

Cloud Buyer's Guide 2022

Smart Data Strategies for
an Effective Hybrid Cloud



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Executive Summary

The hybrid multicloud has rapidly become the norm, with the move to containers front and center, and the need for application modernization rising to paramount importance

Data centers face new challenges in the complexity, rigidity, and uninspiring nature of current industry solutions.

Choosing the right storage infrastructure and data-services platform is critical to meeting the challenges of today's hybrid multicloud.

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The State of Cloud Adoption Today

The COVID-19 pandemic accelerated digital initiatives because of the need to support a remote workforce, and hybrid-cloud adoption has been a huge enabler of that acceleration.¹ The enterprise cloud environment is increasingly critical to your operations. The enterprise cloud environment is also more complex and multifaceted as companies employ multiple public clouds and create private clouds of their own, on premises or co-located offsite, with containerized applications and public cloud-like infrastructure.

Hybrid Multi-cloud Infrastructure

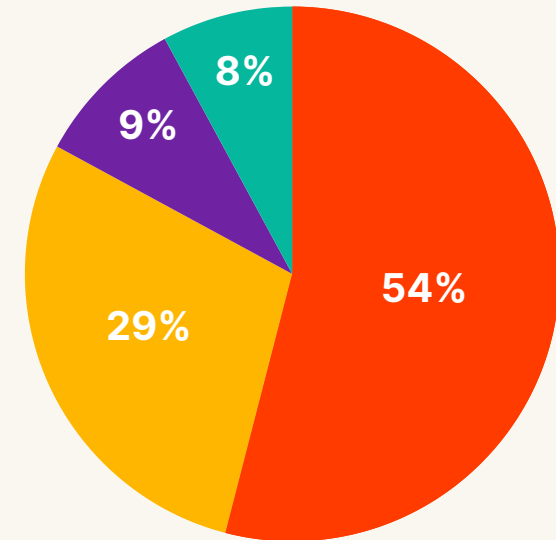
This is the new hybrid nature of the cloud: it's not a location but a style of computing that takes place in multiple public and private locations. The next challenge is to accelerate cloud computing practices and adopt cloud-native technologies everywhere.

Not every workload belongs in the public cloud, nor does every workload need to be kept on premises. Where to run an application should depend on what makes sense for each application. In some cases, the need for security, reliability, and enterprise-grade data services will call for on-premises infrastructure. In other cases, the advantages of agility and scalability will call for a hyperscaler environment. The important thing is to choose solutions that are flexible enough to provide application mobility across diverse cloud environments.

IDC figures an even higher percentage of enterprises have hybrid clouds than indicated in Figure 1—fully 97 percent now have both public- and private-cloud environments installed, according to an IDC report.³

Hybrid Cloud Dominates the IT Landscape

Most clouds are now hybrid, according to an IDG and Pure Storage® survey of IT decision makers²



- Some public cloud, mostly on premises
- All public cloud
- Some on premises, mostly public cloud
- All on premises

