



Managing the Hybrid,  
**MULTI-CLOUD,**  
and **DISTRIBUTED**  
**CLOUD FUTURE**

# The Three Shades of the **ENTERPRISE** **DATA CLOUD**

## Best Practices Series

There's no turning back from cloud as an enterprise data platform, and adoption continues to expand rapidly. Gartner predicts public cloud spending will exceed 45% of all enterprise IT spending by 2026, up from less than 17% in 2021. In addition, in a recent Unisphere Research study of data managers conducted among the DBTA subscriber base, 58% indicated plans to leverage multiple cloud providers in the future. When asked about distributed cloud, 21% said they support such capabilities today and another 28% are currently planning to add distributed cloud to their infrastructures.

The question then is not whether to pursue a cloud strategy but how to do so to meet an organization's business requirements most efficiently and cost-effectively.

The management of enterprise data in the cloud continues to evolve at a steady pace—addressing key IT issues along the way. From the need for more cost-effective scalability and agility to the demand for improved security and compliance, challenges and opportunities are growing in step. Finding ways to achieve better visibility and manageability of budding hybrid, multi-cloud environments is critical to managing the digital enterprise.

To make informed decisions, it is necessary to understand the differences between hybrid, multi-cloud, and distributed cloud scenarios, and the benefits of each. Let's look at the distinctions presented by the three approaches and how they can support data-driven organizations.

### HYBRID CLOUD

In hybrid cloud arrangements, on-premise applications and data are maintained, while other assets are built or moved to the cloud, often in parallel, with some form of integration and connectivity between the two. Hybrid brings the advantages still seen within on-premise systems, such as security and retention of specialized program logic, but with the flexibility advantages of cloud services.

#### *How does a hybrid cloud approach offer a strategic advantage?*

- **Supports heavy legacy investments:** Many companies have built extensive on-premise legacy systems—from mainframes to Windows server farms. A hybrid cloud strategy enables enterprises to move more incrementally into the cloud, without disrupting well-functioning legacy systems. In addition, systems can be modernized on a gradual basis.
- **Supports scaling on demand:** A hybrid cloud strategy allows organizations to handle spikes in workloads, or longer-term changes in requirements, with cloud services automatically stepping in as demand increases beyond the capacity of on-premise systems. Cloud services can be leveraged to support big data workloads, with on-premise systems supporting traditional requirements.
- **Supports management of diverse workloads:** Data workloads vary greatly within enterprises. For example, it might be critical to maintain workloads with more sensitive data within separate domains. Alternatively, technical or engineering applications may require the extremely low

latency that could potentially be lost as data is sent back and forth to cloud providers.

- **Brings in new applications and data environments:** Along with ever-expanding data volumes, there is a new generation of applications emerging, such as AI and high-end analytics. In addition, having cloud resources at the ready enables developers and QA teams to build and test new applications without disrupting existing product environments.
- **Helps to avoid vendor lock-in:** New applications can be built, tested, and deployed on a cloud platform, and moved in-house, or vice versa.
- **Takes advantage of process learning and collective knowledge:** Cloud providers build their processes on the lessons learned from their clients, as well as industry experts. Enterprises can access these processes and learnings through their cloud providers and adopt these continually updated best practices into their own organizations.
- **Addresses backup and business continuity requirements:** A cloud service can also serve as a backup and recovery site for applications and data, thereby reducing the risk of having these assets all in a single facility.

*Additional note:* A hybrid cloud approach enables flexibility and agility, which are critical attributes for any modern data environment. However, it may also create complexity and require skilled professionals to oversee the appropriate placement, movement, and accessibility of data.



## MULTI-CLOUD

A multi-cloud architecture supports cloud services from more than one vendor. While this is distinguishable from a hybrid arrangement which involves blending an on-premise environment with cloud use, a multi-cloud formation may still include a hybrid cloud environment that runs alongside another cloud environment. A multi-cloud arrangement may consist of an enterprise accessing cloud services from providers anywhere across the globe, while supporting regional data storage requirements.

