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IBM Storage Fusion—Enterprise-grade, Cloud-native Data Services for Kubernetes

Scott Sinclair, Practice Director; and Monya Keane, Senior Research Analyst

Abstract: Companies are engaging in modernization to allow them to better leverage hybrid cloud IT. They are also accelerating their adoption of Kubernetes. These efforts will make them faster and more agile from an operational standpoint. But at the same time, this kind of modernization can increase IT complexity. IBM Storage Fusion—container-native data services—simplifies the adoption and scaling up of container-based applications for hybrid cloud environments.

Overview

Digital initiatives and application development now play a large role in revenue creation. As a result, more organizations are feeling pressure to accelerate operations and modernize their on- and off-premises infrastructure. For example, research by TechTarget's Enterprise Strategy Group (ESG) shows that 91% of surveyed IT organizations have had to accelerate their operations over the last three years—41% of them accelerating those operations by more than 50%.[1]

As part of this effort to become operationally faster and more agile, these organizations are adopting cloud-native development practices, containers, and Kubernetes to automate deployment and management of their containerized applications. The adoption of containers and Kubernetes is now mainstream: 68% of organizations surveyed by ESG report leveraging containers in production today.[2]

In a separate survey of organizations currently developing or planning to develop cloud-native applications, ESG found that rapid application development was the most commonly identified benefit of a microservices-based application architecture (cited by 48%). Being able to roll out apps quickly is a desirable benefit that is further fueling the popularity of container-based environments and Kubernetes.[3]

However, the rampant adoption of containers and microservices—along with the integration of Kubernetes—has increased the complexity of IT environments. Because of this added complexity, IT leaders and other architectural decision-makers now find themselves in need of solutions that span both on- and off-premises environments and that support Kubernetes in the public cloud and in the data center alike.

Fortunately, a solution from IBM can fit the bill. IBM Storage Fusion integrates open source innovation from Red Hat within a validated, easy-to-deploy-and-manage solution with a consistent user experience that simplifies the adoption, hardening, and scaling of container-based applications for hybrid cloud environments.

[1] Source: Enterprise Strategy Group Research Survey Results, *2021 Data Infrastructure Trends*, September 2021.
[2] Source: Enterprise Strategy Group Complete Survey Results, *Distributed Cloud Series: Application Infrastructure Modernization Trends*, March 2022.
[3] Source: Enterprise Strategy Group Complete Survey Results, *Distributed Cloud Series: Cloud-native Applications*, May 2022.

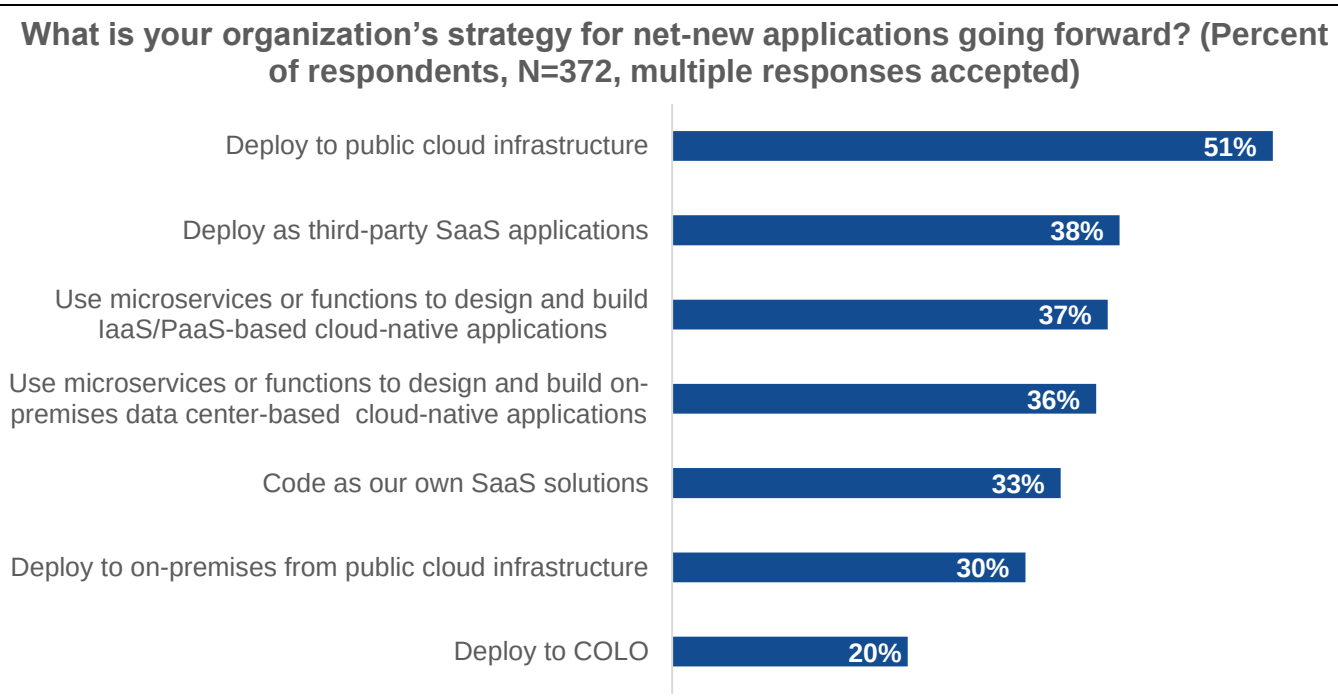
Kubernetes Adoption Drives Infrastructure Modernization

IT is more complex, and Kubernetes is contributing to that complexity. Consider that in a recent Enterprise Strategy Group (ESG) study, 53% of surveyed organizations reported that IT has become more complex in the last two years.[4] Among those organizations, one-third of the respondents identified that an increase in the use of applications leveraging modern architectures, such as containers, has become a top-five driver of the rise in complexity.[5] Organizations urgently need to address this problem, as simplicity will be essential to achieving their business goals tied to operational acceleration.

