—means IT orgs are faced with the challenge of how to manage them alongside existing apps, without further compounding already high levels of complexity. Help is at hand via Red Hat OpenShift Virtualization, a feature included in the Dell APEX Cloud Platform for Red Hat OpenShift, a tightly integrated turnkey approach to managing virtualized and container-based applications on a single stack.

Introduction

The technology infrastructure market continues to evolve at a rapid pace, and IT leaders are facing an all-too-familiar conundrum: how to modernize their applications and infrastructure to embrace transformative technologies without further increasing complexity or seeing costs spiral out of control. In particular, they are under pressure to modernize their virtualization estate, adopt modern cloud-native architectures, and build, train, and deploy AI models amid noteworthy skills gaps and rising costs. Organizations want the freedom to seamlessly run their workloads wherever the business needs, but moving to such an operating environment is easier said than done.

For many, the idea of a trusted, unified, and modern enterprise application platform, delivered as a turnkey appliance and powered by the latest server and storage systems, is an attractive consideration. Dell APEX Cloud Platform for Red Hat OpenShift is one such approach. It offers comprehensive automation for Red Hat OpenShift including OpenShift Virtualization, enabling seamless integration, deployment and management of both virtual machines and containers on a single, unified, modern application platform. For organizations looking to take advantage of OpenShift Virtualization, APEX Cloud Platform for Red Hat OpenShift delivers simplicity and consistency across the IT footprint.

In a Changing Virtualization Market, IT Organizations Are Reevaluating Their Options

Recent disruption in the hypervisor market is prompting organizations to evaluate virtualization alternatives and, in many cases, rethink their entire strategies. In a recent study by TechTarget's Enterprise Strategy Group, over three-quarters (76%) of respondents said the cost of hypervisor software is a top IT concern to their organization. Notably, more than a third (37%) of respondents also said they are planning to replace their primary hypervisor.¹

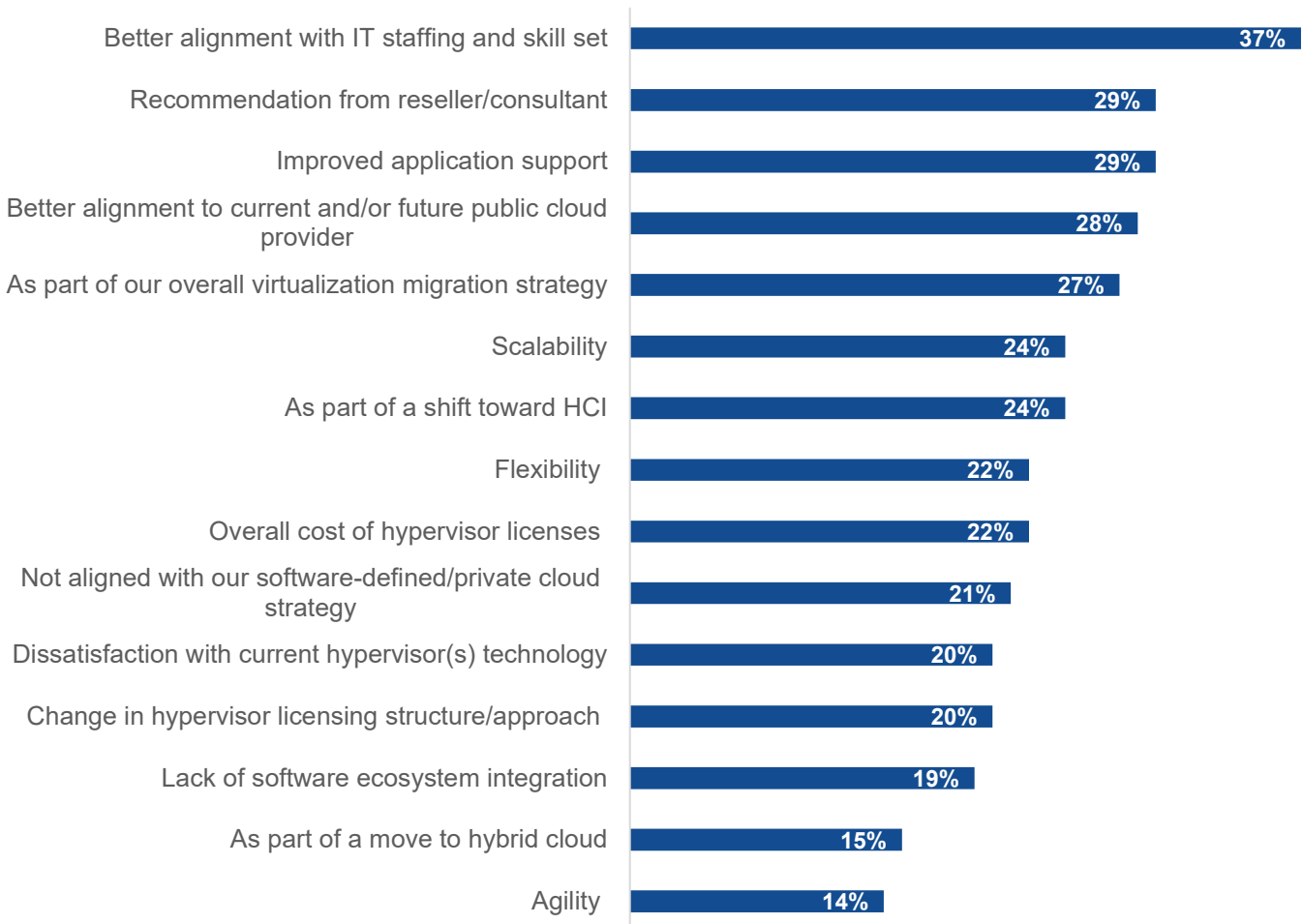
¹ Source: Enterprise Strategy Group Complete Survey Results, [Navigating the Cloud and AI Revolution: The State of Enterprise Storage and HCI](#), February 2024.

