

A woman with dark hair, wearing a red short-sleeved top, is sitting at a desk. She is smiling and talking on a mobile phone held to her ear with her left hand. Her right hand is on the laptop screen. The scene is lit with warm, golden light, suggesting an indoor setting like a home office or a cafe.

# **Harnessing the Power of Dynamic Data Storage with Hybrid Cloud Management.**

Smarter  
technology  
for all

**Lenovo**

## Introduction

**Discovering Dynamic Data.**

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**Strategizing for the Future.**

# Discover a More Dynamic Way to Manage Data on the Cloud.

Data is the key to unlocking memorable, personalized customer experiences. Fortunately, running a business generates data that is leveraged for AI. But its potential value is only as good as the company's ability to gather, store, transport, and analyze it before the opportunity for meaningful action passes.

As customer expectations of speed and convenience continue to climb — and new cyberthreats emerge every year — business leaders must employ a data management strategy to keep pace with a constantly evolving landscape. Thankfully, advances in cloud technology make it possible for companies to reap the benefits of all their data without putting consumer trust at risk.

Managing data between public and private clouds has been a slow and complicated task. Now, hybrid cloud management enables simpler, faster, and more secure transport between data sets, empowering companies with a 360-degree view of their customers and how they interact with their services in real time.





## Chapter 1

# The Evolution of Cloud Data Management.

**Within the next two years,  
9 out of 10 businesses will be  
using more than one cloud service.<sup>1</sup>**

## Blurring the Lines between Clouds.

The way businesses manage their data is constantly changing. New capabilities in Artificial Intelligence, machine learning, IoT, and others consistently enable new ways for data to be stored, migrated, and analyzed. Many business leaders are looking to adopt a new approach to managing multiple clouds to take advantage of these emerging technologies.

Initially, hybrid data management involved businesses running applications solely on private or public clouds. In such a system, the data remains static in one environment with no easy way of transferring or synchronizing data in real time between the two.

On-premises and shared clouds have their unique strengths and benefits. Today, advancements in cloud technology make it possible for companies to use their private and public data sets in a more dynamic way. They can run their operations in multiple clouds simultaneously with real-time synchronization and secure transportability between the two services. The result is faster response times and valuable real-time insights for making data-driven decisions.

A **private data cloud** is an on-premises infrastructure dedicated solely to your organization, offering the best security and compliance.

A **public cloud** is a shared cloud infrastructure that serves many organizations simultaneously, allowing for greater scalability, and is charged on a usage model that enables more flexibility to scale up and down.

A **hybrid cloud** combines the benefits and capabilities of public and private clouds. This allows businesses to seamlessly scale up and down when cloud computing and processing fluctuations are in demand without giving third-party data centers access to the entirety of the enterprise data.

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Chapter 2  
**Flexible  
Scalability.**

**57% of SMBs** are looking to boost productivity in 2022 by migrating more of their workloads to the cloud.<sup>2</sup>



# Strategize for Growth amid Fluctuation Needs.

Using your cloud data to make data-driven decisions can be more or less expensive and resource-intensive depending on how frequently you need to access it.

Seasonal trends can help predict future data management requirements to a certain degree. Other adjustments to your company's operations — such as mergers, new edge device technology, and adding new territories — make data requirements more difficult to anticipate.

Business-critical data reveal the best course of action for growth. But you can only keep so much of it within reaching distance. Given the unpredictable spikes and dips in data management demand, businesses can only guess how much cloud capacity they need for their applications and workloads at any time.



# Hybrid Cloud Management Carves Out a More Predictable Path to Growth.

The unpredictability of shifting data requirements can be resource-intensive. Even worse, it can hurt potential for growth. Without a dynamic way to move data between cloud services, companies either overpay for infrastructure they don't use or miss out on opportunities to seize insights from incoming data when demand is higher than anticipated.

Today, hybrid cloud management makes it possible to flexibly scale storage capacity with fluctuating data management needs, eliminating the need to guess. Cloud bursting lets companies flex their data usage into the public cloud during times of high storage and computing demands while avoiding the cost of unused storage when demand is lower.

Public cloud providers don't only offer flexible storage. There are also many processing applications and powerful analytics engines that companies don't have on-premises. Not only can you flex into the cloud when the data is flowing, you can reel it back in with more insight than when it was first generated.

**Hot data** needs to be accessed more frequently, ideally with little or no retrieval time. It's stored closer to home and is thus more costly and resource-intensive.

**Cold data** doesn't need to be accessed as often and is generally stored where retrieval and response times are longer.

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**Learn more about how big data drives digital transformation >**



## Chapter 3

# Comprehensive and Centralized Governance.

**Ransomware attacks rose by 92.7% in 2021. North America and Europe were the two most targeted regions in the world.**

## The More Success, the Bigger the Target.

A strong data governance program is the key to a strong data management strategy. In a world where success makes companies an attractive target, protecting yourself against threats like ransomware, malware, and denial of services is an arduous task.

A single data breach could cause customers to lose faith in a business and turn to a competitor. Further, organizations can be fined millions of dollars for security breaches.

Using the cloud can be even riskier for companies that don't have a traditionally dedicated IT department. Without the proper governance requirements to regularly ensure the right level of security for every data set, they make themselves vulnerable to attacks — even from unsophisticated criminal operations.



