



Efficient Data Management in the Era of Pervasive Hybrid Cloud

Hybrid cloud adoption has become standard practice among most enterprises looking for flexibility, efficiency and agility. This means organizations need to understand best practices and take advantage of exciting new tools to ensure proper management of data at rest, in flight or in the cloud. This paper looks at the critical role data management plays in aiding organizations' deployment and optimization of hybrid cloud.



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Anyone searching for signs of the increasing adoption of hybrid cloud architectures doesn't have far to look. Research indicates that hybrid cloud expenditures will surge by nearly 19% annually over a five-year period, reaching \$128 billion by 2025.¹ IDC says that 70% of enterprises will integrate their multiple clouds and on-premises environments into a hybrid cloud architecture by 2022,² and TechTarget research notes that hybrid cloud this year is the second-most-utilized infrastructure deployment method.

Of course, a key driver in the adoption of hybrid cloud is organizations' desire to have the right data in the right place at the right time for both operational agility and economic efficiency. It is the massive growth in data volumes and the intensive demands for easy, efficient access to data across a variety of workloads and locations that is a primary force behind hybrid cloud adoption.

The right data management strategy, supporting a full range of data-centric actions including security, data migration, data sovereignty, data protection and more, can help organizations get the most from their hybrid cloud deployments. And, in order to get the most from data management, IT decision-makers need to make smart, thoughtful choices about enterprise storage hardware and software.

¹ "Hybrid Cloud Market - Growth, Trends, and Forecast (2020-2025)," Mordor Intelligence, 2019.

² "Hybrid Cloud to Gain Traction in 2020: 5 Stocks in Focus," Yahoo Finance, December 23, 2019.



This paper looks at why innovative data management is vital to successful hybrid cloud environments, why data management functionality is essential in selecting enterprise storage solutions and how Lenovo's approach to storage helps organizations turn data management into a strategic asset.

Data management challenges in hybrid cloud environments...and a trusted partner

As data volumes explode, some applications will migrate to the cloud while on-premises workloads must be accelerated and hybrid cloud increasingly is becoming the IT environment of choice.

That creates substantial data management challenges, including the need to maintain the acceptable performance metrics such as high IOPS and low latency as workloads and data volumes scale dramatically. Then, of course, data must be protected and secured regardless of its location and whether it is at rest or in flight.

Data management must properly address compliance and governance demands, as well as operate as cost-efficiently as possible. Finally, data migration must be seamless, intelligent, automated and reliable.

Managing data under those challenging circumstances requires a new approach to enterprise storage at both the hardware and software level. Often, legacy storage hardware and software solutions fall short because they were not engineered with the cloud in mind. As a result, many IT and storage decision-makers are looking for a new storage partner to help them with the diverse data management challenges of a hybrid cloud environment.

That's where Lenovo comes in. As a multi-billion-dollar IT industry leader, Lenovo has established its reputation for reliability, innovation, best-in-class service and future-proofed technology solutions. In particular, Lenovo offers a full range of enterprise storage hardware and software solutions that put data management front and center for the rapidly evolving hybrid cloud landscape.



Lenovo's data management solutions for hybrid cloud

Lenovo's storage solutions are engineered for the hybrid cloud world, managing data seamlessly and securely from the data center to the edge to the cloud. Lenovo's enterprise storage hardware and software provide a wide range of features and functionality to aid cloud architects in engineering a reliable, scalable and flexible hybrid cloud.

Additionally, those solutions are a boon to organizations that are making their initial moves to hybrid cloud and may find that managing storage in the cloud brings new, unanticipated challenges. Many legacy storage arrays require new tools and the integration of a dedicated software layer in order

to properly manage cloud-based storage. However, Lenovo storage arrays provide native integration for cloud data management, significantly improving storage management in a hybrid cloud environment and improving time to value.

Lenovo's solutions are ideal for today's hybrid cloud, multi-cloud world because they address a wide range of data management requirements. For instance:

- **End-to-end data management.** Lenovo data management is architected and implemented for requirements from the core (data center) to the edge to the cloud. Additionally, those solutions offer enterprise-wide support that is engineered into the storage and software from the start, not bolted on after the fact.
- **Security and data protection.** Security is an integral element of hybrid cloud data management, and Lenovo solutions protect data in motion, at rest and in the cloud. The solutions help organizations to quickly recover from data breaches by delivering disaster recovery on prem or in the cloud impact. And, encryption-based data protection is resident across the storage infrastructure in the data center, on the edge and in the cloud.