This isn't just about pricing and licensing changes, although these are certainly factors; IT organizations appear to be thinking more strategically. Among several factors driving hypervisor replacement are IT staffing issues, the need for improved application support, a desire for better alignment with public cloud providers, and a requirement for improved scalability and flexibility (see Figure 1).²

Collectively these factors reflect a broader, more fundamental transition taking place within the IT infrastructure landscape. We are entering a new era where support for modern, cloud-native applications—including AI applications—is increasingly important. The challenge for IT leaders is how to navigate this transition. How can they modernize their application estate and truly take advantage of new approaches without breaking the bank, and without further compounding complexity?

Figure 1. Top Drivers for Hypervisor Replacement

**To the best of your knowledge, why would your organization be most likely to displace its current primary hypervisor with another hypervisor?
(Percent of respondents, N=139, multiple responses accepted)**



Source: Enterprise Strategy Group, a division of TechTarget, Inc.

² Ibid.

Complexity is already a major challenge for IT organizations. According to Enterprise Strategy Group research, 9 out of 10 organizations said their overall IT environment had become more complex over the previous two years.³ The net result of this complexity is that it impedes the pace of progress: In another survey, 68% of organizations said IT complexity is slowing down IT operations and digital initiatives.⁴

The transition to cloud-native architectures is a good example of this complexity challenge within the IT infrastructure domain. According to Enterprise Strategy Group, 67% of organizations are already running container-based production applications, with a further 18% expecting to be doing the same within 12 months.⁵

Container environments themselves can be complex to manage, especially at large scale. This complexity can be compounded as organizations begin to deploy more stateful applications, requiring access to persistent storage. Moreover, many organizations are experiencing Kubernetes “sprawl,” where multiple developer groups are deploying Kubernetes independently, often using different orchestration platforms, and with little consistency between environments. At an aggregate level, this sprawl is inefficient, increasing overall costs and, without centralized management and control, potentially introducing risk.

Additionally, managing the container-based application estate separately from the existing virtualized application estate might seem like the easiest option at the outset, but this would likely have negative consequences over the longer term, resulting in higher costs, lower efficiency, and greater complexity, since IT would need to manage two entirely separate environments. Such an approach would also make it more difficult to “containerize” virtualized applications over time, should that become a requirement.

