



# Empowering your hybrid cloud infrastructure

Business benefits of hybrid cloud infrastructure outweigh management and cost control challenges.

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# Introduction

Hybrid cloud infrastructure offers clear business benefits, but also presents management and cost control challenges. In this ebook, we'll look at what you might face, and why hybrid cloud is still a good idea for your organization.

## What is hybrid cloud infrastructure?

Today's cloud terminology can be confusing, so our first step is to clear it up with some definitions. The term "cloud" by itself has become amorphous, and can refer to public or private clouds – those that are shared by many entities versus those that are exclusive to one entity.

Multi-cloud means that an organization is using more than one public cloud for discrete functions. Its adoption grew from the recognition that different parts of the business may have distinct needs, and certain cloud environments represented a best-of-breed solution for that need. Using multiple cloud providers can have cost advantages depending on the workloads, and can free cloud consumers from vendor lock-in. A multi-cloud environment may rely on some on-premises resources, and could also include a private cloud.

Hybrid cloud infrastructure refers to the combined usage of public cloud, private cloud and/or on-premises resources – but in this model, the resources all work together instead of on separate functions. So, managing hybrid cloud infrastructure means connecting the networks, being able to move workloads from one cloud platform to another, orchestrating the operations and accomplishing these activities via a single management console.

How widespread are these approaches? According to the [2021 Flexera State of the Cloud report](#), "Enterprises have almost entirely embraced

multi-cloud. Ninety-two percent of respondents reported having a multi-cloud strategy. Eighty-two percent are taking a hybrid approach, combining the use of both public and private clouds."

The real difference is that the hybrid cloud model enables the interconnection of many computing platforms. A multi-cloud environment can become hybrid when steps are taken to seamlessly interconnect and manage the previously disparate cloud properties.

## What are the challenges of hybrid cloud infrastructure?

Armed with these definitions, it becomes easier to understand how managing hybrid cloud infrastructure can be challenging, especially along several dimensions including visibility, cost, security and governance. Top challenges include:

**Lack of enterprise visibility** – Many enterprise applications are dependent on others up and down the technology stack. Mapping these dependencies is complex even in an on-premises environment, but it is made more difficult in hybrid cloud infrastructure with its proliferation of databases, containers and microservices. Mapping is an ongoing activity since hybrid cloud infrastructure is dynamic, but having a current understanding of application dependencies is crucial for assessing the impact of any performance issues and making the best decisions around network design, workload allocation, provisioning and more.

As organizations invest in newer data platforms to better support their applications, they generally end up with multiple monitoring solutions with no single view across all the systems in their hybrid environment.

**Assessing and controlling costs** – Perhaps one of the most vexing aspects of cloud infrastructure is managing the myriad aspects of how much it costs, especially when cloud providers have such complex pricing models. First, there is the challenge of selecting the correct service tier based on expected usage, and then IT teams must monitor actual workloads, data movement and storage to avoid overage charges. Hybrid cloud multiplies both the difficulty and necessity of cost control.

**Ensuring security** – The integration of disparate platforms in hybrid cloud infrastructure introduces a new set of security concerns that are different from those encountered on premises. API-based integrations are largely created by developers who may not have as much security experience as IT teams. On the data side, hybrid infrastructure tends to distribute data more widely, making it more difficult to identify and protect sensitive data across the environment. The use of mobile devices to access cloud applications requires stronger security for endpoints.

**Implementing governance** – In a more homogeneous environment, governance is simpler. A complex system across cloud and on-premises resources requires more attention to governance mechanisms that ensure standard policies, procedures and processes are established and followed. A governance framework for hybrid cloud is also critical for ensuring compliance with data privacy and other regulations.

There is often a disconnect between the business and IT in many digital transformation projects. To achieve the maximum benefit from the move to hybrid cloud infrastructure, there needs to be engagement between these groups to ensure that implementation and any future changes ultimately serve the needs of the business. This requires the data governance framework to make data provenance, lineage and impact analysis available and visible for use in holistic analysis, traceability and decision making.



## What are the benefits of hybrid cloud infrastructure?

Despite the additional challenges of managing hybrid cloud operations, there is still a significant business benefit that accrues to organizations with the right approach and management tooling for this infrastructure.

### Better support for remote workforces

As the workforce shows few signs of returning to pre-pandemic office population levels, organizations can use their hybrid cloud infrastructure to provide employees with enhanced remote access to data and applications. The application mobility and portability enabled by hybrid cloud mean that workloads and data can be placed closer to employees for more convenient access than if they were stored in an on-premises data center where lag time is a factor.

### Scalability

One of the advantages of cloud infrastructure has always been the ability to deliver capacity bursting in times of peak demand. This is also true for hybrid cloud, when applications that normally run in the private cloud or on premises can expand into the public cloud to cover excess demand. This fluid ability to scale helps avoid the high costs of overprovisioning on-premises data centers, and ensures that high-quality customer experiences are maintained during periods of high application demand.

### Reduced operational costs and capital expenditures

Not having to over-invest in on-premises capacity is a capital expenditure savings that organizations should take seriously. In addition to the cost of purchasing hardware, companies also save by not needing extra personnel to deploy and maintain it. With hybrid cloud infrastructure, workloads and storage can be shifted to where costs are lowest; for example, to cold-storage service tiers for rarely accessed archives. A hybrid cloud makes it possible to neatly divide IT spend into capital and operational costs, monitor utilization and make adjustments as budgets dictate.

### Automated control

Organizations seeking direct control over certain types of assets are well-served by a hybrid cloud environment. IT teams can maintain control over the on-premises and private cloud portions of their infrastructure, and cede management of public cloud portions to their cloud service provider(s). Many important aspects of hybrid cloud management can be automated, enabling enterprise IT teams to achieve greater scale, speed and standardization. Automation further allows teams to adjust quickly to rapidly changing market pressures by making adjustments with minimal disruption to the business.