- **Integrations.** Lenovo data management solutions seamlessly link with leading public cloud platforms including Microsoft Azure, Amazon AWS, IBM Cloud, Google Cloud and Alibaba Cloud, as well as with major enterprise applications and workloads, regardless of whether they reside on premises or in the cloud.
- **Intelligence and automation.** Lenovo's solutions offer automated functionality to ease implementation, reduce risk and free up IT teams to work on more strategic issues. They also support embedded analytics for future-proofed data management, delivering superior long-time economic and operational value to the organization.

In a hybrid cloud world, for most environments, highly used data is automatically kept on high-performance storage media for near-real-time access. With Lenovo, the less frequently used data can now be automatically tiered using S3 object protocol to a lower cost on premise or public cloud solution with a few simple steps. When purchased, this capability is built into the ThinkSystem DM Series management console for simple integrated management including reporting of on premise and cloud capacity utilization, data efficiency and performance.

Beyond standard S3 tiering to the cloud, the Lenovo ThinkSystem DM Series with Cloud Volumes ONTAP, enables users to expand DM Series to a cloud environment while maintaining the block and file protocols and compatibility that powers their on premise workloads. This unique capability provides enterprises tremendous agility and flexibility in leveraging the cloud to innovate their data management approach. The administrator can seamlessly migrate or replicate data between on premise and cloud environments. They can quickly enable new capacity in the cloud to address unplanned expansion. This capability can also be utilized to set up disaster recovery capability in the cloud to simplify business continuity across your critical production workloads and databases with zero data loss.

An important value with the DM Series hybrid cloud solutions is that you will



continue to see great storage efficiency and savings because you will retain the data reduction onboard the system when you are utilizing the cloud. Data will also stay encrypted on-premise, over the wire and in the cloud when deploying a hybrid cloud solution. The Lenovo cloud capability is designed to be open and broad so customers can utilize with their cloud vendor of choice or to implement a multi-vendor cloud strategy. DM Series can integrate with Microsoft Azure, Amazon AWS, IBM Cloud, Google Cloud and Alibaba Cloud, to name just a few. When using a multi-cloud strategy, organizations can leverage the best features from each cloud provider, ensure competitive pricing and avoid vendor lock-in.

Lenovo's data management software is uniquely suited for hybrid cloud

environments, where vital data may be on-premises, in a public cloud, in a private cloud or migrating back and forth. This means data management must be architected in the most flexible manner possible, while ensuring simple deployment and management, as well as seamless cloud integration across multiple cloud providers' platforms.

The software is available across the ThinkSystem DM Series portfolio both in entry solutions optimized for edge, remote office and SMB deployments as well as in advance higher performance models for performance intensive environments.

The Lenovo storage strategy is focused on making the customer journey to cloud easy and efficient, so they can begin utilizing the cloud with minutes to manage critical data. DM Series cloud management capability is delivered with simple automation so administrators can free their time to focus on new value add activities.

While Lenovo makes the move to hybrid cloud easy, there are a number of operational and planning considerations that must be taken into account to achieve the full value. Lenovo offers a range of hybrid cloud services ranging from hands-on, customized workshops on how organizations can architect their hybrid cloud solutions to turnkey, end-to-end hybrid cloud design and implementation. Those services greatly expand an organization's ability to derive more value from their data in a hybrid cloud environment. These



services extend beyond cloud and are designed to facilitate and simplify a complete storage infrastructure modernization.

For instance, Lenovo services provides such capabilities as advanced remote deployment and smart configuration. Lenovo service and consulting offerings include Cloud architecture planning consulting, advanced remote deployment and configuration, remote monitoring and management, hardware monitoring, data migration, and consumption based pricing models.

Bottom line: Whether an organization wants to leverage a hybrid cloud architecture in order to optimize

data capacity and simplify storage management or needs a full-scale hybrid cloud solution combining storage, compute and software provisioning, Lenovo's storage solutions offer a reliable, secure and scalable approach to data management in a hybrid cloud environment.

Conclusion

As hybrid cloud adoption proliferates and the architecture becomes more strategic to how IT services are deployed and consumed, organizations need to pay even greater attention to how data is managed at all points to, from and in the cloud.

The most successful hybrid cloud solutions will be those that optimize data management practices and policies from the core to the edge to the cloud, and back. Regardless of

which cloud vendors an organization partners with, infrastructure and data management solutions from Lenovo can be essential to making the move to cloud efficient and affordable.

Lenovo all-flash arrays, hybrid-flash arrays, cloud-optimized servers and data management software are great solutions for hybrid cloud environments, for today and future hybrid cloud models.

Visit www.lenovo.com/us/en/data-center/storage/c/storage to learn more.