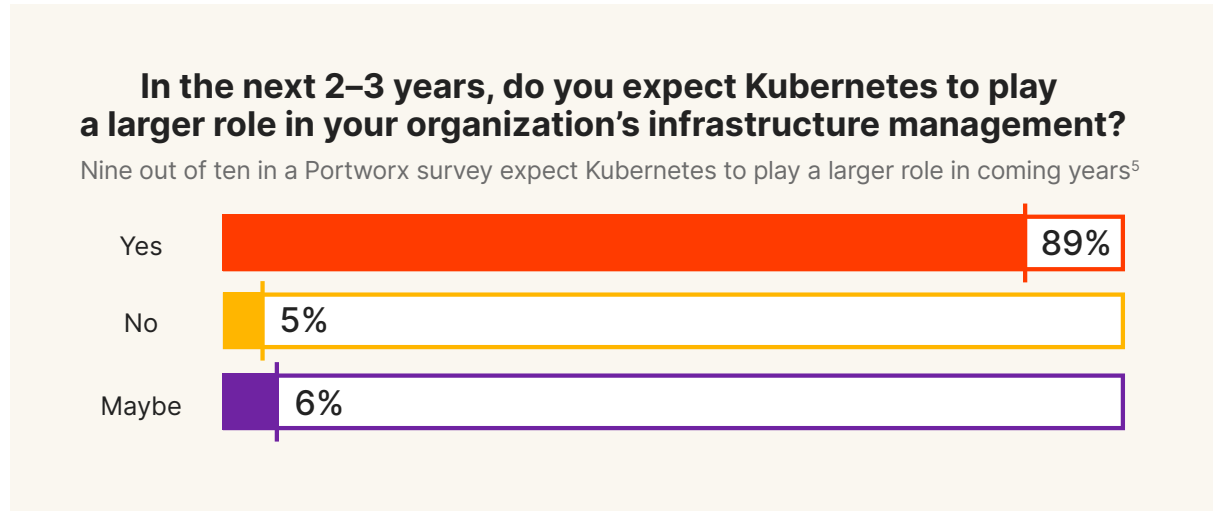


Containerized Applications

Containerized software deployments, such as those that use Kubernetes, are the norm for hyperscale public-cloud environments. What's changing rapidly is the widespread adoption of containers in private-cloud environments.

A recent Portworx® survey found that more than half of new applications are already running in containers today, and nine out of ten IT professionals surveyed expect the role of Kubernetes to increase in the near future.⁴ The advantages of Kubernetes are that applications are faster to deploy and easier to update, with the ability to reuse code, all leading to reduced costs and time savings.

IDC predicts a wholesale shift to containers in three years, where 80% of workloads will shift to, or be created with, containers and microservices. But while the rise of containers might spell the end of bare-metal server environments, don't expect virtual machines (VMs) to go away anytime soon. According to IDC, "containers will coexist with virtual machines



in the enterprise for the foreseeable future.”⁶ So your cloud will need to play nicely with your VMs.

A container-ready system that is architected for innovators is paramount. The shift to containers and microservices for applications can accelerate DevOps, speed time to market, and quicken the pace of innovation. It can improve the performance, agility, and reliability of mission-critical applications in the

cloud. But all these outcomes depend on a data strategy to overcome the challenge of data gravity, which tends to pull applications and infrastructure into silos around the locations of big and important data.

Next, take a closer look at three challenges that companies face in their journeys to the next stage of cloud adoption: data protection, data management, and application modernization.



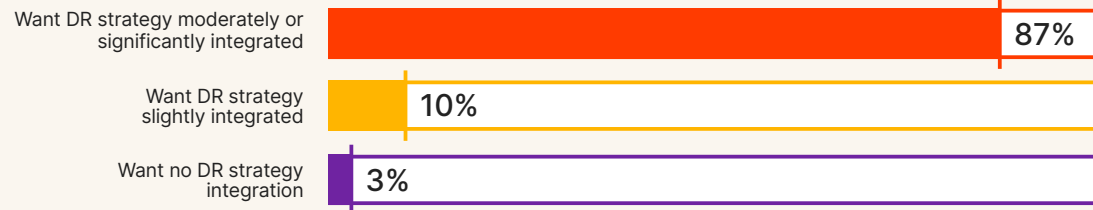
Data Protection

Data protection is the process of safeguarding important information from loss, typically caused by an accident or a disaster, through periodic backup or continuous replication of that data. In the era of ransomware, where data is being lost as a result of malicious acts, data protection is a critical part of data security. The same data-protection measures that provide insurance against accidents or disasters are now also a valuable form of protection against this widespread and costly form of malicious attack.

Companies need to protect their data no matter where it lives—on a machine or in containers in a public or private cloud. It's becoming the norm to use containers not only for cloud-native applications but also for existing workloads such as mobile platforms that come with databases like MongoDB, which require storage persistence. As persistent workloads in containers move from being an exception to the norm, rigid traditional machine-focused storage infrastructure is not able to cope with the new container paradigm, where applications run across machines.

It's Nearly Unanimous: Integrate Disaster Recovery with Hybrid Strategy

IT professionals are nearly unanimous in agreeing that disaster-recovery strategy needs to be integrated with hybrid-cloud strategy⁷



“Organizations require solutions to back up and protect containerized environments, including the data, metadata, application configuration, and Kubernetes objects.”

—IDC⁶

An forward-thinking data-protection strategy needs to support your containerized environment, and it needs to be integrated with your hybrid-cloud strategy. Fully 87% of IT professionals believe that hybrid-cloud and disaster-recovery strategies should be significantly integrated.⁷

Data-protection strategies can use snapshots or synchronous or asynchronous replication—and the

best strategies often use more than one of these methods. You can store snapshots right in your data center for quick recovery, and you can replicate the data to a public cloud or a data center in a different region in case of a disaster or a ransomware attack.