### Increased agility

While organizational growth and agility used to be limited by the level of capital investment in physical architecture, hybrid cloud architecture can increase a company's ability to take advantage of new opportunities. The use of public cloud computing resources makes it easier to develop new applications and run powerful analytics programs that smaller organizations couldn't otherwise afford. With the removal of barriers to growth, hybrid cloud puts companies of all sizes on equal footing with established competitors.

### Business continuity and disaster recovery

Hybrid cloud architecture has several business continuity benefits. First, because system resources can be accessed from anywhere, employees can log in and perform work even without being in the primary business location. This was clearly an advantage in the early stages of the pandemic, and would be in the case of natural disasters, war or other threats that prevent access to a physical office. Second, organizations can use the distributed nature of the cloud to maintain redundant databases and systems for immediate failover in case the primary instances become unstable or are attacked. Finally, businesses can store backups in the cloud as another method of safeguarding on-premises production environments.



### **Improved security**

Hybrid cloud solutions give organizations greater flexibility when it comes to securing their data. Many businesses still want to store their most sensitive data in hardened, on-premises data centers that can be more difficult to attack. Hybrid cloud enables this strategy while still delivering the cost and efficiency gains of moving less-sensitive workloads off premises. IT can maintain the maximum levels of protection for on-premises data and can ensure proper encryption before data is transmitted.

### **Regulatory compliance**

Global data privacy laws are growing increasingly complex, and many require that customer data be stored in the country where it is collected. With hybrid cloud solutions, multinational organizations don't need a data center in each country they operate in. Instead, they can store customer data in public cloud regions that comply with data localization requirements and protect customer privacy as required by law. Businesses can also use their on-premises or private cloud infrastructure to sanitize personally identifiable data before sending it to business intelligence applications in the public cloud.

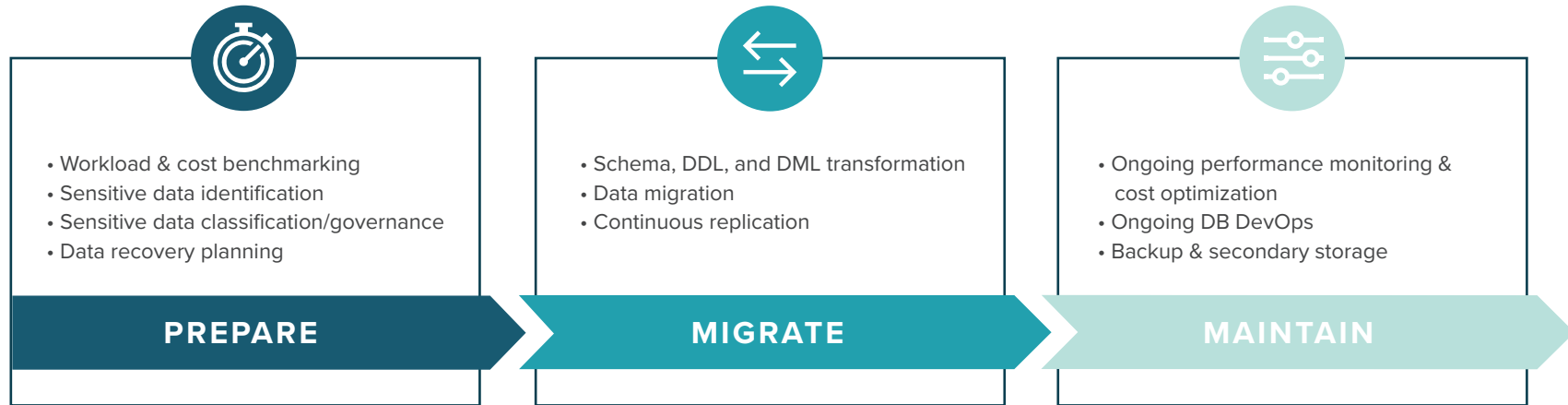
### **Empowering your hybrid cloud infrastructure**

So, how can you empower your hybrid cloud infrastructure and maximize the benefits it offers your business?

Many companies invest in cloud services and migrate applications and databases without performing due diligence on the risks and costs. When they find that costs are higher than anticipated, they repatriate the migrated workloads to their data center.

What's needed is a multi-step, low-risk approach that minimizes the business impact should something not turn out as planned. Here are some important steps:

## EMPOWERING YOUR HYBRID CLOUD INFRASTRUCTURE



- Implement a data governance process that discovers and maps the data assets for the databases to be migrated, to your business processes. You should also implement a data recovery plan for the migration to recover any potentially lost or corrupted data to ensure there is no disruption to business continuity.
- Perform benchmark testing prior to migration. This will help you choose the correct service level, and then address optimal workload performance, future scalability needs, resource consumption and associated cloud costs after migration.
- Identify personal and sensitive data across all your databases. This way you can apply the necessary data protection techniques as well as audit transactions that use this data to ensure compliance with data governance regulations. To counter any cyberthreats, you need to discover and secure all your endpoints.

- Once migration is completed, constantly monitor and maintain your hybrid infrastructure (VMs, databases, containers, microservices, etc.) so that IT operations can respond immediately to a performance issue and resolve it quickly.

By successfully implementing a solid cloud migration strategy that involves the essential phases of planning, migration and maintenance, you can ensure a successful outcome for the business that enables applications to meet service levels, security requirements and regulatory compliance while balancing performance with cloud cost.

### Conclusion

Hybrid cloud infrastructure is here and it's a smart choice for organizations seeking the maximum flexibility and control over their IT environments. Although it can present some management challenges, with the right planning, design and implementation hybrid cloud architecture could be a game changer for your business.

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