## Stay Ahead of Constantly Advancing Threats.

Cybercrime operators looking to profit from your data don't need to be IT geniuses to create ransomware. They can easily buy tools on the dark web.

Even without expert IT knowledge, they can get inside organizations through end-user devices, encrypt the data so no one else can access it, and refuse to return access until payment is received.

The key to robust hybrid cloud data governance is using numerous layers of protection wherever you transport, store, or compute data in the cloud. Store data in multiple spaces, each with its layer of security, such as Multi-Factor-Authentication or encryption. Run analytics of the landscape to detect when a ransomware attack is targeting you and take a snapshot to preserve the data before it's lost if the threat turns out to be authentic.

## Ransomware Actors Are Becoming Better Equipped.

Ransomware operators are investing in more sophisticated technology from third-party providers.

In 2020, only 6% of the funds sent by these operators went to purchasing more effective tools and ransomware-as-a-service technology. In 2021, that spend increased to 16%.

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## Chapter 4

# Edge-to-Edge Applications and Computing.

**The global edge computing market is estimated to reach \$274 billion by 2025.<sup>3</sup>**



## The Next Big Leap: Data from the Edge.

Traditionally, data was created and computed in centralized data centers or the cloud. Companies would pull that data from the centers using computers or laptops. Today, however, data can be generated and computed beyond the cloud: at the edge.

Devices on the edge, such as mobile phones, AI cameras, tablets, and wearable trackers, are constantly producing mountains of data. That data potentially contains valuable, real-time information about how end users consume an organization's services. With that kind of insight, companies could produce even more expertly personalized customer experiences.

As this edge data pours in, routing it to centers using the traditional method becomes overly long and complicated. Worse, it prevents companies from acting on those valuable insights when they would have had the greatest impact.



# Hybrid Cloud Management Gets Data Where It's Needed, When It's Needed.

People expect fast responses from their devices and services. But with so many cutting-edge devices and disparate legacy systems that can't easily communicate with each other, analyzing all that data on demand becomes a challenge. To get the most out of their edge data, companies need a method of quickly and securely transporting it from the edge to the cloud and back.

**Data fabric** is an integrated architecture that connects data from different systems for faster and easier transport. It weaves together other avenues for moving, cleaning, and translating data from edge servers to the cloud and to the core, enabling dissimilar storage systems to communicate faster and with fewer complications.

With so many business leaders planning to use multiple cloud services in the future, data fabric is a critical component of a hybrid cloud management strategy. Without it, companies will struggle to take advantage of their data when its potential for inspiring impactful change is at its highest.

Ready to view your customers up close — from the edge?

Edge computing is a growing trend among enterprise organizations. By 2025, 75% of enterprise-generated data will be collected and processed at the edge.<sup>4</sup>

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**Learn more on how edge computing and Artificial Intelligence make real-time insights possible >**



## Chapter 5

# Hybrid Cloud Management from Lenovo.

**By 2025, the Global Datasphere will grow to 175 zettabytes of data, compared to only 33 ZB in 2018.<sup>5</sup>**

## Where to Start with Hybrid Cloud Management?

Cyberthreats are increasing every year, and ransomware-as-a-service is available worldwide.

While essential to creating good customer experiences, efficiency and speed cannot come at the price of security or regulatory compliance. Lenovo offers different solutions to build up the layers of protection, including automatic immutable snapshots and isolation of compromised users.

To reap the total value of their data without putting it at risk, business leaders must be thoughtful about the infrastructure they employ to manage it. Whether the goal is to simplify data storage management, optimize capacity, or embrace a full-scale hybrid cloud solution, the best strategy starts with the best technology.



## Lenovo Is Innovating for an Exploding Global Datasphere.

Already a trusted name in technology, Lenovo offers data management solutions that help enterprise companies simplify the shift to hybrid cloud management.

As a groundbreaking industry leader in computing and storage solutions, Lenovo products and services are designed to stay agile in a world of unpredictable demands, emerging threats, and ever-advancing edge technology.

With best-in-class ransomware mitigation and a single interface for on-premises and cloud instances, Lenovo data management solutions are built to meet the rising consumer demands for speed, security, and connectivity — from data centers to the cloud, to the edge, and back again.

Lenovo ThinkAgile HCI and ThinkSystem's DM solutions simplify the journey to hybrid cloud by providing a common set of management practices on-premises and on the public cloud.

# ThinkAgile ThinkSystem

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## Conclusion

**Strategizing  
for the Future:  
Agile Data  
Management for  
an Ever-Changing  
Ecosystem.**

“Cloud is the powerhouse that drives today’s digital organizations.”

**Sid Nag**, VP of Cloud Services & Technologies at Gartner Research

Every day, new data sources and applications reveal innovative ways for businesses to observe their customers’ behavior and deliver even more impactful end-user experiences.

Businesses in the early or middle stages of their cloud journey stand at the edge of an exciting precipice. Moving to a robust hybrid cloud management strategy can boost retrieval speed from edge and cloud environments, reduce latency between disparate systems, and take advantage of emerging applications to grow their data processing power.

Data is king, which means it shouldn’t be treated lightly. Intelligent use of data-centered technology starts with having a flexible, well-connected, and secure system that keeps your data close at hand when it’s needed — and safely stored away when it isn’t.

**Learn more** about using hybrid cloud management to accelerate your data from edge to cloud >





This eBook was written in collaboration with **Les Ruddick**,  
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