Legacy data-protection solutions are little more than costly insurance. Introduce your organization to modern data-protection solutions that can:

1. Improve business resiliency and protect applications with continuously active replication, and with near-zero recovery point objectives (RPOs) for robust disaster recovery.



2. Achieve fully symmetric active-active bidirectional replication. Look for a solution that provides synchronous replication across your Ethernet or Fibre Channel networks for RPO zero and automatic transparent failover for recovery time objective (RTO) zero.
3. Protect your cloud data for traditional and cloud-native applications with quick restore times.

Learn about [modern data-protection solutions](#) from Pure Storage.

Data Management

Two major data-management challenges are how to achieve application and data mobility in a hybrid-cloud environment, and how to manage data in a containerized environment.

Application and Data Mobility

In today's dynamic hybrid multi-cloud enterprise environments, application and data mobility has become an important consideration. Technology that makes application and data mobility simple is playing a more important role than ever.

“71% of enterprises recognize the importance of consistent shared cross-cloud control planes.”

—IDC³

Having a consistent data strategy across on-premises and cloud environments can play a big role in simplifying workload and data mobility. Look for solutions that offer a consistent data plane across diverse infrastructure environments and that provide the flexibility to consume resources across on-premises and cloud environments as and when needed.

Learn about the [Pure as-a-Service™](#) platform and [Pure1®](#) software.

Kubernetes Challenges

Data management is one of the top three challenges that have been most difficult for companies to overcome in order to run Kubernetes, according to the Portworx poll.⁵ Storage and data persistence are key barriers to broad adoption of containers.

One difficulty is that traditional storage does not support Kubernetes concepts such as namespaces and configuration. Traditional storage is also managed centrally, while stateful containers are driven by the end user, so one user operation must not interfere with another.

“Databases are our biggest bottleneck in accelerated software-delivery strategies. It takes 3.5 hours a day for a database to deploy, and 100% of our applications talk to databases.”

—IDC RESPONDENT IN FINANCIAL SERVICES⁶

Look for a container-defined platform for storage and data services to power your modern application environment. As more persistent workloads enter the container world, it is critical for you to keep storage overhead under control. Look for storage solutions that deliver container-aware storage with simplicity, cloud integration, flexible costs, automation, and elastic scaling.

Learn about the [Portworx Kubernetes storage platform](#) by Pure Storage.



Application Modernization

Re-architecting applications for hybrid multi-cloud mobility is no easy task. In the IDG survey of IT decision makers, 93% recognize that such re-architecting is necessary, and also that it can be a complicated and expensive process.²

The difficulty is not only in reworking applications to be container-based consumers of microservices, but also in integrating such modern applications into existing data center environments. Storage access and databases are often the bottlenecks hindering application modernization.

“72% of organizations cited lack of integration into existing environments as the biggest technology roadblock in their modern application delivery pipeline.”

-IDC⁵

Key IT Priorities for 2020–2021

Survey respondents identified containers, automation, and self-service as key priorities⁶



It's no wonder, then, that the top two initiatives cited in an IDC survey of strategies and investments were cloud infrastructure evolution and IT infrastructure modernization.⁶ Your IT infrastructure should be built on a platform that is architected for innovators, to properly support your modern cloud-native applications. More specifically, the IDC survey identified several key infrastructure priorities for application acceleration, including support for containers, programmable automation, and intuitive self-service interfaces (see Figure 4).

Traditional data solutions aren't well optimized for container environments. To accelerate your modernization initiatives,

it is key to adopt a Kubernetes-native data solution for data operations that are:

- Container-granular
- Kubernetes namespace-aware
- Application-consistent
- Optimized for multi-cloud environments

Learn how to create a [Modern Data Experience™](#) with Pure Storage.



Strategy Recommendations



Storage

- Consider storage as a service (STaaS) for high reliability. Reliability is the single most important criterion when evaluating public-cloud storage solutions.⁷
- Opt for an operating expense (OPEX) storage model to avoid upfront capital expenditures (CAPEX).⁸ Look for simple, automated storage on demand, with features for integration with public clouds. Make sure your storage supports both containers and VMs.



Data Services

- Look for a single control plane for the entire data layer, including for hybrid-cloud development, deployment, and disaster recovery (DR). The data layer can significantly impact time to market and speed of innovation.
- Support hybrid scenarios like developing in the public cloud and deploying on premises, using the public cloud for backup and disaster recovery, and migrating applications to and from the public cloud.