It's important to remember that container-based applications are still relatively new. Adoption is likely to grow substantially over the coming years, particularly as organizations begin deploying AI applications. Many AI apps are developed to run in containers, since this suits their lightweight and portable nature. Additionally, Enterprise Strategy Group research suggests more than a third (36%) of organizations are deploying their AI infrastructure in hybrid cloud environments or on-premises.⁶

All of this suggests that many more organizations will see their on-premises container environments grow substantially in the future. For this, they need to be prepared with modern, agile infrastructure that can elegantly and efficiently scale, in a manner that is consistent with their traditional virtualized and cloud-based workloads. To effectively do this in a way that minimizes complexity, many will conclude that this can be best achieved via a single, integrated solution.

Better Together – Red Hat OpenShift Virtualization on APEX Cloud Platform for Red Hat OpenShift

Dell and Red Hat have been strategic partners for over 20 years, during which time they have jointly engineered and integrated a range of fully validated solutions, tools, and reference architecture, simplifying IT for customers. The latest collaboration between the two provides IT organizations a path forward on two critical fronts:

1. It supports those looking to move, entirely or partly, to a new hypervisor platform.
2. It enables organizations to deploy and manage their virtualized and containerized applications on a common infrastructure stack, managed via a unified console.

³ Source: Enterprise Strategy Group Complete Survey Results, [2024 Technology Spending Intentions Survey](#), February 2024.

⁴ Source: Enterprise Strategy Group Complete Survey Results, [Navigating the Cloud and AI Revolution: The State of Enterprise Storage and HCI](#), February 2024.

⁵ Source: Enterprise Strategy Group Complete Survey Results, [Distributed Cloud Series: The State of Infrastructure Modernization Across the Distributed Cloud](#), August 2023.

⁶ Source: Enterprise Strategy Group Research Report, [Navigating the Evolving AI Infrastructure Landscape](#), September 2023.

APEX Cloud Platform for Red Hat OpenShift streamlines containerized and virtualized application development, deployment, and management on premises, fostering innovation through a fully integrated system. It offers consistent operations across on-premises and public cloud environments, leveraging full stack automation to simplify deployment and management of hybrid cloud infrastructures.

The platform empowers IT teams with increased productivity through automated routine tasks and integration with the OpenShift Console. It provides flexibility to extend data and applications across OpenShift multicloud environments on a common storage plane. With multilayer security and compliance built in and over 13,000 hours of testing before each release, it also ensures peace of mind and reliable performance for diverse workloads, including AI/ML, analytics, and application modernization.

An important aspect of APEX Cloud Platform for Red Hat OpenShift is that it includes Red Hat OpenShift Virtualization. Built on key open source components—the mature and widely deployed Red Hat Linux KVM hypervisor and the container-native virtualization technology KubeVirt for running virtualized applications inside containers—Red Hat OpenShift Virtualization provides a seamless path for migrating existing virtual machines onto a modern, unified platform. OpenShift Virtualization enables consistent management across hybrid cloud environments and supports scalability. It integrates seamlessly with existing tools, allowing for efficient management of VMs, containers, and serverless workloads. This solution not only simplifies the migration process but also facilitates application modernization, including AI, empowering organizations to innovate and bring new products to market faster with a comprehensive, scalable, and secure infrastructure platform.

The deep integration and intelligent automation between layers of Dell and OpenShift technology stacks accelerates time to value and eliminates the complexity of using different tools in disparate portals. Additionally, Dell APEX Subscriptions provide customers the option to acquire the technology they need with usage-based monthly payments to support changing business requirements.