### *What are the key benefits of a multi-cloud approach?*

- **Enables greater choice for workload and data management:** With the plethora of cloud services now available at all levels—applications, platforms, and infrastructure—enterprise data managers have more choices than ever in terms of selecting the best solutions for the workloads at hand. In addition, drawing from multiple cloud services may mean greater pricing options, especially if these services compete with one another.
- **Enhances resilience and continuity:** As with hybrid cloud arrangements, multi-cloud strategies employ cloud services that serve as a backup and recovery site for applications and data, enabling for redundancy between services. This also provides “insurance” against a regional cloud failure or security incident, with assets replicated in a distant region.
- **Addresses the issue of shadow IT:** Let’s face it, most organizations are multi-cloud organizations, whether they realize it or not. A multi-cloud strategy acknowledges this diversity and can support it, thereby lessening employee initiatives to adopt cloud services on the stealth.
- **Supports agility and flexibility:** Adopting a multi-cloud architecture also helps to address the complexities and rigidity of on-premise monolithic systems. Moving to a multi-cloud architecture can serve to replace the rigid proprietary systems that can slow down business performance and access to data insights by hosting critical functions across a constellation of more responsive cloud services.
- **Helps avoid vendor lock-in:** A multi-cloud strategy takes the value proposition

of hybrid cloud further in terms of vendor lock-in, providing even more options to move data and workloads between environments.

- **Supports process learning and collective knowledge:** As with hybrid cloud approaches, enterprises can access the processes and collective learnings through their cloud providers. Compared to hybrid arrangements, multi-cloud strategies offer a greater range of continually updated knowledge and best practices. In addition, with a choice of multiple clouds, less-effective processes don’t have to be shoehorned into a particular provider’s practices.

*Additional note:* For cloud providers, security is a make-or-break proposition, and they must keep up with the latest technology and standards. However, while these providers have certainly made it their business to ensure the highest level of security possible, it is on you to ensure that your company’s security and compliance requirements are being met. Ultimately, your company is responsible for your customers’ and partners’ data—whether that data is stored in your own data center or one controlled by a cloud services provider.

## DISTRIBUTED CLOUD

A distributed cloud is a centrally managed cloud service that incorporates the elements of both hybrid and multi-cloud architectures but provides a single point of management. Widely considered to represent the next stage of the evolutionary process in enterprise cloud, it is typically offered through a public cloud service that manages the processes and infrastructure requirements of other cloud services that may be in use.

### *What are the benefits a distributed cloud approach delivers to data enterprises?*

- **Provides greater visibility of all cloud formations:** A distributed cloud provides the tools and dashboards that enable enterprise managers to manage the variety of services—both on-premise and in the cloud—that are being employed to run their businesses. This also ensures greater consistency across all enterprise systems, as well as observability to provide performance and security.
- **Supports edge and IoT computing:** Distributed cloud services not only support

cloud environments but edge and Internet of Things networks as well. While edge and IoT systems may typically sit outside of cloud implementations, a distributed cloud management system treats these more localized environments as equal citizens in the control plane. This is important in data environments, as increasing volumes of data are being generated and delivered from edge and IoT systems and data.

- **Improves user experience:** With edge and IoT environments fully supported and managed as part of a comprehensive system, content and information can be delivered quickly to end users, without the latency that may be incurred from data transfers to and from centralized clouds.

*Additional note:* For companies looking to operationalize their development and data delivery processes through emerging methodologies such as DevOps and DataOps, the distributed cloud model can be advantageous since the approach can be employed consistently across the various environments that comprise today’s enterprises. In addition, governance and innovation can be part of the workflow.

## GETTING THE MOST FROM CLOUD CHOICES

Succeeding in today’s digital economy means freeing up the application and data resources needed to propel innovation. Cloud providers and services enable a rapid and cost-effective path to achieve this innovation. It’s a matter of choosing between the three key forms of cloud engagement to select the approach that fits the business purpose—hybrid, multi-cloud, or distributed cloud arrangements. Still, it is important to understand and make informed choices about the types of cloud deployments as well as the individual cloud vendors. Working with a trusted consultant or a technology partner that is knowledgeable about your requirements is essential to help you understand the services that are being delivered as well as the full picture of data handling costs.