Container-based Applications

- Invest in software-defined and container-ready storage to meet modern Kubernetes-related data needs.
- Choose a Kubernetes-native data solution for application-centric storage operations, including Kubernetes-aware application backup and security.



Security

- Choose a STaaS provider with strong forward-thinking security features such as always-on encryption.
- Find a data-management platform with container-granular role-based authentication, authorization, and ownership.



Backup and Recovery

- Be sure you are backing up not just heterogenous databases but also Kubernetes objects and configuration data for faster and easier recovery.
- Look for features like granular restores, flexible backup targets, application-aware backup, hybrid-cloud data mobility and restores, and policy-based automation for data protection.



Conclusion

Your storage infrastructure and data-layer choices can make or break your hybrid-cloud strategy. By asking the right questions as you design your hybrid cloud, you can improve your chances for success.

How can you achieve application portability?

Make infrastructure decisions that will support a move to containers at scale, while continuing to support VMs and traditional applications into the foreseeable future. Implement container support and object storage in your data center so that cloud-native applications from the public cloud can also run in Kubernetes in your private cloud. Consider investing the effort to make your traditional mainstream applications run in Kubernetes as well, where feasible, so that they will also become portable between public and private clouds.

How can you manage, secure, and back up your data in a hybrid-cloud environment?

When containerizing applications, it's important to address the storage, data service, and security needs of containerized applications right at the onset, and not as an afterthought. Traditional backup systems are not well suited to backing up Kubernetes applications that run across machines, including their Kubernetes objects and configuration data. You want to avoid the pitfall of managing data in different clouds with different tools. You need a granular, Kubernetes-aware container-data-protection solution that's part of a consistent shared cross-cloud control plane.

How can you accelerate DevOps and improve operational agility?

Prioritize a public cloud-like experience in your own private cloud. Provision STaaS for containerized and virtualized applications for optimal scalability and reliability. Implement solutions that support self-service deployment, automated operations, and storage delivery to reduce IT involvement and increase developer agility. Finally, it's important to avoid vendor lock-in. Choose evergreen solutions that will support whatever environment you run in with full-stack observability and a consistent experience across all your clouds.



Learn More

Success in hybrid multicloud requires a consistent, cloud-centric data strategy. Pure Storage uncomplicates data storage for cloud-native and traditional applications, accelerating innovation in unified hybrid and multi-cloud ecosystems.

Visit www.purestorage.com/cloud for more information about how Pure can help you transform your infrastructure to meet the needs of tomorrow's modern applications in a hybrid multi-cloud environment.

- 1 Around half (48%) of company workloads are running in public clouds, according to a global survey of 271 IT professionals by Pure Storage. "Accelerating Applications in a Hybrid Cloud." 2021. www.purestorage.com/docs.html?item=/type/pdf/subtype/doc/path/content/dam/pdf/en/ebooks/eb-accelerating-applications-hybrid-cloud.pdf.
- 2 IDG and Pure Storage. "An Insider's Look at Enterprise Cloud Adoption." 2021. www.purestorage.com/resources/type-a/idg-purestorage-benchmark-study.html.
- 3 IDC. "10 Investment Areas for Optimizing Connected Cloud Management." <https://info.idc.com/optimizing-cloud-mgmt-WP.html>.
- 4 500 IT professionals were surveyed in March of 2021. The survey found that 89% of respondents expect Kubernetes to play a larger role in their organization's infrastructure management in the coming years. Source: Pure Storage. "Portworx 2021 Kubernetes Adoption Survey." www.purestorage.com/content/dam/pdf/en/analyst-reports/ar-portworx-pure-storage-2021-kubernetes-adoption-survey.pdf.
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- 6 IDC. "Containerizing Key Business Workloads." Sponsored by Pure Storage. May 2021. www.purestorage.com/content/dam/pdf/en/white-papers/wp-idc-containerizing-key-business-workloads.pdf.
- 7 Pure Storage. "Accelerating Applications in a Hybrid Cloud." 2021. www.purestorage.com/docs.html?item=/type/pdf/subtype/doc/path/content/dam/pdf/en/ebooks/eb-accelerating-applications-hybrid-cloud.pdf.
- 8 OPEX treatment is subject to customer's auditor review.

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