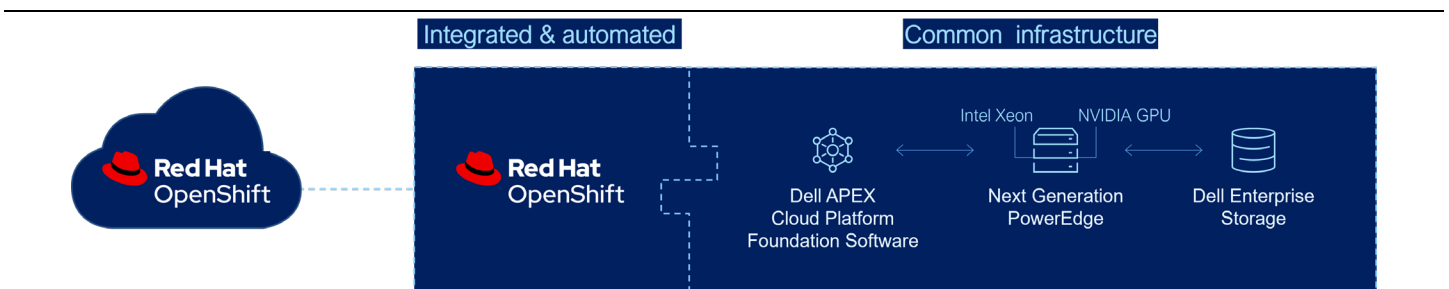
In other words, Dell and Red Hat have done all the heavy lifting, so customers don't need to. Their solution contains everything customers need to build, deploy, and operate both virtualized and modern apps on a single, highly integrated platform, with full-stack management through a single pane of glass. Crucially, this also helps bring together development, operations, and security teams, enabling them to spend less time maintaining and managing the environment and more time innovating in a stable environment.

APEX Cloud Platform for Red Hat OpenShift offers IT organizations multiple benefits, including:

- **Simplified deployment, operations, and upgrades.** The solution provides cloud-like agility and efficiency for cloud-native workloads, virtualization, and OpenShift AI on bare metal through software-driven automation and full-stack lifecycle management. APEX Cloud Platform Foundation Software is integrated with the OpenShift stack to vastly simplify deployment, day-to-day operations, and lifecycle management of the hardware and software.
- **Modernized VMs at a desired pace to incorporate cloud-native practices.** OpenShift Virtualization enables customers to run VM-based applications alongside containers and AI workloads, and it includes tools to easily migrate virtual machines and run them consistently across on-premises, edge, and supported cloud environments.
- **AI/ML and analytics application enablement.** APEX Cloud Platform for Red Hat OpenShift provides the ability to build, train, deploy, and monitor AI/ML workloads in on-premises data centers or close to the data's location. Organizations can train as well as deploy models and AI-enabled applications wherever needed to meet the relevant regulatory, security, and data requirements. This includes air-gapped and disconnected environments. Additionally, containers package the AI/ML model and its dependencies in a single unit, making it easy to deploy the model across different environments without worrying about compatibility issues.
- **Cloud repatriation.** APEX Cloud Platform for Red Hat OpenShift provides a unified application platform to simultaneously run and manage repatriated workloads, whether they are containerized or virtualized.

- **Reduced migration complexity and Kubernetes sprawl.** Support for bare metal containers and virtualization on a single infrastructure enables customers to easily choose their best migration path and more easily migrate existing, traditional VM workloads onto a hybrid cloud application platform with Red Hat's migration tooling. Organizations with disparate Kubernetes clusters can consolidate on Red Hat OpenShift with a centralized approach that helps simplify and standardize on a unified platform.
- **Unified technical support.** Dell provides a single support call for the entire solution, from the Red Hat OpenShift layer through the server and storage systems. If required, Red Hat can seamlessly join the conversation or be the first point of contact if preferred.

Figure 2. Architectural Overview of Red Hat OpenShift Virtualization on Dell APEX Private Cloud for Red Hat OpenShift



Source: Dell Corporation.

Conclusion

The IT infrastructure landscape is in transition, driven by disruption in the virtualization space, the growing popularity of cloud-native applications, and the emergence of a new era of AI workloads and applications. The latter two create tremendous opportunities for organizations to further differentiate themselves through technology, but navigating a path forward is not without its challenges. The risk is that these factors will further compound an already complex environment. Consequently, IT organizations need to find a way to navigate this transition as smoothly as possible by continuing to support existing virtualized workloads, as they provide a path forward for container-based applications, including AI workloads—all the while keeping a close eye on costs.

Help is at hand via the Dell and Red Hat partnership, which offers customers a way to manage both VMs and containers on a single, tightly integrated but flexible platform based on proven and mature technologies. Organizations looking to evolve their infrastructures for the new era should have the APEX Cloud Platform for Red Hat OpenShift on their shortlist.

Learn more at Dell.com/OpenShift.

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