There is no question that cloud platforms offer advantages in terms of flexibility and elasticity. Ultimately, combinations of the three shades of cloud will only help deliver valuable innovation. ■

—Joe McKendrick

# How to Simplify Data Deployments Across Cloud Regions

# DataStax

By Jake Luciani, DataStax Area Technical Lead

Replicating data in multiple cloud regions around the globe is a critical part of any data strategy. It reduces latency by enabling users to access data locally and it creates redundancy to support disaster recovery plans. But maintaining a database in multiple regions has been a complicated, costly task. It usually requires the maintenance of fixed hardware and clusters in multiple regions, with intensive work required to ensure peering and networking connections are set up properly.

In an effort to solve these challenges for customers, DataStax recently added multi-region capabilities to [Astra DB](#), its database-as-a-service built on Apache Cassandra®—making it the only serverless, multi-region database available that isn't delivered as a cloud provider solution. Here's why this resonates with our customers.

## WHY IS A MULTI-REGION DATABASE IMPORTANT TO BUSINESSES?

Latency (or the lack thereof) is a big reason to have a point of presence in every region. With data workloads and users in several geographies, it's important to have that data as close to the end user as possible while still having it replicated in many regions. Our customers' users move around, and it's key that we enable them with a global footprint.

Customers also want the peace of mind of knowing their data is replicated in multiple regions, so if something goes wrong they can execute a disaster recovery plan and point users to another region. It increases availability and provides business continuity.

Astra DB changes the game for multi-region database deployments because there's no fixed infrastructure for users. If you want to replicate data from one region to another (US West to US East, for instance), it's just done. Traditionally with Cassandra, you have to install clusters in each region, set up the peering, and set up the networking. Now, you don't do any of that. You go into the UI, or use the API, and it's done.

## MAKING MULTI-REGION DEPLOYMENTS SIMPLER AND MORE COST-EFFECTIVE

With multi-region database deployments, fixed hardware is required in each region, regardless of how much it is being used. You have to scale to the peak that you might see in the biggest region—in all regions.

But because Astra DB is serverless, there is no scaling. DataStax takes care of all the scalability so you get all the TCO benefits we built with serverless, but now the savings are

even better, because you're basically not paying for the business continuity anymore. For each additional region, we charge an additional write. That's all you pay, along with whatever the network transfer cost is for moving data around.

## DON'T GET TIED TO A CLOUD

As mentioned earlier, Astra DB is the world's only serverless multi-region database that isn't delivered as a cloud provider solution. So there are offerings like Dynamo, Spanner, Google CloudSQL, and Cosmos DB, but those are all tied to a single cloud provider.

With Astra DB, organizations can pick their cloud provider and deploy data on either Azure, GCP, or AWS. And if an enterprise wants to move away from a particular cloud provider, it's just Cassandra. To move to another cloud, or go on prem, you can take the data and go from one place to another. Migrating from one cloud to another is just like migrating from Cassandra to Cassandra. You're no longer tied to a specific cloud provider for your persistence.

## WHAT MULTI-REGION MEANS TO BARRACUDA NETWORKS

Enterprise security provider [Barracuda Networks](#) relies on [Astra DB](#) as the data architecture behind its cloud-based security service. Speed is a critical component to success in this area, says Fleming Shi, the company's CTO.

Multi-region databases enable enterprises to replicate data to users' regions, helping them to deliver responsive customer experiences—and, in Barracuda's case, timely protection for its users.

"Imagine having hundreds of thousands of customers running physical appliances, virtual appliances, or SaaS solutions that we offer in their neighborhoods or local network environments," Shi says. "All those devices and workloads require threat response decisions to be made, which shouldn't be limited by replication capabilities. Making one decision quickly serviceable to millions of people throughout the overall Barracuda ecosystem is critical to how we protect our customers."

[Learn more about DataStax Astra DB](#) ■

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