It's also important to remember that Kubernetes is not just a public cloud option. Organizations adopt containers partly for their portability features. In an ESG research study of organizations currently developing or planning to develop cloud-native applications, 86% of those organizations called application portability (the ability to move workloads across the data center, edge, and cloud) either critical (cited by 19%) or very important (cited by 67%).[6]

When it comes to deploying net-new applications (see Figure 1), 36% of respondents reported that a key part of their strategy is to use microservices to develop new cloud-native applications for the data center. In addition, 30% identified a need to deploy net-new apps on premises after developing them in the public cloud.[7]

Figure 1. Top Strategies for Net-new Applications



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

To support these Kubernetes-based application environments, many organizations are turning to solutions such as Red Hat OpenShift. In fact, a large majority of organizations (87%) identified open source technology as being strategic to their organization's overall IT strategy. When Enterprise Strategy Group asked those organizations to

[4] Source: Enterprise Strategy Group Research Report, *2023 Technology Spending Intentions Survey*, November 2022.
[5] Ibid.
[6] Source: Enterprise Strategy Group Complete Survey Results, *Distributed Cloud Series: Cloud-native Applications*, May 2022.
[7] Source: Enterprise Strategy Group Complete Survey Results, *Distributed Cloud Series: Application Infrastructure Modernization Trends*, March 2022.

explain why they believe open source technology is strategic, the most commonly mentioned responses centered on reliability (47%), security (46%), and the fact that the technology tended to be more innovative in general (41%).[8]

Infrastructure Modernization Priorities for Kubernetes Environments

When architecting an IT environment to support Kubernetes, IT and cloud leaders require solutions that can deliver:

- **Greater agility**—The solution must be able to respond quickly to changes in application and business needs. Container-based apps can scale quickly. They need high-performing, highly scalable infrastructure to quickly respond to those demands.
- **Greater flexibility**—Containers are designed to leverage technologies that will provide a consistent user experience across multiple cloud providers and other on- and off-premises locations. A truly flexible solution simplifies portability and accelerates the organization's ability to take maximum advantage of hybrid and multi-cloud IT.
- **Enterprise-level resiliency and security**—Container-based applications require the highest levels of resiliency, availability, and security. Notably, the most commonly identified challenge related to applications that are based on a microservices architecture centers on providing secure configurations (cited by 40%).[9]

IBM Storage Fusion

Storage Fusion is a hybrid cloud data services solution for containers and software-defined infrastructures (compute, storage, and data protection all in one) for OpenShift. It can run both on premises or in the cloud of any of the major public cloud providers—AWS, Azure, Google Cloud Platform, and IBM Cloud. IBM designed Storage Fusion to provide numerous benefits and capabilities to organizations, such as:

- The ability to scale up and/or down with workloads, which is essential to meet the agility requirements of container-based apps.
- An abstraction layer of infrastructure as code for developers and platform engineers, enabling them to simplify and accelerate access to and scaling up of resources.
- Integrated data storage services for block, file, and object data, along with automated backup and restore.
- Integrated support for high availability and disaster recovery, complete with policies for application consistency.
- Flexible deployment as hyperconverged infrastructure (HCI) on premises and as software on AWS, Azure, or IBM Cloud.

The Modernization Advantages of IBM Storage Fusion

With the integration of RedHat OpenShift technology and IBM's data services, data protection, and infrastructure, IBM Storage Fusion delivers modernization-specific benefits to container-based applications in Kubernetes environments. For example, it can:

- **Accelerate innovation** by better supporting developers, DevOps teams, and platform engineers. It is simple, consistent, and dynamically scalable, offering a repeatable Kubernetes experience, even across extended hybrid and multi-cloud environments.
- **Reduce complexity and burdens on staffing** with a consolidated, validated, secure HCI-based architecture, with IBM supporting the entire software and hardware stack.
- **Provide better cost control** as the environment scales, with improvements to density and efficiency, along with its integrated open source technology to help reduce the cost of licencing.

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[8] Ibid.
[9] Source: Enterprise Strategy Group Complete Survey Results, *Distributed Cloud Series: Cloud-native Applications*, May 2022.

- **Reduce risk** through its enterprise resiliency, availability, integrated data services, data protection, and metro and regional disaster recovery capabilities.

Conclusion

In the race to embrace Kubernetes and cloud-native applications, organizations need to simplify their infrastructure's management, maintenance, and scaling if they expect to keep pace with the demands of the business. Complexity is the enemy of success. It injects unnecessary costs and risks into any environment.

In application development particularly—where time to value often directly affects operational efficiency, customer satisfaction, competitive success, and revenue generation—unnecessary complexity represents a costly problem that organizations cannot afford to leave unsolved.

IBM Storage Fusion, with the integration of RedHat OpenShift technologies, simplifies the management, scaling, and securing of Kubernetes environments all with a consistent user experience. The result is a solution that allows an organization's technical talent to focus on what is most important to the business.

Successful cloud-native strategies require the ability to focus the right resources on the right tasks, and IBM and Red Hat are collaborating to deliver just that.

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contact@esg-global.com
www.esg-global.com